EVALUATION OF NEW ZEALAND CYCLE TRAIL – COUNTER DATA ANALYSIS, 2020

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Jonathan Kennett
Marilyn Northcotte

This report has been prepared for the Ministry of Business, Innovation and Employment / Hikina Whakatutuki, Tourism Branch, and was written by Marilyn Northcotte, en Velo, and subject matter expert Jonathan Kennett, Kennett Brothers. This document reports on the findings from the eco-Visio and DOC trail counters, secondary/supplementary data sources, and conversations with the New Zealand Cycle Trail Great Ride managers. We acknowledge and thank all those who participated in the data gathering and feedback phases of the evaluation for their knowledge, time and contributions.

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Executive Summary

The Ministry of Business, Innovation & Employment / Hikina Whakatutuki (MBIE) contracted The Kennett Brothers and Marilyn Northcotte (researcher) to analyse trail counter data from counters on all 22 New Zealand Cycle Trail Great Rides (the Great Rides).

The findings from this analysis will be used to create a live dashboard for each counter on every Great Ride, and the overall network. There is also an individual trail analysis for each Great Ride included in this report.

Project aims

The main aims of the data analysis project are to:

- gather counter data from all 22 Great Rides **for the 12 months – beginning 1 March 2019 to 28 Feb 2020** (note that although 2020 was a leap year we did not include 29 Feb, so that annual data can be compared with a consistent 365 days)
- develop a consistent methodology for collecting and analysing trail counter data (ie, develop weightings and formulae relative to each Great Ride).
- provide an estimated number of trips/visits for pedestrians and cyclists for all counters on each Great Ride.

Summary of findings

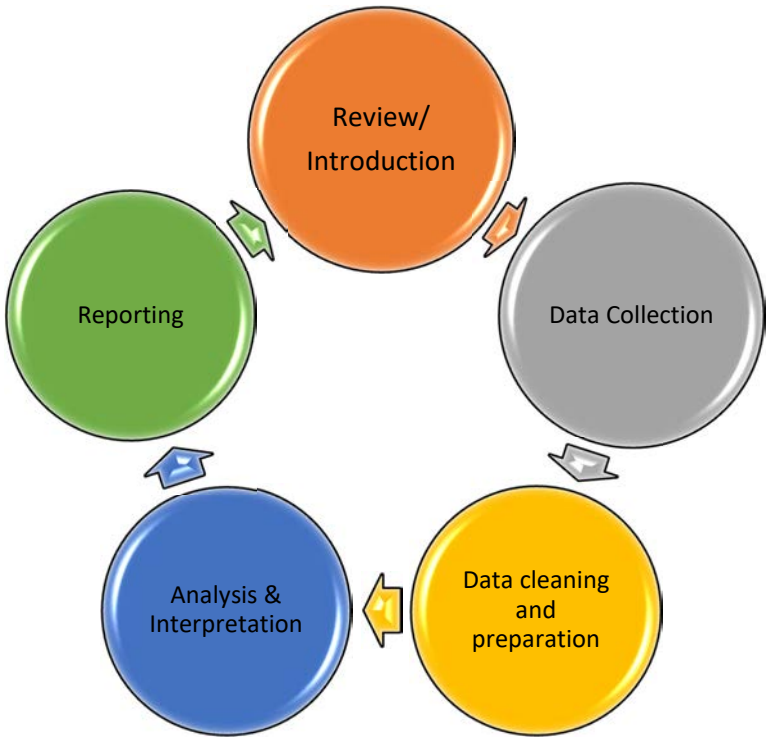
Following the installation of eco-Counters on most Great Rides, there is now a wealth of counter information on the New Zealand Cycle Trails, including splits between pedestrians and cyclists, and the direction of travel, for almost every day of the year. Key findings are as follows:

- Over the 12 months from 1 March 2019 to 28 February 2020, there were 1,985,600 trips on the New Zealand Cycle Trail Great Rides (compared with 1,300,000 estimated trips in 2015).
- 1,025,000 of these trips were by pedestrians.
- 960,200 of these trips were by cyclists.
- At only 1,822 cycle trips for the year, the St James Cycle Trail, in the South Island, was the least popular of the Great Rides (unchanged since 2015).
- At 188,000 cycle trips and 220,000 pedestrian trips for the year, the Hawke's Bay Cycle Trail was the most popular.
- The venerable Otago Central Rail Trail recorded 68,000 trips, with 13,000 of these being people riding the full trail (similar to 2015).

- Trails connecting to larger populations (ie, Nelson, Queenstown and Hawke's Bay) are experiencing considerably higher use than other trails.
- Over half the trail users are pedestrians. When assessing the economic impacts and benefits of the Great Rides, consideration should be given to the high number of walkers, runners and trampers. In effect, the cycle trails are 'shared use paths', as none of them are restricted to only bicycles. In some cases (eg, The Old Ghost Road), the number of trampers doing the full trail is quite high, and they provide a similar economic contribution as the cyclists.
- The new eco-Visio counters, which were installed on all but three of the trails, are performing very well compared with DOC counters. The eco-Visio counters are able to distinguish between cyclists and pedestrians, give the direction of travel, notify trail managers if the battery is running low, and most of them automatically upload data to satellites thus saving the need to travel to the counter to collect the data.
- We recommend that eco-Visio counters be installed on the few remaining trails that do not have them.
- The DOC counters by comparison were harder to get the data from, and several had major data gaps (because of flat batteries or breakages or because collection rates were more random).
- However, all trail counters require regular and ongoing attention to perform properly. Flat batteries were the most common cause of 'data gaps', and vegetation blowing back and forth in front of a counter was the most common cause of 'data spikes'.
- A bespoke formula has been created for each counter to estimate the number of trail trips from the raw counter data. Once this has been used by eco-Visio to create 'virtual counters,' the counters will be able to provide MBIE and trail managers with regular usage figures.
- We have made recommendations (see pages 12–13) for every trail to further improve the data capture and provide the most reliable trail usage numbers possible.

Methodology

In developing the methodology, we followed the steps below:



Review and Introduction

To meet the project aim of developing a methodology, we began by reviewing the 2015-16 trail counter data analysis that had been completed by Jonathan Kennett, who worked for MBIE at that time. In 2015-16, most trail counters were rudimentary and were unable to differentiate between walkers and cyclists. Furthermore, several trails had not been completed and only had one or two counters. Nonetheless, this was our starting point for calculating bespoke trail trip estimates from trail counter data.

We then contacted all 22 NZCT Great Ride managers to introduce the project, explain the aims and provide the 2016 counter analysis/formulae as a starting point. We also asked the trail managers to provide any additional information (ie, trail surveys) that might assist us in interpreting the data from their trail counters.

There are now between 1 and 14 counters per Great Ride.

Data collection

This stage involved contacting Phil Walton from BeCounted for a lesson in how to best gather data from the eco-Visio website. Compared with 2016, when most of the counters were Trafx infrared beams that did not distinguish between pedestrians and cyclists, or different travel directions, the eco-Visio counters in use on most of the Great Rides now are more sophisticated and cover both of these options.

At this stage, we downloaded the monthly data counts into Excel sheets for every counter on every trail from 1 March 2019 to 28 February 2020 (considered the most up-to-date 12 month period not significantly affected by Covid-19). We highlighted the months that had implausible data for more in-depth investigation.

We also requested the Department of Conservation (DOC) counter data. This produced mixed success, as staff were often busy, the data sometimes had yet to be collected and, in some cases, it was incomplete.

Data from these 100 counters was the main source of information. However, we also used information from the *2016 New Zealand Cycle Trail Evaluation Report*, as well as significant trail user surveys where they existed, and Strava Heatmap to help understand how the trails are being used. It is also worth noting that Jonathan had ridden and written about all of the trails, and had a good understanding of where the counters were, and how people might plausibly use the trail and be counted. He created sketch maps of every Great Ride, marking the location of each counter and annotating the annual pedestrian and cycle counts for both directions for those counters. This helped us identify anomalies and further develop our overall understanding of how each trail was being used. Where relevant, the sketch maps included connecting trails and transport options that helped highlight how the trails were being accessed and used.

In some cases, we gained additional data from Great Ride managers and businesses that provide key transport links on the trails. For example, we asked for the number of people booking into The Old Ghost Road huts and talked to the Roxburgh Gorge boat operators to find out how many cyclists and walkers had travelled between the two sections of trail, which is necessary to ride/walk the full length of the trail.

Data cleaning and preparation

The 22 Great Rides are all unique. Some are linear point-to-point trails, with no access points other than the start and end points. Others are complex networks, which are used by people in many different ways. For this reason, we needed to consider each trail as an individual entity.

The monthly data from the initial download sometimes showed implausibly high, or low, counts that prompted more detailed investigation. This usually involved going back into the eco-Visio website and examining data spikes or data gaps. By focusing in on the specific data, we could pinpoint the exact day/days of the spike/gap.

In cases of a spike, we would ask the trail managers if there had been an event on during the spike (eg, the Queenstown Marathon). If there had been no event, then we would try to find out if the spike might have been due to stock being driven along the track or vegetation blowing back and forth in front of the counter. Trail managers often had an answer to our questions.

Cases of data gaps were likely to be caused by a flat battery or a trail closure. In two cases on the Motu Trails, the data gap was caused by mason bees nesting in the counter, preventing the counter from recording data accurately.

Eco-Visio counters

If there was no event (such as the Queenstown Marathon) to cause the anomaly, then we considered it to be a data error, and we corrected it. We replaced the faulty data with data as similar as possible to the missing data. For example, we used data averaged from the same day of the week before and after the missing data. Or, for larger time periods (eg, a month), we used data for the same time period 12 months earlier, but adjusted for any annual growth that might have occurred. Our analysis also took into account the effects of public holidays on user numbers – both in terms of the actual dates of faulty data and the dates of potential substitute data.

Note that Phil Walton from BeCounted often notices data anomalies within days of them happening and contacts trail managers about them. Phil helped us solve several of the data spike/gap issues.

DOC counters

The data from DOC counters was more challenging as there were a lot more data gaps, and the data was presented in a difficult format. Six Great Rides have DOC counters. Some of the DOC trails (Motu Trails, Timber Trail and Queen Charlotte) also had one or two eco-Visio counters, and where this was the case, we deferred to the eco-Visio data sets. The others required a range of approaches to obtain the best data set possible, as outlined below:

- Motu Trails – used the eco-Visio data from three counters.
- Timber Trail – used the eco-Visio data from one counter but referred to the DOC counters when creating the trip estimate formula.

- Mountains to Sea – major reconstruction of a complete data set was require as around half the data was missing. There was only one eco-Visio counter near Whanganui.
- Queen Charlotte Track – used data from the one eco-Visio counter as the DOC data was difficult to obtain and difficult to interpret.
- St James Cycle Trail – used data from two DOC counters only (no pedestrian data for one counter). There was no eco-Visio counter.
- Otago Central Rail Trail – these were the most reliable DOC counters but were also supported by one private counter (from a farmer). There are no eco-Visio counters.

One of our recommendations is to have more eco-Visio counters installed on the DOC trails.

Analysis and Interpretation

This analysis was last conducted in 2016 (using 2015 data). Since then, counter technology has advanced considerably, and there are more counters on most of the trails.

As such, our analysis and interpretation included findings and considerations from a range of data sources (previously listed) to provide a more holistic picture of trail use beyond the counter numbers.

We used email/phone discussions to:

- request additional information and ask questions
- seek clarification of information
- develop initial weightings and formulae
- provide the formulae and seek feedback
- review and revise where necessary.

However, the key information for our analysis came from the two main data sets (eco-Visio and DOC counters), which we examined to establish working formulae for each counter and the overall track network. We examined:

- total counts
- pedestrian-only counts
- cyclist-only counts
- variations over time due to seasons, holidays, data spikes and gaps, etc
- direction of travel when passing a counter (if available)

- placement of the counters along the trail network (useful in understanding how often a counter might be passed by a single user on one trip)
- tacit knowledge (insights and intuition) of the subject matter expert.

We used all these methods to develop assumptions, estimates and formulae for the individual trails, explained in each Great Ride trail analysis (see pages 14–120).

All trail managers were given the opportunity to review and question the analysis and results for their Great Ride. The majority of them, but not all, provided feedback and we have included it in the following report.

Limitations

Limitations are known potential weaknesses that can be associated with the analysis. In the case of this data analysis exercise, the main weaknesses are those related to data quality, or the time period of the analysis.

Data quality – where the data available was not entirely reliable and needed extensive cleaning and adjustments.

Time period – analysis conducted over a certain interval of time results in a snapshot dependent on conditions occurring during that time. In this case, the month of February may have been impacted by COVID-19 (possibly down on expected figures as tourists returned home early to avoid lockdown), although the pandemic was not a significant influence until March 2020. Also, some trails (specifically the Mountains to Sea and Pakihi Track) had lengthy trail closures due to a fatality and landslides). Furthermore, a few trails were not complete, and significant growth in use is expected when they are.

NZCT Great Ride Trip Numbers - 1 March 2019 to 28 February 2020

The table below provides estimates for the number of unique trips (ie, visits or uses) for each of the 22 Great Rides.

A trip/use/visit is different from a user/visitor. During one trip, a visitor on a Great Ride often passes more than one counter or the same counter/s twice. We have estimated the number of trips/uses/visits based on knowledge of how each trail is used by visitors. However, one person/visitor may undertake more than one trip in a year, and we have no way of knowing how often this occurs without doing extensive user surveying. This is why we refer to trips/uses/visits rather than users/visitors.

Great Ride	Pedestrian trips	Cycle trips	Cycling most/all trail	Overall Trips (pedestrians + cycles)
Twin Coast Cycle Trail	35,669	32,948	5,000	68,617
Hauraki Rail Trail	27,692	44,177	2,445	71,869
Waikato River Trail	16,146	14,428	1,483	30,574
Te Ara Ahi	36,548	55,343	3,466	91,891
Motu Trails	6,387	10,977	n/a	17,364
Timber Trail	3,612	8,863	6,682	12,475
Great Lake Trail	22,257	21,008	650	43,265
Mountains to Sea	6,076	14,470	2,000	20,546
Hawke's Bay	219,737	188,037	n/a	407,774
Remutaka	145,319	73,451	1,976	218,770
Queen Charlotte	21,871	5,054	2,333	26,925
Coppermine (Dun Mtn)	29,801	51,870	4,645	81,671
Tasman's Great Taste	84,212	183,006	n/a	267,218
St James Cycle Trail	n/a	1,822	627	1,822
Old Ghost Road	6,343	5,173	4,130	11,516
West Coast Wilderness	32,635	33,935	5,389	66,570
Alps 2 Ocean	50,838	19,504	3,000	70,342
Otago Central	21,848	46,427	13,000	68,275
Roxburgh Gorge	10,498	9,417	1,350	19,915
Clutha Gold	4,568	6,001	2,988	10,569
Queenstown	239,935	131,037	n/a	370,972
Around the Mtns	3,357	3,319	1,500	6,676
TOTAL	**1,025,349**	**960,267**	**62,664**	**1,985,616**

Note: 'Pedestrians' refers to walkers, runners and trampers. 'Cyclists' refers to mountain bikers, bikepackers, cycle tourers and any other person on a bicycle.

Recommendations:

The following recommendations were developed after analysing the data and consulting with the trail managers:

- **All Trails – Counter Maintenance**. Batteries must be replaced before running flat or a data gap will be caused. And vegetation must be kept clear of the pedestrian counters or it will result in a data spike on windy days as the vegetation blows back and forth in front of the counter. Less common problems include insects getting into the pedestrian counters. All trail managers should check the eco-Visio website (eco-visio.net) for data spikes/gaps weekly, and the battery levels. On the trail, maintenance contractors/volunteers should check for vegetation and insects every time they pass a counter.
- **Waikato River Trail** - Move the Arapuni counter (near top of zig-zags off Waotu South Rd) to between Arapuni and Jones Landing.
- **Te Ara Ahi** - When the trail is reconfigured to be a loop around Whakarewarewa Forest, add an Eco counter at the most remote (least popular) section of the loop. This will give the best indication of who is riding at Whakarewarewa to do the new Great Ride, as opposed to the other trails in the forest.
- **Timber Trail** - that a second Eco counter be installed on the second half of the trail, possibly close to Camp 10, or the Ongarue Spiral. This would enable more accurate analysis of trail counts.
- **Timber Trail** - DOC has requested that Eco Visio rename Harrisons Creek to 'Bog Inn' because Harrisons Creek is 10 km away from the counter.
- **Mountains to sea** -
    - Improve/service the current counters
    - Change counter names:
        - Horopito to Ohakune Old Coach Road,
        - Upokongaro to Whanganui River Road.
    - Consider placing counters on:
        - Fishers Track
        - the Ohakune end of the Old Coach Road just before the first viaduct
        - a section of trail in Whanganui city so that maximum counts would be comparable with other Great Rides that have counters on urban trail sections.
- **Coppermine Trail -** The Codgers Counter be moved up the trail, to above Tantragee Saddle, so that mountain bikers using Codgers Trails are not

counted, and also to capture people riding up from Maitai Valley on the new Grade 2 climbing track.

- **Queen Charlotte Track –** install an eco-counter on the Ship Cove section.
- **Tasman's Great Taste Trail –** install a new counter between Kohatu and Tapawera
- **Alps 2 Ocean -** Install a counter between Omarama and Otematamata.
- **Otago Central Rail Trail –** DOC/Trail Trust check:
    - for data gaps in the Rock and Pillar counter
    - the location of the Rock and Pillar counter to see if riders are avoiding it in any way.
- **Around the Mountains –**
    - Install a counter between Kingston and Fairlight
    - Install a counter at the northern end of the Southland Traverse heartland ride so that trail use is better understood.

Notes on counter malfunctions

- Vegetation growing in front of the pedestrian counter was the most common reason for data errors.
- Flat batteries (given that the eco-counter site gives several weeks warning of a battery going flat, this should never happen).
- Insects blocking the pedestrian counter (on the Motu Trails two counters had been blocked by mason bees nesting in/around the counter.
- A vehicle parked in front of a counter (Remutaka).
- A washout at a counter (Around the Mountains).
- DOC counters had multiple faults that were not explained to us. As the DOC counters require manual uploads, it was some weeks/months before faults were picked up.
- Overall, the cycle counters appear to be considerably more reliable than the pedestrian counters.

Individual Great Ride counter analysis[1]

1. Twin Coast Cycle Trail
2. Hauraki Rail Trail
3. Waikato River Trail
4. Te Ara Ahi
5. Motu Trails
6. The Timber Trail
7. Great Lake Trail
8. Mountains to Sea
9. Hawke's Bay Trails
10. Remutaka Cycle Trail
11. Queen Charlotte Track
12. Coppermine
13. Tasman's Great Taste Trail
14. St James Cycle Trail
15. The Old Ghost Road
16. West Coast Wilderness Trail
17. Alps 2 Ocean Cycle Trail
18. Otago Central Rail Trail
19. Roxburgh Gorge Trail
20. Clutha Gold Trail
21. Queenstown Trails
22. Around the Mountains

[1] Trails are organised geographically from north to south

1. Twin Coast Cycle Trail

Counter	Pedestrians	Cyclists	Total
Horeke counts	21,332	4,721	26,053
Horeke uses	11,733	4,155	15,888
Kaikohe counts	7,207	11,633	18,840
Kaikohe uses	4,324	8,725	13,049
Kawakawa counts	9,300	12,924	22,224
Kawakawa uses	5,580	9,693	15,273
Moerewa counts	3,857	7,857	11,714
Moerewa uses	2,893	7,071	9,964
Okaihau counts	2,542	6,333	8,875
Okaihau uses	1,907	5,636	7,543
Opua counts	14,228	26,432	40,660
Opua uses	9,960	19,824	29,784

Counters

1. Horeke (on bridge a few kms south of Horeke)
2. Okaihau (a few kms out of town at Macadamia Farm entrance)
3. Kaikohe (2 km north of town)
4. Moerewa (2 km west of town)
5. Kawakawa (400 metres west of Kawakawa)
6. Opua (500 metres from carpark)

Observations and assumptions

- The Twin Coast Cycle Trail is a linear trail passing through five settlements.
- It is used by local people doing there and back trips, which inflates the number of counts close to settlements.
- The Opua end has over five times the cycle counts as the Horeke end.
- The Horeke end has the largest number of pedestrian count which is surprising.

Horeke

Pedestrian count = 21,332
Cycle count = 4,721

There are exceptionally high (total 1,741) pedestrian counts on Sat/Sun, 9 /10 March 2019, and again, on 8/9 April (where there were over 1,300 pedestrian counts, while there is virtually no pedestrian activity shown on the Strava heatmap). The assumptions are that the pedestrian activity may be associated with the construction of the new buildings, or perhaps a weekend event associated with the Marae (unconfirmed).

From the directional counts, it appears that pedestrians are walking very evenly in both directions, 10,502 in one direction and 10,830 there-and-back to Horeke, which indicates a very high local use. The assumption is for approximately 90% there-and-back use. To derive pedestrian uses, multiply counts by 0.55 (90%/2 + 10%).

The cycle counts are far more directional with 3,595 counts heading towards Horeke (the expected direction of travel) and only 1,126 heading away from Horeke. There are no massive data spikes as seen in the pedestrian data.

Of the cycle counts heading away from Horeke (1,126) the assumption is that 50% are there and back trips and 50% are people doing the trail in reverse. The estimation is that 76% of the total counts (3,588) are through trips, and 24% of the counts (1,133) are there-and-back trips by users being counted twice (24% of the total counts divided by 2 = there and back uses = 567 uses). Therefore, to derive user numbers, multiply the total cycle counts by .88 (24%/2 + 76%).

As this is the most remote and least popular of the sections, the conclusion is that the number of through trips is close to the number of users doing the full trail (ie, 3,588 cyclists).
There will be other users doing significant sections (ie, Opua to Okaihau), but not all the trail.

Note one caveat: This counter is on a section of trail beside a quiet country road, and those cyclists who may ride on the road would not be counted.

Total walker/runner uses = 21,332 counts x 0.55 = 11,733 unique uses/annum
Total cycle uses = counts 4,721 x 0.88 = 4,155 unique uses/annum

Okaihau

Pedestrian count = 2,542
Cycle count = 6,333

This section of trail has low pedestrian use and moderate cycling use. The assumption is that only 50% of the pedestrian counts are double counts, there-and-back.

Therefore, to derive walker/runner user numbers, multiply the total counts by 0.75 (50%/2 + 50%).

For the cycle count, begin with the assumption that over 3,588 are doing a through trip (established from the Horeke counter), and subtract it from the total count (6,333 - 3,588). The difference (2,745) consists of around 50% through trips (1,373) and 50% there-and-back trips (1,373/2 = 686 as those users are being counted twice). The estimation for cyclists passing this counter is that 78% of counts are users doing through trips and 22% of counts are double counts. Therefore, to derive cycle user numbers, multiply the counts by 0.89. (22%/2+78%).

Total walker/runner uses = 2,542 counts x 0.75 = 1,907 unique uses/annum
Total cycle uses = 6,333 counts x 0.89 = 5,636 unique uses/annum

Kaikohe

Pedestrian count = 7,207
Cycle count = 11,633

This counter is only 2 km from town, between Kaikohe and three destination locations (a mountain bike track, a tunnel and a café at the next town) all of which present good options for there-and-back trips.

The assumption is that 80% of pedestrian counts are double counts and 20% are single counts (through trips). Therefore, to derive walker/runner user numbers, multiply the total counts by 0.60 (80%/2 + 20%).

For cycle counts, the assumption is that most of the Okaihau through cyclists (78% of Okaihau counts = 4,940) that went past the Okaihau counter also ride past this counter (that is 42% of Kaikohe counts). Of the remaining 58% of counts, it is estimated that most, but not all, are from riders doing there-and-back trips (ie, being double counted). Therefore, to derive cycle user estimates, multiply the total count by 0.75 (50% /2+50%).

Total walker/runner uses = 7,207 counts x 0.6 = 4,324 unique uses/annum
Total cycle uses = 11,633 counts x 0.75 = 8,725 unique uses/annum

Moerewa

Pedestrian count = 3,857
Cycle count = 7,857

This counter is 2 km west of Moerewa and, apart from the historic railway bridges, there is no strong destination for there-and-back trips. The assumption is that only 50% of pedestrian counts are double counts. Therefore, to derive walker/runner use numbers, multiply the total counts by 0.75 (50%/2 + 50%).

The trail is downhill from Kaikohe to Moerewa, which is important for cyclists doing just this section, or the section from Kaikohe to Opua. Of the cycle counts, 4,262 are heading downhill, towards Moerewa/Opua. The total number of cyclists heading towards Kaikohe is 3,686 and we estimate that most of these riders (3,595 based on the Horeke counter) are riding the full trail and heading towards Horeke. Therefore, to derive user numbers, multiply the total count by 0.90 (20%/2+80%).

Total walker/runner uses = 3,857 counts x 0.75 = 2,893 unique uses/annum
Total cycle uses = 7,857 counts x 0.9 = 7,071 unique uses/annum

Kawakawa

Pedestrian count = 9,300
Cycle count = 12,924

The section between Moerewa and Kawakawa is used by local commuters, and has a high percentage of there-and-back trips for both pedestrians and cyclists.

The assumption is that 80% of the pedestrian counts are double counts, therefore, to derive walker/runner use numbers, multiply the total counts by 0.6 (80%/2 + 20%).

The section between Kawakawa and Moerewa is not long, and the estimation is that the number of through trips will be the same as for the Moerewa counter (6,286), as most through cyclist will treat Kaikohe to Kawakawa as a section. Therefore, approximately half the cycle counts at Kawakawa are through counts and half are there-and-back trips. The formula for cyclists is the number of counts multiplied by 0.75 (50%/2+ 50%).

Total walker/runner uses = 9,300 counts x 0.6 = 5,580 unique uses/annum
Total cycle uses = 12,924 counts x 0.75 = 9,693 unique uses/annum

Opua

Pedestrian count = 14,228
Cycle count = 26,432

This section is popular among walkers and cyclists going both ways and doing there-and-back trips because the scenery is excellent, and there are no hills to deter people. It will not be used by many commuters, but is considered a good recreational ride for locals.

The assumption is that 40% of pedestrian counts are through trips and 60% are there-and-back (ie, double counted). Therefore, to derive walker/runner use numbers, multiply the total counts by 0.7 (60%/2 + 40%).

Cyclists will be more easily able to complete the Kawakawa-Opua section as a there-and-back trip. Based on previous counters, the estimation is that around 6,500 cyclists passing this counter are doing longer through trips. In addition, around the

same number again will do this trip as a single section through trip, in either direction. The remainder, approximately 50% of the counts, will be doing there-and-back trips and getting counted twice.

Therefore, to derive user numbers that are cyclists at the Opua counter, multiply the total counts by 0.75 (50%/2 + 50%).

Total walker/runner uses = 14,228 counts x 0.7 = 9,960 unique uses/annum
Total cycle uses = 26,432 counts x 0.75 = 19,824 unique uses/annum

Overall Trail Summary

The overall number of pedestrians can be calculated by assuming that the trail counters are too far apart to have a significant number of people passing more than one counter per walk/run. Therefore, add all the pedestrian counts together and multiply by 0.98 (assumes 4% of uses are passing two counters): 0.98 x (11,733 + 1,907 + 4,324 + 2,893 + 5,580 + 9,960) 36,397 = **35,669 walkers/runners uses of the trail over 12 months.**

Approximately 5,000 people cycled most or all of the Twin Coast Cycle Trail over the 12 months analysed. At least 3,600 people rode all 85 km and passed the Horeke counter, but in addition some riders would also have been on the quiet Horeke Road at that point and missed the counter.

The total number of cycle uses can be estimated by subtracting those that cycled most of the trail from each counter and adding the 5,000 long distance riders at the end. For example, Opua 19,824-5,000 + Kawakawa 9,693-5,000 + Moerewa 7,071-5,000 + Kaikohe 8,725-5,000 + Okaihau 5,635-5,000 + the through riders of 5,000 = **32,948 total cycle uses of the trail over 12 months**.

Total combined trips (pedestrians and cycles) over 12 months = 68,817.

Note: The number of through cyclists is relatively low which may reflect that the trail is young and lacks some key infrastructure in certain places. For example, Horeke right now is still a weaker destination due to lack of food and accommodation services. However, as this improves the numbers will grow.

Trail counters summaries for 1 March 2019 – 28 Feb 2020 data

Horeke

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Okaihau

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Kaikohe

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Moerewa

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Kawakawa

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Opua

Total walker/runner uses = 14,228 counts x 0.7 = 9,960 unique uses/annum
Total cycle uses = 26,432 counts x 0.75 = 19,824 unique uses/annum

2.Hauraki Rail Trails

Counter	Pedestrians	Cyclists	Total
Pipiroa counts	1,293	4,075	5,368
Pipiroa uses	1,034	3,260	4,294
Hikutaia counts	3,123	10,553	13,676
Hikutaia uses	2,655	7,387	10,042
Waikino counts	19,377	53,782	73,158
Waikino uses	11,626	29,580	41,206
Tirohia counts	3,807	6,021	9,828
Tirohia uses	3,236	4,817	8,053
Totara counts	13,059	22,884	35,943
Totara uses	9,141	13,730	22,871

Counters

1. Miranda (just east of Pukorokoro / Miranda) – NEW COUNTER
2. Pipiroa (on the coast, east of Bugger Café)
3. Totara (half way between Thames and Kopu)
4. Hikutaia (between Kopu and Paeroa)
5. Waikino (Karangahake Gorge)
6. Tirohia (between Paeroa and Te Aroha)
7. Stanley Landing (between Te Aroha and Matamata) – NEW COUNTER

Observations and assumptions

- The Hauraki Rail Trail is the closest trail to Auckland and consists of six distinct sections.
- There is 12 months of data for five counters.

Miranda

There is only limited data for this counter from 1 December to end of February. We have not analysed this counter, however, the assumption is that this counter has no commuters passing it, and very few local recreational riders. Over 90% of counts at Miranda will be from visitors to the region, and approximately 80% will be travelling one way.

Therefore, to derive user numbers, multiply the total counts by 0.9 (20%/2 + 80%).

Pipiroa

Pedestrian count = 1,293
Cycle count = 4,075

This counter is on a relatively new section of trail that is remote from any towns and as such, almost all use is from visiting cyclists.

Over the summer the predominant direction for cycling is towards Kopu, and trail use peaks in late February when Tour Aotearoa riders pass through. In the last week of February counts heading toward Kopu were 81, 57, 60, 85, 60, 36 (travelling in the other direction over that week were only 36 cyclists). Tour Aotearoa will now be an annual event, so this seasonal pattern will continue.

Additionally, 65% of cycle counts head east and 35% head west, whereas 66% of walking counts are westward and 34% are eastward. These differencing directions indicate that the trail is ridden in both directions, and that there are there and back trips (ie, holiday park to Bugger Café and back).

In April 2019 there were four days of high pedestrian counts which may be due to an event, or vegetation/stock passing over the sensor. Counts were 22, 29, 31, and 79. This was due to a botulism event that saw many volunteers on foot passing the counters.

The assumptions are that 40% of all counts (both walking/running and cycling) are double counts. Therefore, to derive user numbers, multiply the total counts by 0.8 (40%/2 + 60%).

Total walker/runner uses = 1,293 counts x 0.8 = 1,034 unique uses/annum
Total cycle uses = 4,075 counts x 0.8 = 3,260 unique uses/annum (2445 are through riders)

Totara

Pedestrian count = 13,059
Cycle count = 22,884

This counter is half way between Thames and Kopu, and receives a high proportion of there-and-back trips from commuters and local recreational riders. It may be considered a side branch to the main trail and therefore missed by many long-distance riders. The Hauraki Rail Trail does not use this counter for their trail analysis. However, there is a requirement to provide analysis for all the counters to be consistent with other Great Ride counter analysis. Also, some tourists may ride from Thames to the Bugger Café and back.

It is interesting to note that this was the only counter not significantly affected by the Covid-19 lockdown (this was due to high local use). The cycling count directions are

equally matched, supporting the assumption that most trips are there-and-back. By contrast, the walking trips are heavily weighted towards Thames, with 66% of counts heading north.

For walkers, the assumption is that 60% of the counts are double counts. Therefore, to derive user numbers, multiply the total counts by 0.7 (60%/2 + 40%).

For cycling, the assumption is that 80% of these are double counts. Therefore, to derive user numbers, multiply the total counts by 0.6 (80%/2 + 20%).

Total walker/runner uses = 13,059 counts x 0.7 = 9,141 unique uses/annum
Total cycle uses = 22,884 counts x 0.6 = 13,730 unique uses/annum

Hikutaia

Pedestrian count = 3,123
Cycle count = 10,553

This section is more remote and used both by visitors and local walkers and runners. The directional data suggests a moderate bias for pedestrians (56.8%) and cyclists (55.9%) to head south. Examination of daily data suggest lower numbers of pedestrians doing there-and-back trips than cyclists.

There is a pronounced cycling peak in Feb 2020, caused by Tour Aotearoa, and a less major peak during Christmas and Easter holidays.

For walkers/runners the assumption is that 30% of counts are double counts, therefore, to derive user numbers, multiply the total counts by 0.85 (30%/2 + 70%).

For cyclists, the assumption is that 60% of counts are double counts (there-and-back) and 40% are through trips, therefore, to derive user numbers, multiply the total counts by 0.70 (60%/2 + 40%).

Total walker/runner uses = 3,123 counts x 0.85 = 2,655 unique uses/annum
Total cycle uses = 10,553 counts x 0.7 = 7,387 unique uses/annum

Waikino

Pedestrian count = 19,377
Cycle count = 53,781

This counter is on the popular Karangahake Gorge, the most stunning section of the trail, near Owharoa Falls. The directional data is more symmetrical for cyclists than any other Great Ride counter with 50.5% of riders heading east and 49.5% heading east. There are slightly higher variations for walkers (54.5% heading west and 46.5% heading east). This indicates very high levels of there-and-back trips.

For walkers/runners the assumption is that 80% of the counts are double counts, therefore, to derive user numbers, multiply the total counts by 0.6 (80%/2 + 20%).

For cyclists, the assumption is that 90% of counts are double counts (there-and-back) and 10% are through trips. Therefore, to derive user numbers, multiply the total counts by 0.55 (90%/2 + 10%).

Total walker/runner uses = 19,377 counts x 0.6 = 11,626 unique uses/annum
Total cycle uses = 53,781 counts x 0.55 = 29,580 unique uses/annum

Tirohia

Pedestrian count = 3,807
Cycle count = 6,021

This counter is at a remote site halfway between Paeroa and Te Aroha. There is a marae and a country school within 1 km of a counter, but very few houses. There are five data spikes for pedestrians heading south (14 March, 19 March, 9 Oct, 23 Nov, 22 Feb) and one spike for cyclists heading south (Tour Aotearoa).

Pedestrian data was not being counted from 14 Dec 2019 to 23 Jan 2020, which covers the busy holiday period.

For the pedestrian counts, 75% are heading south, and the assumption is that 30% of counts are double counts. Therefore, to derive user numbers, multiply the total counts by 0.8 (30%/2 + 70%).

For the cycling counts 59% are heading south. The assumption is that 40% of the counts are double counts (there-and-back) and 60% are through trips by people doing a significant portion of the Hauraki Rail Trail. Therefore, to derive user numbers, multiply the total counts by 0.8 (40%/2 + 60%).

Total walker/runner uses = 3,807 counts x 0.85 = 3,236 unique uses/annum
Total cycle uses = 6,021 counts x 0.8 = 4,817 unique uses/annum

Stanley Landing

This is a new counter and data starts from end of January 2020, and as such, there is no analysis for this counter. However, the assumption is that this counter has no commuters passing it. The majority of counts at Stanley Landing will be from visitors to the region, and around 80% will be travelling one way and counted once. Therefore, to derive user numbers, multiply the total counts by 0.9 (20%/2 + 80%).

Overall Trail Summary

The Hauraki Rail Trail is a tri-spoke trail network, with a strong spine from Kaiaua to Matamata.

The branch line to Waihi has the best scenery and interpretation and is clearly the single most popular section for visitors to the region with a total of **29,580 cycle uses**. As this number is so high, the assumption is that most users of that section are only doing that section.

The branch line to Thames is the second most popular section, with numbers being boosted by local use (recreational and commuting) leading to a total of **13,730 cycle uses**. This high local usage is why the trail manager does not use this counter to analyse trail use. Almost all visitors passing this counter will be captured by another counter anyway, (thereby extrapolating that approximately half the cycle counts at Totara are visitors).

People who travel to the region to tick off the Hauraki Rail Trail Great Ride (ie, ride from Kaiaua to Matamata), will pass counters at Pipiroa, Hikutaia, and Tirohia. As the Pipiroa counter has the lowest number of cycle counts it provides the best indication of the number of people cycling most/all of the Hauraki Rail Trail (ie, the number of through riders at Pipiroa, which is 60% of the counts).

Total number people cycling most/all of the Hauraki Rail Trail over 12 months was estimated to be 2,445 people (Pipiroa counts x 0.6).

As the counters are generally 20-30 km apart, walkers are likely to only pass 1 counter per trip, and walking uses are estimated to be the sum total of walking uses passing all counters.

Total number of walking/running trips estimated over 12 months = 1,034 + 9,141 + 2,655 + 11,626 + 3,236 = 27,692 trips.

In future, this should have walking counts from Pukorokoro/Miranda and Stanley Landing added as these new sections of trail may attract new walking trips.

Cyclists have a much greater range and will pass between one and seven counters per trip. However, it's likely that most Waikino counts are associated with people only passing one counter (ie, just doing Karangahake Gorge). Whereas those riding the spine of the trail (estimated at 2,445) will be passing 3 counters (or 5 counters now that two new ones have been installed at Miranda and Stanley Landing). Totara users could be heading from Thames to Kopu and back, or the Bugger Café and back, or down to Paeroa. So, on average the estimation is that beyond the Karangahake Gorge, people will be passing an average of two counters.

Therefore, the overall trail use estimate for cyclists is Waikino uses (29,580) + all the other cycle counter uses divided by 2.

Total cycle trips = 29,580 + (3,260 + 13,730 + 7,387 + 4,817 / 2 = 14,597) = 44,177 trips

Note: These are conservative estimates as there are opportunities for visitors to use the trail without being counted, however, to do so indicates only minor use of the trail.

Total combined trips (walkers/runners and cycles) over 12 months = 71,869

Trail use summaries for 1 March 2019 – 28 Feb 2020

Miranda (just east of Pukorokoro / Miranda) – NEW COUNTER, insufficient data

Pipiroa (on the coast, east of Bugger Cafe)

Total walker/runner uses = 1,293 counts x 0.8 = 1,034 unique uses/annum
Total cycle uses = 4,075 counts x 0.8 = 3260 unique uses/annum (2,445 are through riders)

Totara (halfway between Thames and Kopu)

Total walker/runner uses = 13,059 counts x 0.7 = 9,141 unique uses/annum
Total cycle uses = 22,884 counts x 0.6 = 13,730 unique uses/annum

Hikutaia (between Kopu and Paeroa)

Total walker/runner uses = 3,123 counts x 0.85 = 2,655 unique uses/annum
Total cycle uses = 10,553 counts x 0.7 = 7,387 unique uses/annum

Waikino (Karangahake Gorge)

Total walker/runner uses = 19,377 counts x 0.6 = 11,626 unique uses/annum
Total cycle uses = 53,781 counts x 0.55 = 29,580 unique uses/annum

Tirohia (between Paeroa and Te Aroha)

Total walker/runner uses = 3,807 counts x 0.85 = 3,236 unique uses/annum
Total cycle uses = 6,021 counts x 0.8 = 4,817 unique uses/annum

Stanley Landing (between Te Aroha and Matamata) – NEW COUNTER, insufficient data

3.Waikato River Trail

Counter	Pedestrians	Cyclists	Total

Powerhouse counts	10,684	13,423	24,107
Powerhouse uses	6,945	8,725	15,670
Arapuni counts	1,683	1,443	3,126
Arapuni uses	1,094	1,443	2,537
Waipapa counts	734	1,854	2,588
Waipapa uses	697	1,761	2,458
Mangakino counts	10,116	9,597	19,713
Mangakino uses	6,575	6,238	12,813
Atiamuri counts	1,777	2,539	4,316
Atiamuri uses	1,688	2,412	4,100

Counters

1. Powerhouse (just north of Arapuni village)
2. Arapuni (just off Waotu South Road – middle of section)
3. Waipapa (a few kilometres north of Mangakino village)
4. Mangakino (just south of the village)
5. Atiamuri (half way between Whakamaru and Atiamuri)

Observations and assumptions

- The 103 km point-to-point trail has several entry points and the majority of users are doing sections rather than the full trail.
- There are on-road alternatives that are often used by Cycle Tourers and Bikepackers, however, they will still connect (and contribute to) the villages along the trail.
- There is virtually no commuting use.
- Tour Aotearoa follows much of the trail and accounts for a significant level of use (1,000 – 1,500 uses in 2019-2020).
- Kopiko Aotearoa will account for a significant amount of use from Atiamuri to Whakamaru.
- Some sections of trail are short and easy, and others are long and hard. The level of use reflects the difficulty.

Powerhouse (1 km north of Arapuni)

Pedestrian count = 10,684

Cycle count = 13,423

A short, easy section of trail, with a counter that is not far from a popular café. The assumption is that 70% of counts are double counts from people doing there-and-back trips (mostly between Waipa Reserve and Arapuni), and the remaining 30% are through trips. Therefore, to derive user numbers, multiply the total counts by 0.65. (70%/2+30%).

Total walker/runner uses = 10,684 counts x 0.65 = 6,945 unique uses/annum
Total cycle uses = 13,423 counts x 0.65 = 8,725 unique uses/annum

Arapuni (near top of zig-zags off Waotu South Rd) Pedestrian count = 1,683
Cycle count = 1,443

This is a difficult section of trail with a remote counter, which subsequently gets the smallest number of cycle counts. Previously this counter would have been a good indicator of the number of people doing the full trail, however, due to its reputation some people have chosen to ride around this section on the road instead. In February 2020 the road option was signposted as a Heartland Ride and used for Tour Aotearoa, the section of trail was closed (not for the first time), meaning this counter is no longer a good indicator of full trail use.

For pedestrians the assumption is that 65% of the counts will equal to the number of unique pedestrian uses. Therefore, to derive user numbers, multiply the total counts by 0.65 (70%/2+30%).

For cyclists the assumption is that 100% of cycle counts are through trips and therefore, the user numbers are bike riders = 1,443.

Total walker/runner uses = 1,683 counts x 0.65 = 1,094 unique uses/annum
Total cycle uses = 1,443 counts x .100 = 938 unique uses/annum

Note: The use of this section of trail will increase greatly when planned upgrades are completed.

Waipapa (a few kilometres north of Mangakino)

Pedestrian count = 734
Cycle count = 1,854

This counter, while close to Mangakino, is still quite remote and not connected by an off-road section which makes it quite interesting. The Trail to the south of Mangakino is far more attractive for day visitors and easy riders. In 2020, a significant number of Tour Aotearoa riders used the road, rather than the trail, because the road is easier

The assumption is that 90% of users are through traffic, rather than there and back trips. Therefore, to derive user numbers multiply the total counts (pedestrians and cyclists) by 0.95 (10%/2+90%).

Total walker/runner uses = 734 counts x 0.95 = 697 unique uses/annum
Total cycle uses = 1,854 counts x .95 = 1,761 unique uses/annum

Note: Even on this section there will be a significant number of tired cyclists who ride along the road instead of the trail (there is a side road that people can bail out on, and for some southbound riders, the trail leading up to the side road is too hard – it is Grade 4, Advanced).

Mangakino (1km south of lakefront reserve)

Pedestrian count = 10,116
Cycle count = 9,597

This section starts from a lakefront campground/reserve and is highly attractive as a short trip to a nearby bridge, or to Whakamaru. It is also used by Tour Aotearoa riders. The assumption is that 70% of the counts are double counts from people doing there-and-back trips (mostly between Mangakino and Whakamaru). Therefore, to derive user numbers, multiply the total counts by 0.65. (70%/2+30%).

Total walker/runner uses = 10,116 counts x 0.65 = 6,575 unique uses/annum
Total cycle uses = 9,597 counts x .65 = 6,238 unique uses/annum

Note: For the period being analysed, the assumption is that 1,000 – 1,500 were Tour Aotearoa riders who branched off a few kms south of Mangakino to ride to The Timber Trail. This adds to the evidence suggesting that only 1,000 – 2,000 people are riding the full trail. The reason for the relatively low number is that the Waikato River Trail is currently so variable in quality, that in its entirety it doesn't appeal strongly to a single user type. The short easy sections are by far the most popular, but if the whole trail was easy, then the whole trail would be popular.

Atiamuri (about halfway between Whakamaru and Atiamuri)

Pedestrian count = 1,777
Cycle count = 2,539

This section of the trail is used by those walking/running/riding the whole trail as well as people just riding between Atiamuri and Whakamaru. It includes Kopiko Aotearoa riders (210 in 2020, and estimate rapid growth ahead). There are several options for riders to pop out onto SH30 if they are tired, so the number of cyclists based on this counter will be an underestimate. The assumption is that 90% of users are through traffic, rather than there and back trips. Therefore, to derive user numbers multiply the counts by 0.95 (10%/2+90%).

Total walker/runner uses = 1,777 counts x 0.95 = 1,688 unique uses/annum
Total cycle uses = 2,539 counts x .95 = 2,412 unique uses/annum

Overall Trail Summary

Pedestrians
The assumption is that over 95% of the unique uses that are walkers/runners (uses, not counts) are only passing one counter. Therefore, take the total number of pedestrian uses and multiply by 0.97 to derive total number of walkers/runners.

Total pedestrian counts (from all counters on the trail) = 24,994 and total pedestrian uses by section = 16,999.

As the counters are well spaced out, only a small portion of the 16,999 trips are by those walking past more than 1 counter (assume 10%). Therefore, multiply 16,999 by 0.95 to account for 10% being double counted = 16,149 uses.

To simplify the formula, to derive total pedestrian uses multiply the total pedestrian counts from all counters by 0.646.

Total walker/runner uses = 24,994 (sum of all pedestrian counts) x 0.646 = 16,146 unique uses/annum

Cyclists

The assumption is that as cyclists travel 2-4 times as far as walkers that they likely to pass an average of two counters per day, unless they are doing a there-and-back trip, in which case they will also be counted twice.

Therefore, to derive the total number of cyclists, take the total number of cycle counts (28,856) and multiply by 0.5.

Total cycle uses = 28,856 (sum total cycle counts) x 0.5 = 14,428 unique uses/annum

A more subtle way of achieving a result (to check the simple formula above) would be to add the Powerhouse uses to the Mangakino uses and subtract 2,000 for the number passing both counters (ie, Tour Aotearoa riders, etc) and half the Atiamuri cyclists. This = 14,169, which is a close estimate to the simpler method above.

Total number (walkers, runners and cyclists) over 12 months = 16,146 + 14,428 = 30,574 unique uses.

Note: It is difficult to compare the total trail use in 2020 with the trail use in 2015, but it does appear there has been significant growth in user numbers.

To estimate the number of people riding a significant length of the trail (ie, > half), consider that the Waipapa counter is both remote and reliable, and estimate that 80% of those counts are people riding most of the trail.

Therefore, over the 12-month period, approximately 1,483 people rode most/all of the Waikato River Trail.

Recommendation

- Move the Arapuni counter [near top of zig-zags off Waotu South Rd] to between Arapuni and Jones Landing

Trail counters summaries for 1 March 2019 – 28 Feb 2020 data

Powerhouse

Total walker/runner uses = 10,684 counts x 0.65 = 6,945 unique uses/annum
Total cycle uses = 13,423 counts x 0.65 = 8,725 unique uses/annum

Arapuni

Total walker/runner uses = 1,683 counts x 0.65 = 1,094 unique uses/annum
Total cycle uses = 1,443 counts x .100 = 938 unique uses/annum

Waipapa

Total walker/runner uses = 734 counts x 0.95 = 697 unique uses/annum
Total cycle uses = 1,854 counts x .95 = 1,761 unique uses/annum

Mangakino

Total walker/runner uses = 10,116 counts x 0.65 = 6,575 unique uses/annum
Total cycle uses = 9,597 counts x .65 = 6,238 unique uses/annum

Atiamuri

Total walker/runner uses = 1777 counts x 0.95 = 1,688 unique uses/annum
Total cycle uses = 2,539 counts x .95 = 2,412 unique uses/annum

4.Te Ara Ahi

Counter	Pedestrians	Cyclists	Total
Sanatorium counts	31,258	19,969	51,227
Sanatorium uses	23,443	14,977	38,420
Hemo Gorge counts	16,911	68,291	85,202
Hemo Gorge uses	10,992	44,389	55,381
SH5 counts	2,348	8,154	10,502
SH5 uses	2,113	6,931	9,044

Counters

1. Sanatorium (within Rotorua, just south of Polynesian Spa)
2. Hemo Gorge (between Rotorua and Whakarewarewa MTB Park)
3. SH5 (15 km from Rotorua CBD on concrete path)

Observations and assumptions

- The main change from the previous evaluation is that while the Hemo Gorge counter has remained since 2015, the other two counters are new.
- There is some difficulty in estimating full trail use as the most distant counter is only 15km from the start of the trail.
- The percentage of pedestrians reduces the farther the counters are from the centre of town (this is expected).
- There seem to be a few days with false counts. Unless these days had major walking events the counts will be wrong and we have substituted the counts for more realistic numbers.
- There is some revision in the total counts (SH5) to reflect a number of anomalies in the data.

Counter analysis

Sanatorium

Pedestrian count = 31,258
Cycle count = 19,969

For all trail users, the assumption is that 50% of the users are doing through trips and the other 50% are doing there-and-back trips, ie, one person passing the counter

twice. Therefore, to derive user numbers, multiply the total counts by 0.75 (50%/2+50%).

Total walker/runner uses = 31,528 counts x 0.75 = 23,646 unique uses/annum
Total cycle uses = 19,969 counts x 0.75 = 14,977 unique uses/annum

Hemo Gorge

Pedestrian count = 16,911
Cycle count = 68,291

For all trail uses, the assumption is that 30% of the uses are doing through trips and the other 70% are doing there-and-back trips, ie, one person passing the counter twice. Therefore, to derive user numbers, multiply the total counts by .65

Total walker/runner uses = 16,911 counts x 0.65 = 10,992 unique uses/annum
Total cycle uses = 68,291 counts x 0.65 = 44,389 unique uses/annum

SH5 Concrete Path

Pedestrian count = 2,348 - corrected
Cycle count = 8,154 – corrected

The total pedestrian counts for this counter was 6,953, which has been corrected by removing data spikes (likely due to vegetation in front of the counter) in November (1,281 counts) and December (3,837 counts). The data for November and December was substituted with the data from October and January, and the revised total pedestrian count is 2,348 counts.

For all trail uses, the assumption is that 80% of the counts are for through trips as it is too far from any popular start/destination for an easy there and back trip. Therefore, to derive user numbers, multiply the total counts by 0.9 (20%/2 + 80%).

For the 8,154 cycle counts, the assumption is 70% are through trips and 30% there and back trips. Therefore, to derive cyclist numbers multiply the total counts by 0.85 (30%/2 +70%).

Total walker/runner uses = 2,348 counts x 0.9 = 2,113 unique uses/annum
Total cycle uses = 8,154 counts x 0.85 = 6,931 unique uses/annum

Overall Trail Summary

The number of Hemo Gorge uses has more than doubled since 2015 when it was estimated to be 23,339 uses. It is likely that e-bikes have contributed to this growth, but the number of pedestrians is also much higher than expected.

The total number of people cycling the whole of the Te Ara Ahi Trail cannot exceed 6,931 (SH5 cycle uses), and is likely to be closer to half that number (in 2015 it was just over 1,000 riders).

To derive total pedestrian use, add all three pedestrian counts together as it is unlikely given the location of the counters that walkers/runners are passing more than one counter per trip.

Total walker/runner uses of Te Ara Ahi over 12 months is estimated to be 36,548.

To derive total cyclist uses over 12 months, consider than an estimated 3,500 cyclists are riding past all three counters, and an estimated 7,500 cyclists (half of Sanatorium uses) are riding past two counters. Therefore add 50% Sanatorium uses plus 100% of Hemo uses, plus 50% of SH5 uses (14,977/2 + 44,389 + 6,931/2 = 55,343).

Total cyclist uses of Te Ara Ahi over 12 months is estimated to be 55,343.

Total number riding the full trail (or at least to Waiotapu) over 12 months is estimated to be 3,466.

Total number of trips (walkers, runners and cyclists) of Te Ara Ahi over 12 months is estimated to be 91,891.

However, if you wanted to get a general idea of the unique trail uses at a glance, add the total of the three counters (raw number of total counts = 146,931) and multiply by 0.625. This equals 91,832 uses.

Note: The significant growth in full trail use since 2015 is likely the result of the bikepacking boom and Rotorua being the centre for bikepacking events.

Recommendations

- When the trail is reconfigured to be a loop around Whakarewarewa Forest, add an eco-counter at the most remote (least popular) section of the loop. This will give the best indication of who is riding at Whakarewarewa to do the new Great Ride, as opposed to the other trails in the forest.

5.Motu Trails

Counter	Pedestrians	Cyclists	Total
Dunes counts	8,972	14,586	23,588
Dunes uses	5,383	8,752	14,135
Pakihi counts	1,255	1,394	2,649
Pakihi uses	1004	1,359	2,363
Motu Rd counts		1363	1,363
Motu Rd uses		1227	1,227

Notes: The data analysed was from 1 March 2019 to 28 Feb 2020.
The Pakihi Track was closed for half of 2019.

Counters

1. Dunes Trail (near Opotiki, at the 2km mark)
2. Pakihi Track (near the Pakihi Road end)
3. Motu Road (at Toatoa)

Observations and assumptions

- The Pakihi Track was closed from 16 May - 22 Nov 2019 (resulting in somewhat lean annual usage figures, which is not a true reflection of the trail's capability).
- For Covid-19, the Pakihi Track was closed, and Dunes Trail open to only short local use
- Motu Challenge event is in mid-October
- Kopiko Aotearoa event is in late-Feb
- Pakihi Track is two-way for pedestrians, downhill only for bikes
- Both the Dunes and Pakihi pedestrian counters were blocked by mason bees – in these instances, data was substituted from the previous year, to give a truer reflection of the number of uses.

Dunes Trail

Pedestrian count = 8,972
Cycle count = 14,586

The Dunes Trail has a mix of locals (estimated 90%) mainly during May-Oct, and visitors (est. 80%) from Jan-Apr. Year-round the broad assumption is that the local vs visitors use can be averaged out at 60% locals and 40% visitors, and that locals are mostly doing there-and-back trips. The counter is within easy walking and cycling

distance of Opotiki. Therefore, to derive the number of trail uses, multiply the total counts by 0.6.

Pedestrian counts were mostly zero from 23 Oct to 24 Feb due to the presence of mason bees.

Total pedestrian/runner users = 8,972 counts x 0.60 = 5,383 unique uses/annum
Total cycle users = 14,586 counts x 0.60 = 8,752 unique uses/annum

Pakihi Track

Pedestrian count = 1,255
Cycle count = 1,394

The Pakihi Track should account for at least some return trips (estimated 5% biking and 20% pedestrians), passing the counter twice (there-and-back), while the remaining trips will be counted as through trips (80%).

For pedestrians, the assumption is that 20% will be there-and back trips and 80% are through trips. Therefore, to derive user numbers for pedestrians, multiply the count by 0.8.

The return trips for cyclists should be fewer, as the Pakihi Track is predominantly ridden in one direction - downhill. The assumption is that 95% of the counts are through cyclists and 5% are there-and back-cyclists. Therefore, to derive user numbers for cyclists, multiply the count by 0.975 (5%/2 + 95%).

Total pedestrian/runner users = 1,255 counts x 0.80 = 1,004 unique uses/annum
Total cycle users = 1,394 counts x 0.975 = 1,359 unique uses/annum

Motu Rd

Pedestrian count = 0 (there is no pedestrian counter)
Cycle count = 1,363

As per the Pakihi Track, the Motu Rd should account for some out and back uses (10%). The assumption is that 90% of the counts are through cyclists travelling in one direction, and 10% are there and back cyclists. Therefore, to derive the user numbers for cyclists, multiply the count by 0.90.

Total cycle users = 1,363 counts x 0.90 = 1,324 unique uses/annum

Overall Trail Summary

The Motu Trails function as three separate trails. No pedestrians walk/run more than one trail at a time, and fewer than 1 percent of cyclists ride more than one trail at time (the only exception is that most people who ride the Pakihi Track also ride part of the Motu Road, but they do not pass the Motu Road counter and are not counted twice). Therefore, to derive the total number of pedestrian trips, add the use estimates from Dunes and Pakihi (5,383 + 1,004 = 6,387).

The total number of walking and running trips on the Motu Trails over 12 months was 6,387.

To derive the total number of cycle trips, the assumption is that 2% of cyclists are riding past 2-3counters, therefore multiply the sum total of uses by 0.99. The calculation is Dunes (8752) + Pakihi (1359) + Motu (1324) = 11,435. But 2% are estimated to be people riding the Dunes-Motu-Pakihi loop per year = 229. They will be counted three times. Therefore, subtract 229 x 2 to remove the second and third time they pass counters. 11,435 – (229 x 2) = 10,977.

Total number of cycle trips on the Motu Trails over 12 months = 10,977
Total of all trips (walk/run, cycle) over 12 months = 17,364

Note: This number has been impacted by the long duration that the Pakihi Track was closed.

6. The Timber Trail

Counter	Pedestrians	Cyclists	Total
Bog Inn counter	3,013	7,185	10,198
Bog Inn uses	2,862	7,113	9,975

Counter
Harrisons Creek – close to Bog Inn Hut turn-off. This is a remote location.

Observations and assumptions

- There is one Eco Visio counter called 'Harrisons Creek' (which is close to Bog Inn Hut, about one third the way along the trail), and eight DOC counters in five locations.
- The DOC counters record significantly fewer trail users than the Eco Visio counter. This will, in part, have to do with how the counts are analysed, as DOC analyses are over the financial year as opposed to the more recent 12-month period used for this evaluation, which included the highest trail numbers ever (late Feb 2020).
- The oldest DOC counter (Camp 10) was not working during the time period for the evaluation (parts were ordered to fix it).
- The DOC Pureora counter is missed by most Tour Aotearoa and Kopiko Aotearoa riders (approximately 1,500 riders over the previous 12 months).
- This trail is now part of the Te Araroa Trail, which had an estimated 2,000 hikers last year.
- There are a number of users from Piropiro that are being missed by the Eco Visio counter
- We recommend another eco counter be installed on the second half of the track near Camp 10 to get a clearer picture of the trail's use.

Harrisons Creek (Bog Inn) Eco Visio Counter

Pedestrian count = 3,013 – corrected
Cycle count = 7,185

There were 168 false pedestrian counts (data spike) from 20 Feb to be subtracted from the total counts, which when corrected = 3,013 counts over 12 months. The assumption is that 90% of the counts are through walkers (mostly Te Araroa Trail walkers) and 10% are there and back walkers. Therefore, to derive user numbers, multiply the total counts by 0.95 (10%/2 + 90%).

For cyclists, the assumptions are that 95% are riding downhill past the counter (90% (6467) riding the full trail, and 5% (359) riding just the first half). Of the remaining 5%, the assumption is that 3% (215) are riding the full trail `backwards' and 2% are doing a there-and-back trip past the counter and being counted twice (144/2 = 72). Therefore, to derive user numbers, multiply the total counts by 0.99 (98% + 2%/2).

Total walker/runner trips = 3,013 counts x 0.95 = 2,862 unique uses/annum
Total cycle trips = 7,185 counts x 0.99 = 7,113 unique uses/annum

Overall Trail Summary

Based on the Harrisons Creek (Bog Inn) counter, the total number of walkers doing all/most of the trail is 2,862, and the total number of cyclists doing all/most of trail is 6,682 (7,185x0.93). Therefore, there is a total of 9,544 people doing the full trail.

There is a further rationale for an estimated 2,500 additional people who started a there-and-back trip from Piropiro (and went hunting or visited the Maramataha Bridge), as follows. The DOC Piropiro Counter (not far south of Piropiro campground) had 10,505 counts, but the DOC counters before and after it (Angels Rest with 6,786 and Ongarue with 5,158) had approximately half that number. The difference being (approximately 5,000), divided by 2 (because they are likely to be there-and-back trips) = 2,500 users based from Piropiro.

Furthermore, it is not likely that many people doing the there-and-back trips are from either Pureora or Ongarue, as these locations are mainly visited by people doing the Timber Trail who would have been counted by the Eco Counter or the Piropiro counter.

Therefore, based on above rationale, the total number of Timber Trail uses/trips (walkers, runners and cyclists) over 12 months is estimated to be **12,475.**

Total number of pedestrian trips on the Timber Trail over 12 months is estimated to be 3,612

Total number of cycle trips on the Timber Trail over 12 months is estimated to be 8,863

Recommendations

- that a second Eco counter be installed on the second half of the trail, possibly close to Camp 10, or the Ongarue Spiral. This would enable more accurate analysis of trail counts.
- DOC has requested that Eco Visio rename Harrisons Creek to 'Bog Inn' because Harrisons Creek is 10 km away from the counter.

7.Great Lake Trail

Counter	Pedestrians	Cyclists	Total
Waihaha River counts	2,108	2,808	4,916
Waihaha River uses	1,666	2,217	3,883
Waihora Trail counts	1,717	1,121	2,838
Waihora Trail uses	876	885	1,761
Kinloch to Kawakawa counts	20,500	16,459	36,959
Kinloch to Kawakawa uses	11,275	9,052	20,327
W2K Link Kinloch counts	11,088	13,149	24,237
W2K Link Kinloch uses	5,544	6,575	12,119
W2K Whakaipo Bay counts	7,543	6,329	13,872
W2K Whakaipo Bay uses	3,772	3,164	6,936

Counters

1. Waihaha River Trail
2. Waihora Trail
3. Orakau Trail – data not reliable at present, so will be disregarded for the evaluation
4. Otaketake Trail – new counter on a new trail. Only 3 months data.
5. K2K Trail
6. W2K Kinloch Side
7. W2K Whakaipo Side

Observations and assumptions

- This trail consists of three unique sections and will be analyzed as such
- The Orakau Counter has given too many false readings throughout 2019 to be used. This makes comparisons with 2015 not possible
- The Otaketake counter has only been in place since December 2019.
- According to the boat operator (Bay to Bay) there are approximately 650 cyclists and 30 walkers a year picked up from Waihora Track, and most go to Kinloch. That is 58% of cycle counts and 2% of pedestrian counts.

Counter Analysis

Waihaha River Trail

Pedestrian count = 2,108
Cycle count = 2,808

The Waihaha Trail is in two sections, with a counter on each section (Waihora Trail and Waihaha River Trail). The assumptions are, approximately:

- 42% ride/run/walk past the counter and back again (= 2,064) and therefore are counted twice (4,916 x 42% /2) = 1,032 uses
- 35% ride/run/walk one way to the halfway point (= 1,720) and exit via the SH on the road = 1,720 uses
- 10% ride/run/walk one way from the halfway point (east to west) = 492 uses
- 13% ride run/walk one way all the way through to the boat = 639 uses (this is based on boat operator's estimate).

Total number of walking/running/cycling trips estimated over 12 months = 1,032 + 1,720 + 492 + 639 = 3,883 trips.

Comment: use of this track has grown from 3,200 to 3,883 since 2015.

Waihora Trail

Pedestrian count = 1,717
Cycle count = 1,121

According to the boat operator he picks up approximately 650 bikers and 20-30 walkers per year. The estimation is that 98% of pedestrians are starting the trail from the halfway point and doing there- and-back trips. Just 2% are doing through trips. Therefore, to derive pedestrian use, multiply the total counts by 0.51 (98%/2 + 2%).

Of the 1,121 cycle counts, we know from the boat operator that approximately 650 (58%) are riding through to the lake and catching a boat (mostly to Kinloch, and a minority to Kawakawa Bay). The remaining number 471 (42%) are riding past the counter twice. Therefore, to derive cyclist use, multiply the total counts by 0.79 (42%/2 + 58%).

A further assumption is that most riders going to the lake and back are starting at the halfway mark, and that most riders catching the boat are starting from the Waihaha Carpark and riding both Waihaha and Waihora Trails because that length of ride justifies the cost of the boat trip.

Total walker/runner uses = 1,717 counts x 0.51 = 876 unique uses/annum
Total cycle uses = 1,121 counts x 0.79 = 885 unique uses/annum

Kinloch – Otaketake – Orakau – Kawakawa – Kinloch

There are three counters, but only one has been working over the 12 months from 1 March 2019 to Feb 2020. The Kinloch to Kawakawa counter captures four types of user, who are:

- boating from Waihora to Kawakawa Bay and riding to Kinloch;
- doing a there-and-back trip from Kinloch;
- riding from Whangamata Road down the Orakau Track and on to Kinloch, and
- riding a full loop (since Dec 2019).

An estimate of the number of walkers and cyclists boating from Waihora is 5% of the Waihora counter (2,838) = 142 uses, which at 0.4% of the Kinloch counter is an insignificant number.

Kinloch to Kawakawa

Pedestrian count = 20,500
Cycle count = 16,459

For pedestrians, there is a high proportion of there-and-back trips (90%). The estimation is that only 10% of counts are doing through trips, minus the Waihora boat transfers = 85 (5% of the Waihora pedestrians). Therefore, to derive walker numbers, multiply total counts by 0.55 (90%/2 + 10%).

The cycle counts also have a high proportion (90%) of there-and back cyclists, with the remaining 10% being through cyclists. Taking into consideration boat drop offs (4%) and transfers (10%), through cyclists and there-and-back cyclists + full loop cyclists, to derive cycle numbers, multiply the total counts by .55 (90%/2 +10%).

Total walker/runner uses = 20,500 counts x 0.55 = 11,275 unique uses/annum
Total cycle uses = 16,459 counts x 0.55 = 9,052 unique uses/annum

Notes: The Kinloch counter is close to Kinloch, so:

- everyone who goes to Kawakawa Bay and back, passes the counter twice
- everyone doing the new Otaketake Track and back passes the counter twice
- everyone doing the Otaketake Track and continuing on to do the full loop passes the counter twice
- the new Otaketake Trail provides a very appealing loop to mountain bikers
- parking at Kinloch is much preferred to Whangamata Road because of security, and the cafe/store.

The estimation is that 90% of the Kinloch counts are recording people twice (out, and back). Therefore, to derive the user numbers, multiply the total counts by 0.55 to arrive at an estimate of the total number of unique uses (walkers, runner and mountain bikers).

W2K - Link Kinloch

Pedestrian count = 11,088
Cycle count = 13,149

W2K - Whakaipo Bay

Pedestrian count = 7,543
Cycle count = 6,329

The W2K Trail has two counters (W2K link Kinloch and W2K Trail). The assumption is that all users will be passing both counters, or one counter twice. Therefore, to derive user numbers for either trail counter, add both counts (pedestrians/cycle) together and divide by two.

Total pedestrian/runner uses = 11,088 + 7,543 counts x 0.5 = 9,316 unique uses/annum
Total cycle uses = 13,149 + 6,329 counts x 0.5 = 9,739 unique uses/annum

Note: The 2015 total counts for the W2K counters were 25,251+14,199 = 39,450 divided by 2 = 19,725. Therefore, the numbers of uses on W2K has remained static since 2015. This may be because the track has not changed, but also because other new tracks are soaking up the general growth of recreational uses in Taupo.

Overall Trail Summary

The number of full trail uses cannot be more than 650 riders, as this was the number of boat transfers per annum from Waihora to Kawakawa/Kinloch.

Walkers/runners per year

The total pedestrian usage can be calculated by adding the Waihaha (1,666) uses + the Kinloch to Kawakawa uses (11,275) + the W2K (5,544+ 3,772) = 22,257

Total number of people walking/running on the Great Lake Trail over 12 months was 22,257.

Cyclists per year

Based on the assumption that all Waihora riders have passed the Waihaha counter, the total cycle trips = the Waihaha (2,217) uses + the Kinloch to Kawakawa uses (9,052) + the W2K (9,739) = 21,008

The total number of cycle trips on the Great Lake Trail over 12 months was 21,008.

Total number of trips (walkers, runners and cyclists) on the Great Lake Trail over 12 months was 43,265.

8. Mountains to Sea Trail

Counter	Pedestrians	Cyclists	Total
Horopito counts	3,187	12,052	15,239
Horopito uses	2,550	10,847	13,397
Mangapurua counts	3,341	1,195	4,546
Mangapurua uses	2,505	1,135	3,640
Kaiwhakauka counts	1,703	1,040	2,742
Kaiwhakauka uses	1,021	988	2,009
Upokongaro counts	n/a	2,197	2,197
Upokongaro uses		1.758	1,758

Counters

1. M2S – Horopito (Old Coach Road at Horopito end)
2. Mangapurua Track
3. Kaiwhakauka
4. Upokongaro (Whanganui River Road)

Observations and assumptions

- The counter data is intermittent for all counters. We have extrapolated from the sections of data available to estimate a full 12 months of data.
- Some of the data used is significantly impacted by trail closures, Covid-19 and Tour Aotearoa.
- The trail grade/type varies considerably from section to section (ie, some sections are road, others are more like a tramping track).
- The trail has two starts, and relatively few people are riding the full trail as envisioned. Of those that are, almost all are starting from Ohakune rather than National Park.
- Strava Heat Map data shows most Fishers Track users stopping at Oio Road rather than continuing down to the Kaiwhakauka counter.
- The Old Coach Road is the most popular section of trail for which we have a counter. However, the section of trail in Whanganui City will be used by far greater numbers, due to proximity to the i-SITE and local residents.
- DOC used to have counters on this trail, but we have been unable to gather data from them, and in the past it has also been intermittent.

Horopito

Pedestrian count = 3,187
Cycle count = 12,052

This counter is 1 km from Horopito (which does not have any services). Ohakune however, has lots of services, so most short walk/ride visitors would start their trip from Ohakune, and head to the viaducts and back. Therefore, the counter is likely to be missing most people out for a 1-2 hour trip.

Counter data is missing prior to July 2019, so Horopito data from 10 July 2019 to 27 June 2020 is being substituted. The data is corrected for the Covid-19 lockdown by adding the estimated drop in uses (150 pedestrian counts and 1,250 cycle counts).

For pedestrians, of the 3,187 counts, 2,051 (65%) are going from Horopito towards Ohakune (14 km), compared with 1,109 (35%) walking in the other direction. It is estimated that 40% of the counts are users doing a there-and-back walk/run from Horopito (many of whom would be dropping cyclists off). To derive pedestrian uses, multiply total counts by 0.8 (40%/2 + 60%).

The cycle counts are far more directional. Of the 12,052 cycle counts, 9,556 (79%) are heading from Horopito towards Ohakune and 2,496 (21%) riding uphill towards Horopito. This supports anecdotal evidence that many people shuttle to Horopito to do this 14 km ride, because it is downhill in that direction. However, there will also be many people doing short rides from Ohakune to the viaducts and back, and not being counted.

Of those that are counted, it is estimated that:

- 10% of the counts (approximately half the uphill riders) are riding through to Horopito and beyond
- 20% of the counts are there and back riders being counted twice
- the remaining 70% of counts are through riders, most of whom have been shuttled to Horopito.

Therefore, to derive the number of cyclists, multiply by 0.9 (20%/2 + 10% + 70%).

Total walker/runner uses = 3,187 counts x 0.8 = 2,550 unique uses/annum at the Horopito end of the Old Coach Road (many more at the Ohakune end).
Total cycle uses = 12,052 counts x 0.9 = 10,847 unique uses/annum

Mangapurua

Pedestrian count = 3,341
Cycle count = 1,195

The data suggests this section has relatively low use. However, our confidence in the data is low and based on Strava Heatmap, this track has higher use than shown below.

This counter is reported as not working. The data being used for this counter are taken from 7 May 2018 to 17 Dec 2018. To calculate the remaining 5 months of data (18 Dec to 6 May), data was extrapolated from the Horopito Counter, by examining the annual use and calculating what percentage was missing from the Mangapurua counter during that time period. Therefore, the available Mangapurua pedestrian data was estimated to be 38% of annual counts, and the available cycle data was 40% of annual counts. To estimate 100% of annual counts the available pedestrian data was multiplied by 2.6 and the available cycle data was multiplied by 2.5.

For pedestrians the assumption is that 50% of pedestrian counts are double counts, therefore, to derive walker/runner uses, multiply the total pedestrian counts by 0.75 (50%/2 + 50%).

For cyclists, the assumption is that 90% are through riders (mostly doing the full trail or at least heading to the Bridge to Nowhere and Pipiriki) and 20% are there-and-back riders. Therefore, to derive cyclist uses, multiply the cycle counts by 0.95 (10%/2 + 90%).

Total pedestrian/runner uses = 3,341 counts x 0.75 = 2,505 unique uses/annum
Total cycle uses = 1,195 counts x 0.95 = 1,135 unique uses/annum

Kaiwhakauka

Pedestrian count = 1,702
Cycle count = 1,040

For this counter, the data period is from 8 July 2019 to 25 June 2020. This time period includes Tour Aotearoa which amplified the counts, and the Coronavirus lockdown, which ceased the use of the track from late March to mid-May. This track has also been affected by closures during this time, in particular the closure of the Mangapurua Track following a fatality in May 2019.

The assumption is that 60% of the pedestrian counts are doing there-and-back trips, and are being counted twice. Therefore, to derive pedestrian/runner uses, multiply the total counts by 0.70 (60%/2 + 40%).

A unique characteristic of this track is that it is far more popular uphill than downhill – 84% of the uses are uphill, which aligns with the use of this track for Tour Aotearoa (a Cape Reinga to Bluff cycle route).

During the count period:

- 911 people started the Tour Aotearoa ride from Cape Reinga.
- The estimation is that 80% (729) of them made it to this counter (the remainder had either pulled out or took the highway because they didn't want to use this track).
- There would also have been around 100 independent Tour Aotearoa riders during this year.

Note: During a 4 period of autumn 2020, one jet boat company alone took 635 bikepackers downriver to Pipiriki.

The estimation is that 80% of the counts were through riders going uphill, and 10% through riders going downhill, and the remaining 10% were there-and-back riders. Therefore, to derive the cyclist uses, multiply the total cycle counts by 0.95 (80%+ 10% + 10%/2).

Total walker/runner uses = 1703 counts x 0.6 = 1021 unique uses/annum
Total cycle uses = 1040 counts x 0.95 = 988 unique uses/annum

Upokongaro (or Whanganui River Road)

Pedestrian count = there is no pedestrian counter
Cycle count = 2197

The data available for this counter is from 24 October 2018 to 13 October 2019. The counter has not been recording since October 2019.

Of the 2,197 counts almost 70% (1,527) were heading down valley, towards Whanganui. This was not a Tour Aotearoa year, and outside of summer and autumn the weekly uphill counts were virtually identical to the down valley counts, indicating use by Whanganui road riders doing a there-and-back trip.

The assumption is that 40% of counts were double counts. Therefore, to derive walker/runner use numbers from this data multiply the total counts by 0.8 (40%/2 + 60%).

Total cycle uses = 2,197 counts x 0.8 = 1,758 unique uses/annum

Note: Tour Aotearoa is becoming an annual event, to adapt the formula to reflect this, Upokongaro counts should be multiplied by 0.85 (30%/2 + 70%) in future.

Overall Trail Summary

The Ohakune Old Coach Road is the most popular section of trail on the Mountains to Sea, with over 2,550 walking/running trips and 10,847 cycling trips. All these trips pass a counter at the more remote end of the track. If the counter was closer to Ohakune it would likely count at least twice the amount of uses which would mean that the full use of this trail could likely to be **more than 25,000 uses per year.**

Based on Strava Heatmap, **Fishers Track** is being used as a discrete track experience, and most riders stop at Oio Road and are picked up there, rather than continuing down to the Tasman Sea. There is no counter for Fishers Track, but the estimation is it could be around **1,000 – 2,000 uses per year.**

It is estimated that **2,000 people a year are riding most/all of the trail** (Ohakune to Whanganui or Oio Road to Whanganui), however, confidence in this figure is low for a number of reasons:

- Incomplete dataset
- Significant trail closures; and
- The Coronavirus lockdown.

Notwithstanding the low full trail use, trail use is expected to grow significantly in future due to DOC track upgrades and the growing number of bikepackers, for whom this cycle trail is ideal.

Another significant use of the Mountains to Sea Trail is the **Bridge to Nowhere Trip**, which involves riding the Mangapurua Track to the bridge and then getting a jet boat to Pipiriki. Many people start/finish this trip in Raetihi. Again, Strava Heatmap shows the Mangapurua Track to be more popular than the Kaiwhakauka, and the estimation is around **2,000 riders a year are doing the Bridge to Nowhere Trip.**

As the trail is so long, and the counters are far apart, the estimation is that walking/running use is the sum total of all the pedestrian counts. Therefore, it is estimated that total number of walkers/runners passing counters on the Mountains to Sea Trail is 6,076. However, this number fails to include pedestrians walking from Ohakune, walking to the Bridge to Nowhere, and walking the Whanganui City section, which would be far greater than 6,067.

Total number of walking/running trips estimated over 12 months = (2,550 + 2,505 + 1,021) = 6,076 trips.

For those riding/mountain biking/bikepacking, the total can be estimated by adding the Horopito + Mangapurua + Kaiwhakauka and the estimation for Fishers Track = 14,470. The Upokongaro/River Road counts have not been added as most of those uses were already counted at Mangapurua and Kaiwhakauka counters.

Total number of biking trips estimated over 12 months (10,847 + 1,135 + 988 + 1,500 = 14,470 trips.

Note: The Mountains to Sea Cycle Trail counts are comparatively low in regards to most other Great Rides. Reasons for this could be because they do not have a counter on Fishers Track, the counter on the Ohakune Coach Road is on the most remote part of that track, and they don't have a counter in Whanganui City, which is where most trail use would be expected.

Recommendations:

1. Improve/service the current counters to provide better data
2. Change counter names:
   - Horopito to Ohakune Old Coach Road,
   - Upokongaro to Whanganui River Road.
3. Consider placing counters on:
   - Fishers Track
   - At the Ohakune end of the Old Coach Road just before the first viaduct
   - a section of trail in Whanganui city so that maximum counts would be comparable with other Great Rides that have counters on urban trail sections.

9.Hawke's Bay Trails

Counter	Pedestrians	Cyclists	Total
Westshore counts	3,2080	62,204	94,284
Westshore uses	19,248	40,433	59,681
Marine Parade counts	170,553	112,768	283,321
Marine Parade uses	102,332	73,299	175,631
Awatoto counts	17,714	50,344	68,058
Awatoto uses	10,628	32,724	43,352
Clifton counts	31,834	49,116	80,950
Clifton uses	20,692	34,831	55,523
Water Ride/Prebensen counts	21,048	31,909	52,957
Water Ride/Prebensen uses	19,996	30,314	50,310
Gloucester counts	27,540	28,073	55,613
Gloucester uses	17,901	25,266	43,167
Farndon counts	8,283	11,982	20,265
Farndon uses	5,384	10,185	15,569
Bridge Pa counts	2,397	7,924	10,321
Bridge Pa uses	1,558	7,131	8,689
Black Bridge counts	31,664	32,900	64,564
Black Bridge uses	20,582	26,320	46,902
Waimarama counts	2,178	2,226	4,404
Waimarama uses	1,416	2,003	3,419

Counters

1. Westshore (off-road by coast north of Napier)
2. Marine Parade (1km south of I-SITE)
3. Awatoto (at crossroads between Clive and Napier)
4. Clifton (north of Clifton beside sealed road)
5. Water Ride Prebenson Dr
6. Gloucester St, Taradale (stop bank beside Arena carpark)
7. Farndon (beside Ngaruroro River, between Clive and Hastings)
8. Bridge Pa (near golf club on path beside road)
9. Black Bridge (on stop bank path off River Rd)
10. Waimarama (path beside the road – trail section closed)

Observations and assumptions

- The Hawke's Bay Trails is a 185 km network, complemented by the I-Ways network.
- It is a complex network, being used by visitors and locals for a variety of reasons and in a variety of ways. This makes estimating trail use more of a challenge than usual.
- There are 10 counters.
- The total number of counts was 729,500 in 2019, and cycles accounted for 386,955 of those.
- Use of the trails is reasonably high all year round, but peaks in January.
- The Waimarama Road section has been officially closed for two years, but is still being used in low numbers. People must ride on the road to use this section of trail.

Westshore

Pedestrian count = 32,080
Cycle count = 62,204

Westshore is at the northern end of the trail network and is part of the Water Ride, as well as a logical commuter route between Napier and Bayview. The counter is just north of The Esplanade (a dead-end road).

There is no significant directional bias for walking or cycling until the summer holidays, when 100-400 more riders a week head north than south. This is still only 2.4% of the annual counts, consequently supposing for a high percentage of there-and-back walking and cycling trips.

For walkers, the assumption is 80% of the counts are double counts. Therefore to derive user numbers multiply the total counts by 0.6 (80%/2 + 20%).

For cyclists, the assumption is 70% of the counts are double counts. Therefore to derive user numbers multiply the total counts by 0.65 (70%/2 + 30%).

Total walker/runner uses = 32,080 counts x 0.6 = 19,248 unique uses/annum
Total cycle uses = counts 62,204 x 0.65 = 40,433 unique uses/annum

Marine Parade

Pedestrian count = 170,553
Cycle count = 112,768

This counter is the most popular in Hawke's Bay, and one of the most popular in the country. It is only 1km south of the Napier I-SITE and that section of trail is used by visitors, local residents for recreational use and commuting. Over summer, use is so high it is likely that some cyclists will ride off onto the grass to avoid pedestrians and not be counted.

There is no directional data for this counter, but we presume similar patterns to the Westshore counter - that most trips are there-and-back, although a small percentage of cyclists are riding through towards Clifton on one-way trips.

For walkers, the assumption is 80% of the counts are double counts, therefore to derive user numbers, multiply the total counts by 0.6 (80%/2 + 20%).

For cyclists, the assumption is 70% of the counts are double counts, therefore to derive user numbers multiply the total counts by 0.65 (70%/2 + 30%).

Total walker/runner uses = 170,553 counts x 0.6 = 102,332 unique uses/annum
Total cycle uses = 112,768 counts x 0.65 = 73,299 unique uses/annum

Awatoto

Pedestrian count = 17,714
Cycle count = 50,344

This counter is at a crossroads between Napier and Clive, and at this point visiting riders are more likely to be doing through trips, whereas local commuting will still be there-and-back trips.

There are generally 9% more counts heading north (towards Napier), than south, except during the Big Easy Event when 1,521 counts were heading away from Napier and only 206 heading towards Napier.

For walkers/runners, the assumption is 80% of the counts are double counts. Therefore to derive user numbers, multiply the total counts by 0.6 (80%/2 + 20%).

For cyclists, the assumption is 70% of the counts are double counts. Therefore to derive user numbers multiply the total counts by 0.65 (70%/2 + 30%).

Total walker/runner uses = 17,714 counts x 0.6 = 10,628 unique uses/annum
Total cycle uses = 50,344 counts x 0.65 = 32,724 unique uses/annum

Clifton

Pedestrian count = 31,834
Cycle count = 49,116

This section is more remote and used by visitors and local walkers and runners. There is no directional data from counter, however, the assumption is a higher number are doing through trips.

There is a pedestrian peak in May 2019, when a running event saw 1832 runner pass the counter.

For walkers/runners, the assumption is 70% of the counts are double counts. Therefore to derive user numbers, multiply the total counts by 0.65 (70%/2 + 30%).

For cyclists, the assumption is 60% of the counts are double counts (there-and-back) and 40% are through trips. Therefore, to derive user numbers, multiply the total counts by 0.70 (60%/2 + 40%).

Total walker/runner uses = 31, 834 counts x 0.65 = 20,692 unique uses/annum
Total cycle uses = 49,116 counts x 0.7 = 34,381 unique uses/annum

Water Ride Prebensen Drive

Pedestrian count = 21,048
Cycle count = 31,909

This counter is at a bridge on the Water Ride. There is a concrete path on the other side of Prebensen Drive that is more logical for commuters to be using, therefore most users of the Water Ride are recreational riders and/or visiting cycle tourists. There are plenty of opportunities for loops and most passes of this counter are presumed to be through trips.

There is a peak of cyclists at 1129 northbound cyclists on 20 April due to the Big Easy event. Otherwise, there is no strong directional pattern on this trail from walkers or cyclists.

For walkers/runners the assumption is that 10% of counts are double counts. Therefore, to derive user numbers, multiply the total counts by 0.95 (10%/2 + 90%).

For cyclists, the assumption is that 10% of counts are double counts (there-and-back) and 90% are through trips. Therefore, to derive user numbers, multiply the total counts by 0.95 (10%/2 + 90%).

Total walker/runner uses = 21,048 counts x 0.95 = 19,996 unique uses/annum
Total cycle uses = 31,909 counts x 0.95 = 30,314 unique uses/annum

Gloucester St, Taradale

Pedestrian count = 27,540
Cycle count = 28,073

This counter is at the start of the 18 km Puketapu Loop. It is a manageable loop for almost all cyclists, but too far for most walkers.

A data anomaly is that for 18 days (12 April to 29 April 2019) there is no count for cyclists and the pedestrian counts are much higher than average.

For walkers/runners the assumption is that 70% of counts are double counts. Therefore, to derive user numbers, multiply the total counts by 0.65 (70%/2 + 30%).

For cyclists, the assumption is that only 20% of counts are double counts (there-and-back) and 80% are through trips by people doing the full loop. Therefore, to derive user numbers, multiply the total counts by 0.90 (20%/2 + 80%).

Total walker/runner uses = 27,540 **counts x 0.65 = 17,901 unique uses/annum**
Total cycle uses = 28,073 **counts x 0.9 = 25,266 unique uses/annum**

Farndon

Pedestrian count = 8,283
Cycle count = 11,982

This river side section is popular among recreational riders and may receive some commuting use.

For walkers, the assumption is that 70% of counts are double counts. Therefore to derive the uses multiply the total counts by 0.65.

For cyclists, the assumption is that 30% of counts are double counts, and 70% are through trips. Therefore, to derive user numbers, multiply the total counts by 0.85.

Total walker/runner uses = 8,283 counts x 0.65 = 5,384 unique uses/annum
Total cycle uses = 11,982 counts x 0.85 = 10,185 unique uses/annum

Bridge Pa (Wineries Trail)

Pedestrian count = 2,397
Cycle count = 7,924

This counter is on the Wineries Loop and is also close to the Hawke's Bay Golf Course. Otherwise it is quite remote. Directional use for cyclists is inconsistent, indicating a high percentage of through trips. There are high peaks in Easter and Christmas holidays.

For walkers/runners the assumption is that 70% of counts are double counts. Therefore, to derive user numbers, multiply the total counts by 0.65 (70%/2 + 30%).

For cyclists, the assumption is that 20% of counts are double counts (there-and-back) and 80% are through trips. Therefore, to derive user numbers, multiply the total counts by 0.9 (20%/2 + 80%).

Total walker/runner uses = 2,397 counts x 0.65 = 1,558 unique uses/annum
Total cycle uses = 7,924 counts x 0.9 = 7,131 unique uses/annum

Black Bridge (Tukituki loop)

Pedestrian count = 31,664
Cycle count = 32,900

This counter has a couple of major events go by it. The Big Easy event saw 1,639 cyclists pass the Blackbridge counter on 20 April 2019, and for the Hawke's Bay Marathon, there were 2,639 runners that passed by the counter on 18 May 2019.

Outside of these events there is only a slight bias for cyclists to be heading down valley.

For walkers/runners the assumption is that 70% of counts are double counts. Therefore, to derive user numbers, multiply the total counts by 0.65 (70%/2 + 30%).

For cyclists, the assumption is that 40% of counts are double counts (there-and-back) and 60% are through trips. Therefore, to derive user numbers, multiply the total counts by 0.8 (40%/2 + 60%).

Total walker/runner uses = 31,664 counts x 0.65 = 20,582 unique uses/annum
Total cycle uses = 32,900 counts x 0.8 = 26,320 unique uses/annum

Waimarama

Pedestrian count = 2,178
Cycle count = 2,226

This section is officially closed, but not physically closed, so people are continuing to ride it. The value of analysing this section while closed is so we can measure the value of reopening it.

For walkers/runners the assumption is that 70% of counts are double counts. Therefore, to derive user numbers, multiply the total counts by 0.65 (70%/2 + 30%).

For cyclists, the assumption is that 20% of counts are double counts (there-and-back) and 80% are through trips. Therefore, to derive user numbers, multiply the total counts by 0.9 (20%/2 + 80%).

Total walker/runner uses = 2,178 counts x 0.65 = 1,416 unique uses/annum

Total cycle uses = 2,226 counts x 0.9 = 2,003 unique uses/annum

Overall Trail Summary

The Hawke's Bay Trails are a network, and so virtually no one visits to ride all of the trails. It is not relevant to this Great Ride. The counters are 10-20 km apart.

1. Riders doing the top Water Ride loop from Napier I-SITE will pass 1 counter
2. Riders going from Napier I-SITE to Clifton will pass 3 counters
3. Riders doing the Wineries Loop from Napier I-SITE will pass 4-7 counters.
4. Most commuting cyclists will pass 1-2 counters.
5. As pedestrians have a shorter range, most walkers/runners will pass 1 counter.

Including the I-Ways paths the trail network is extensive enough for some visitors to not pass any counters at all, although this is unlikely for anyone who has read Hawke's Bay Trail promotional material. For most of the recreational trips it is more likely a cyclist will be counted twice.

The estimate is that cycling visitors will, on average, be counted as 1.5 unique uses of the trails, and walkers/runners will be 1 unique use of the trails.

Therefore, the overall trail use estimate for walkers is the sum of all unique uses, and for cyclists is the sum of all unique uses divided by 1.5.

Estimate of annual walking and running trips on the Hawke's Bay Trails = 219,737 trips

(19,248 + 102,332 + 10,628 + 20,692 + 19,996 + 17,901 + 5,384 + 1,558 + 20,582 + 1,416)

Estimate of annual cycling trips on the Hawke's Bay Trails = 188,000 trips

(40,433 + 73,299 + 32,724 + 34,381 + 30,314 + 25,266 + 10,185 + 7,131 + 26,320 + 2,003 = 282,056/1.5)

Notes:

- This number is relatively high because the region is flat and has good, stable weather, and the I-Ways have helped make cycling popular.
- NZCT Trail surveys indicate that 60% of the use is by local people, and 40% by visitors to the region.
- Cycle hire is estimated to be a 50:50 split between domestic and international visitors.

Trail counter summaries for 1 March 2019 – 28 Feb 2020

Westshore (off-road by coast north of Napier)

Total walker/runner uses = 32,080 counts x 0.6 = 19,248 /annum
Total cycle uses = counts 62,204 x 0.65 = 40,433 /annum

Marine Parade (1km south of I-SITE)

Total walker/runner uses = 170,553 counts x 0.6 = 102,332 /annum
Total cycle uses = 112,768 counts x 0.65 = 73,299 /annum

Awatoto (at crossroads between Clive and Napier)

Total walker/runner uses = 17,714 counts x 0.6 = 10,628 /annum
Total cycle uses = 50,344 counts x 0.65 = 32,724 /annum

Clifton (north of Clifton beside sealed road)

Total walker/runner uses = 31, 834 counts x 0.65 = 20,692 /annum
Total cycle uses = 49,116 counts x 0.7 = 34,381 /annum

Water Ride Preberson Dr

Total walker/runner uses = 21,048 counts x 0.95 = 19,996 /annum
Total cycle uses = 31,909 counts x 0.95 = 30,314 /annum

Gloucester St, Taradale (stop bank beside Arena carpark)

Total walker/runner uses = 27,540 counts x 0.65 = 17,901 /annum
Total cycle uses = 28,073 counts x 0.9 = 25,266 /annum

Farndon (beside Ngaruroro River, between Clive and Hastings)

Total walker/runner uses = 8,283 counts x 0.65 = 5,384 /annum
Total cycle uses = 11,982 counts x 0.85 = 10,185 /annum

Bridge Pa (near golf club on path beside road)

Total walker/runner uses = 2,397 counts x 0.65 = 1,558 /annum
Total cycle uses = 7,924 counts x 0.9 = 7,131 /annum

Black Bridge (on stop bank path off River Rd)

Total walker/runner uses = 31,664 counts x 0.65 = 20,582 /annum
Total cycle uses = 32,900 counts x 0.8 = 26,320 /annum

Waimarama (path beside the road – trail section closed)**Total walker/runner uses = 2,178 counts x 0.65 = 1,418 /annum**
Total cycle uses = 2,226 counts x 0.9 = 2,003 /annum

10.Remutaka Cycle Trail

Counter	Pedestrians	Cyclists	Total
Cross Creek counts	11,043	8,104	19,147
Cross Creek uses	7,178	6,888	14,066
Gemstone counts	16,200	10,339	26,539
Gemstone uses	12,150	7,754	19,904
Hutt River counts	41,408	64,502	105,910
Hutt River uses	24,845	38,701	63,546
Kaitoke Rail Trail counts	10,661	27,045	37,706
Kaitoke Rail Trail uses	6,397	17,579	23,976
Lake Wairarapa counts		2,080	2,080
Lake Wairarapa uses		2,080	2,080
Ocean Beach counts	6,002	8,037	16,167
Ocean Beach uses	3,301	5,626	8,927
Orongorongo River counts	17,883	6,026	23,909
Orongorongo River uses	9,836	4,520	14,356
Petone Foreshore counts	136,020	33,796	169,816
Petone Foreshore uses	81,612	20,278	101,890

Counters

1. Petone Foreshore
2. Hutt River Trail (just north of Lower Hutt)
3. Silverstream (on Hutt River Trail just north of Silverstream Bridge)
4. Gemstone Drive Reserve (on the trail near Alpaca)
5. Kaitoke Rail Trail (between Kaitoke and Summit)
6. Cross Creek (0.5km in from carpark)
7. Lake Wairarapa (on Western Lakes Road)
8. Ocean Beach Rd (west of Corner Creek by about 1 km)
9. Orongorongo River (30 metres east of the squeeze barrier by bridge)

Observations and assumptions

- The Remutaka Cycle Trail has a high variance in trail type and is generally thought of as three or four different sections (Hutt River Trail + Remutaka Rail Trail + Roads + Wild Coast)
- The trail passes close to the large suburbs of the Hutt Valley.
- Cycle counts vary from 2,080 (Western Lake Road) to 169,816 (Petone Foreshore.
- Data needed correcting for three counters:
    - A high cycle count on Ocean Beach likely because a vehicle parked beside the counter.
    - A high pedestrian count at Cross Creek, likely because of vegetation in front of the counter.
    - Missing counts for 3 weeks on Petone Foreshore possibly because of a flat battery.

Petone Foreshore

Pedestrian count = 136,020
Cycle count = 33,796

Petone Foreshore is a significant attraction in itself and is visited by hundreds of people on foot, by car and by bicycle every day. This section is used mostly by Hutt Valley residents. There are virtually identical numbers of people walking east as walking west, although there is a small bias towards walking towards the Hutt River. Many people are seen walking parallel to the path, along the beach on a fine day.

The cycling directions are also closely matched, although just over 1000 more cyclists head towards Hutt River/Seaview every year. The position of the counter is on a narrower section of path where some confident cyclists heading towards Wellington may choose to ride on the smooth, wide road shoulder, rather than get stuck behind slow pedestrians, especially in the weekend.

The assumption is that 80% of counts are double counts. Therefore, to derive trip numbers, multiply the total counts by 0.6 (80%/2 + 20%).

Total walker/runner trips = 136,020 counts x 0.6 = 81,612 unique uses/annum
Total cycle trips = 33,796 counts x 0.6 = 20,278 unique uses/annum

Hutt River Trail (near Lower Hutt)

Pedestrian count = 41,408
Cycle count = 64,502

This section is used mostly (> 90%) by local residents for recreational use and commuting.

The assumption is that 80% of counts are double counts. Therefore, to derive trip numbers, multiply the total counts by 0.60 (80%/2 + 20%).

Total walker/runner trips = 41,408 counts x 0.6 = 24,845 unique uses/annum
Total cycle trips = 64,502 counts x 0.6 = 38,701 unique uses/annum

Silverstream (on the river trail)

This counter was not installed until June 2019, and therefore the data has not been analysed. However, it appears to be consistently 50% of the Hutt River Trail counter near Lower Hutt, therefore, the recommendation is to use the same formula.

The assumption is that 50% of counts are double counts. Therefore, to derive trip numbers, multiply the total counts by 0.75. Formula: counts x 0.75 = unique uses.

Gemstone Dr Reserve

Pedestrian count = 16,200
Cycle count = 10,339

This section is used mostly by local walkers and runners, many of whom will be doing short loop trips as well as there-and-back trips. The assumption is that 50% of counts are double counts. Therefore, to derive trip numbers, multiply the total counts by 0.75 (50%/2+50%).

Total walker/runner trips = 16,200 counts x 0.75 = 12,150 unique uses/annum
Total cycle trips = 10,339 counts x 0.75 = 7,754 unique uses/annum

Note: This section has seen a significant growth in use as it has been upgraded over the last 5 years.

Kaitoke Rail Trail (en route to Summit)

Pedestrian count = 10,661
Cycle count = 27,045

This section is particularly popular among cyclists going both ways and doing there-and-back trips (the Summit and Siberia Bridge being common destinations, with far

fewer going all the way to Cross Creek and back). There are always several times more cars in the Kaitoke carpark than in the Cross Creek carpark.

The assumption is that 70% of counts are double cycle counts. Therefore, to derive trip numbers, multiply the total counts by 0.65 (80%/2 +20%).

For pedestrians the assumption is that 80% of pedestrian counts are there and back trips. Therefore multiply counts by 0.60. (80%/2+20%).

Total walker/runner trips = 10,661 counts x 0.60 = 6,397 unique users/annum
Total cycle trips = 27,045 counts x 0.65 = 17,579 unique users/annum

Cross Creek

Pedestrian count = 11,043
Cycle count = 8,104

This section is popular among walkers and cyclists going both ways and doing there-and-back trips. The estimation is that 2,000 cyclists are doing the full trail and a further 3,000-4,000 are doing shorter through trips (ie, just the Remutaka Rail Trail) or the Tour Aotearoa.

The assumption is that 70% of counts are double counts for pedestrians. Therefore, to derive the users multiply the counts by 0.65 (70%/2+30%).

The assumption is that 30% of counts are double counts for cyclists, and 70% are through trips. Therefore, to derive total trip numbers, multiply the counts by 0.85 (30%/2+70%).

Total walker/runner trips = 11,043 counts x 0.65 = 7,178 unique uses/annum
Total cycle trips = 8,104 counts x 0.85 = 6,888 unique uses/annum

Lake Wairarapa (on road)

Pedestrian count = no count as it is on road
Cycle count = 2,080

This counter provides an indication of the total number of people doing the Remutaka Cycle Trail. It is the least popular section as it is on road, although it is not a busy road. Road cyclists generally choose other roads to ride on in the Wairarapa.

The assumption is that 100% of counts are an estimate of the number of users, and that 95% of these users are riding the Remutaka Cycle Trail. Therefore, the estimate is around 2,000 people are riding all/most of the Remutaka Cycle Trail.

Total cycle users = counts = 2,080 unique users/annum

Ocean Beach

Pedestrian count = 6,002
Cycle count = 8,037

This section is used mostly by walkers doing short there-and-back walks from Ocean Beach/Corner Creek. The estimation is that 90% of the pedestrian counts are double counts, and therefore to derive the trip number the counts number should be multiplied by 0.55 (90%/2+10%).

For cyclists:

- as per the above estimation based on the Orongorongo Counter data 2,000 (25%) of the cycle counts are people riding the full Remutaka Cycle Trail (or at least from near Upper Hutt).
- A further assumption is that 1,000 (13%) of the cycle counts are from users that are riding past this counter once.
- The assumption is the remainder of the counts (5,307 or 63%) are doing there-and-back trips.

Therefore, to derive the number of cyclists, multiply the total cycle counts by 0.7 (63%/2+25%+13%).

Total walker/runner trips = 6,002 counts x 0.55 = 3,301 unique uses/annum
Total cycle trips = 8,037 counts x 0.7 = 5,626 unique uses/annum

Orongorongo

Pedestrian count = 17,883
Cycle count = 6,026

This section is used by people walking (rock climbers, divers and seal watchers) out and back. It is also used by cyclists doing both there-and-back trips and through trips. The directional data shows quite different patterns for walkers and cyclist.

For walkers/runner the assumption is that 90% of the pedestrian counts are double counts. Therefore, to derive trip numbers, multiply the total counts by 0.55 (90%/2+10%).

For cyclists, the estimation is that 2,000 riders passing this counter are doing all, or most, of the Remutaka Cycle Trail. The assumption is that 50% of cycling counts are double counts, therefore, to derive trip numbers, multiply the total counts by 0.75 (50%/2+50%).

Total walker/runner trips = 17,883 counts x 0.55 = 9,836 unique uses/annum
Total cycle trips = 6,026 counts x 0.75 = 4,520 unique uses/annum

Wild Coast users

The Wild Coast consists of the Orongorongo (6,026) and Ocean Beach (8,037) counters. The simplest way to derive user numbers for the Wild Coast is to work on the assumption that every user will be counted twice. ie, everyone doing a there-and-back trip will be counted twice, and everyone doing a through trip will be counted twice. Only a very small number will be counted once (if they bypass a counter on the way in or out) or counted four times (if they ride from Orongorongo carpark all the way to Corner Creek and back again). Therefore, to derive user numbers, add the total cycle counts and divide by two (8,037 + 6,026 divided by 2 = 7,032 uses).

Total walker/runner/cycle trips = 8,037+6,026 counts x 0.50 = unique uses/annum

Overall Trail Summary

Approximately 1,976 people are riding all (or at least most) of the Remutaka Cycle Trail per year (based on 95% of the Lake Wairarapa counts).

This number is relatively low because the trail is inconsistent and lacks sufficient infrastructure to make the various components gel as a whole. However, this is a young trail and it is improving every year. It has experienced significant growth since opening in 2013.

Based on three significant sections of trail, and adding half of the Petone Foreshore cyclists (20,872/2=10,139), there are **over 73,451 cycling uses of the trail per year**, including:

- Cyclists on the Hutt River Trail near Lower Hutt approximately **38,701**
- Cyclists on the Remutaka Rail Trail approximately **17,579**
- Cyclists on the Wild Coast **7,032**.

Note that some cyclists will pass more than one counter, but other cyclists, doing short trips, will not pass any counters.

In addition**, there are more than 145,319 walking/running trips on sections of the Remutaka Cycle Trail per year**. This estimate is based on the assumption that the number of walkers/runners passing two or more counters per trip is outweighed by the number of people using the trail without passing a counter at all – in particular, the Silverstream section of the Hutt River Trail and Tunnel Gully. Therefore, the number of uses = the sum of pedestrian uses from seven counters.

Trail counters summaries for 1 March 2019 – 28 Feb 2020 data

Petone

Total walker/runner uses = 136,020 counts x 0.6 = 81,612 unique uses/annum
Total cycle uses = 33,796 counts x 0.6 = 20,278 unique uses/annum

Hutt River

Total walker/runner uses = 41,408 counts x 0.6 = 24,845 unique uses/annum
Total cycle uses = 64,502 counts x 0.6 = 38,701 unique uses/annum

Gemstone Drive Reserve

Total walker/runner uses = 16,200 counts x 0.75 = 12,150 unique uses/annum
Total cycle uses = 10,339 counts x 0.75 = 7,754 unique uses/annum

Kaitoke Rail Trail

Total walker/runner uses = 10,661 counts x 0.6 = 6,397 unique uses/annum
Total cycle uses = 27,045 counts x 0.65 = 17,579 unique uses/annum

Cross Creek

Total walker/runner uses = 11,043 counts x 0.65 = 7,178 unique uses/annum
Total cycle user = 8,104 counts x 0.85 = 6,888 unique uses/annum

Lake Wairarapa – road

Total cycle uses = counts = 2,080 unique uses/annum

Ocean Beach

Total walker/runner uses = 6,002 counts x 0.55 = 3,301 unique uses/annum
Total cycle uses = 8,037 counts x 0.7 = 5,626 unique uses/annum

Orongorongo

Total walker/runner uses = 17,883 counts x 0.55 = 9,836 unique uses/annum
Total cycle uses = 6,026 counts x 0.75 = 4,520 unique uses/annum

11.Queen Charlotte Track

Counter	Pedestrians	Cyclists	Total
Anakiwa counts	39,055	7,776	46,831
Anakiwa uses	21,871	5,054	26,925

Counters
Anakiwa – close to the end of the trail

Observations and assumptions

- Virtually all cyclists doing a through trip ride from north to south.
- The counter is only 750 metres from the Anakiwa Road end, which mean most of the counts will be people doing there-and-back trips. The counter shows direction of travel and confirms this assumption.
- The there-and-back trips are likely to be less than 5 km for pedestrians and less than 24 km for cyclists.
- The February counts for pedestrians and cycles was down in Feb 2020 compared with Feb 2019, but it was not significant. The decline may be due to Covid-19.

Who are we missing?

- Cyclists and walkers getting the boat to Ship Cove (or further south) but not riding the full trail (returning to Picton by boat or road). These may be offset by the number of through counts that are only getting dropped off at Te Mahia Saddle (both numbers are expected to be low).
- We are also missing those that boat or drive to various entry points to the trail, although it should be noted that Anakiwa is by far the most popular entry/exit point due to its accessibility.

Anakiwa

Pedestrian count = 39,055
Cycle count = 7,776

The counter is only 750 metres from the Anakiwa Road end, which means most of the counts will be people doing there-and-back trips. By subtracting the number of counts heading away from Anakiwa from the number of counts heading towards Anakiwa, we can derive the number of people doing a through trip. And by applying this formula to a year of data (2019) we find that 12% of pedestrian counts are through walkers (mostly Te Araroa Trail walkers) and 30% of the cycle counts are through riders.

Subtracting the through walker/cyclist counts leaves the remainder, which are there-and-back users and being double counted. Therefore, divide those counts by 2 to get the number of unique uses from there and back walking/cycling trips.

For pedestrians the assumption is that 12% of the counts (4,687) are through trips, and 88% of the counts (34,368) are from users doing there-and-back trips who are being counted twice (34,368/2 = 17,184 pedestrians doing there and back trips from Anakiwa). Therefore, to derive the number of walking/running trips, multiply the total pedestrian counts by 0.56 (88%/2 + 12%).

For people who are riding the assumption is that 30% (7,776 X 0.30 = 2,333) of cyclist counts are riding past the counter once, which represents a close estimate to the number of mountain bikers doing the full trail or most of the trail. The other 70% of counts are from users going both ways (there and back) and being counted twice (7,776 – 2,333 = 5,443/2 = 2,721). Therefore, to derive the total number of cycle trips, multiply the total cycle counts by 0.65 (70%/2 + 30%).

Total walking/running trips = 39,055 counts x 0.56 = 21,871 unique uses/annum
Total cycle trips = 7,776 counts x 0.65 = 5,054 unique uses/annum

Total number of walkers and runners doing the **full trail** over 12 months = 4,687

Total number of mountain bikers doing the **full trail** over 12 months = 2,333

Total number of trips (walkers, runners and mountain bikers) doing a trip on the Queen Charlotte Track over 12 months is over 26,925.

Note this total number is an underestimation, as it does not count users that are not doing the Anakiwa section.

Recommendation

Install an eco-counter on the Ship Cove section of the track.

12.Coppermine Trail Analysis

Counter	Pedestrians	Cyclists	Total
Codgers counts	28,591	67,691	96,282
Codgers uses	21,443	51,870	73,313
Third House counts	2,596	4,849	7,445
Third House uses	1,947	4,645	6,592
Maitai counts	8,548	4,434	12,982
Maitai uses	6,411	4,434	10,845

Counters

1. Codgers – within the mountain bike track network
2. Third House – just above Third House
3. Maitai South Branch – remote location

Observations and assumptions

- Some of the counts had data spikes, likely due to vegetation in front of the counter. We have cleaned the data.
- The Codgers counter is counting mostly mountain bikers out for a short ride around the local mountain bike trails.
- The Third House counter is just above Third House, 91% of the counts going past it are continuing on to do the full trail. Therefore 9% of the counts are passing the counter twice (up to Windy Point or Coppermine Saddle and back).
- There is no way of knowing the number of people who went to Third House, as many of them would turn around at the shelter and not pass the counter.
- The Maitai South Branch counter is above Peaking Ridge track, so it is safe to assume that virtually all of the cycle counts are downhill movements only and equate to the number of people doing the full Coppermine Trail.

Counter Analysis

Codgers

Pedestrian count = 28,591
Cycle count = 67,691

There are many trail options around this counter. For pedestrian counts, the estimation is that half the counts are through trips, and the remainder are there-and-back trips. Therefore, to derive pedestrian/walker/runner trips multiply the count by 0.75 (50% + 50%/2).

The main consideration for Codgers cyclist counts is the high number of local mountain bike riders that ride past the counter on the way into the mountain bike park. The bulk of the cycle counts are likely to be users riding up the trail and back, or up the trail and down one of the local mountain bike tracks. The estimation is that approximately 15% of the cycle counts (4,443) are from people riding the full trail and passing the counter once. The remainder (63,248) are from local mountain bikers and people doing there-and-back trips. Therefore, to derive cyclist user numbers, take the total count, subtract the Maitai Valley cycle count (4,443) and multiply the remainder by 0.75. Then add the 4434 (15%) back on.

Total walker/runner users = 28,591 counts x 0.75 = 21,443 unique uses/annum
Total cycle users = 63,248 counts x 0.75 = 47,436 + 4,434 = 51,870 unique uses/annum

Note: The cycle counts, minus 100% of the Maitai Valley cycle counts, and 9% of the Third House counts = the total number of local mountain bikers versus the Coppermine Trail riders.

Third House

Pedestrian count = 2,596
Cycle count = 4,849

For the pedestrian count, the estimation is that 50% are doing a through trip and 50% are doing a there-and-back. Therefore, to derive pedestrian user numbers, multiply the total counts by 0.75 (50%/2 + 50%).

The Third House cycle counts, minus the Maitai Valley cycle counts (4,434) and divided by two equals the estimated number of cyclists doing a there-and-back trip beyond Third House. They are people who likely turned around at Windy Point or Coppermine Saddle. The calculation is 4,849 counts – 4,434 Maitai counts = 415, divided by 2 = 208 riders doing there-and-back trips from Third House. Taking the 208 and adding it to the Maitai Valley counts (208 + 4,434 = 4,642) equals the number of riders going past Third House counter. Therefore, to derive the cycle user numbers, multiply the counts by 0.958 (4,642/4,849).

Total walker/runner uses = 2,596 counts x 0.75 = 1,947 unique uses/annum
Total cycle uses = 4,849 counts x 0.958 = 4645 unique uses/annum

Maitai South Branch

Pedestrian count = 8,548
Cycle count = 4,434

This section of trail is walked/run in both directions, though there is not any real way of knowing the proportions of each. However, we can tell, from a Strava Heatmap, that it looks to be approximately 50% of the counts are there and back and 50% are through trips. Therefore, to derive pedestrian user numbers, multiply the total counts by 0.75 (50%/2 + 50%).

For cycling, this section of the trail is only ridden downhill, and you can only get to the counter from Coppermine Saddle. As almost everyone gets to Coppermine Saddle via the Dun Mountain trail, close to 100% of the cycle counts in Maitai South Branch = the total number of people riding the full Coppermine Trail (4,434 cyclists).

Total walker/runner users = 8,548 counts x 0.75 = 6,411 unique uses/annum
Total cycle users = 4,434 counts x 100% = 4,434 unique uses/annum

Overall Trail Summary

Working on an overall assumption that the average number of counters passed during a trip is one, (because the counters are so far apart), to estimate the total number of walkers/runners on the Coppermine Trail add all pedestrian counts to get a total use (21,443 + 1947 + 6411 = 29,801 uses).

Total walker/runner uses of Coppermine Trail over 12 months is estimated to be 29,801.

For cyclists, the assumption is that everyone passing the Maitai and Third House counters has also passed the Codgers counter and consequently were counted three times. Therefore, the Codgers counter is the estimate for total number of trail uses on the Coppermine Trail.

Total estimated cyclist uses, including mountain bikers using the Codgers Tracks, over 12 months was 51,870 (includes estimated cyclist uses only counting significant rides on the trail - ie, those that went beyond Third House, over 12 months - 4,645).

Total uses by walkers, runners and cyclists over 12 months (both short and long trips) = 81,671

Note that part of the Coppermine Trail was closed for much of 2019, and this would have significantly limited use by cyclists.

Total number of cyclists riding the full trail over 12 months based on the Maitai counter was 4,434 riders.

Recommendation:

- The Codgers Counter be moved up the trail, to above Tantragee Saddle, so that mountain bikers using Codgers Trails are not counted, and also to capture people riding up from Maitai Valley on the new Grade 2 climbing track.

13.Tasman's Great Taste Trail

Counter	Pedestrians	Cyclists	Total
Vincent St. counts	31,815	106,791	138,606
Vincent St. uses	23,861	80,093	103,954
Whakatu Dr. counts	17,034	126,916	143,950
Whakatu Dr. uses	9,369	69,803	79,172
Fittel St. counts	32,425	47,436	79,861
Fittel St. uses	17,834	26,090	43,924
Pinehill Rd. counts	19,297	15,371	34,668
Pinehill Rd. uses	15,437	12,297	27,734
Riwaka counts	2,409	11,119	13,528
Riwaka uses	1,807	8,339	10,146
Pugh Rd. counts	15,328	47,504	62,832
Pugh Rd. uses	9,197	28,502	37,699
Spooners Tunnel counts	3,702	9,875	13,577
Spooners Tunnel uses	2,591	6,913	9,504

Counters

1. Vincent (Railway Reserve Path)
2. Whakatu Drive path (above trail fork)
3. Fittel St (heading towards Rabbit Island)
4. Pine Hill Rd (en route to Mapua)
5. Riwaka (near bridge north of town)
6. Pugh Rd (en route to Brightwater)
7. Spooners Tunnel

Observations

- The 175 km trail loop is not yet complete. Only a small percentage of users are riding past all, or even a majority of trail counters.
- Most use is by commuters and local recreational riders.
- The 2018 trail user survey completed on a January weekend showed 65% local use. However, during the week, local commuter use would be higher, and external to the holiday periods, visiting users would be lower.

- Tour Aotearoa users (approximately 1,500 riders in 2020) ride past four counters between Nelson and Kohatu.
- Most users – commuters and recreational riders – are doing there-and-back trips on discrete sections, and are mostly likely to pass one counter twice.
- It has been pointed out that: "There is no perfect methodology for calculating discrete uses/trips for this Trail since there is a high proportion of local users and many local access points to the sections of trail."
- On this trail, which goes through residential areas, there will be many thousands of uses that are not being counted.

Assumptions:

- Mapua Ferry ticket sales over summer are mostly "return tickets". There were 1,213 return tickets sold compared with 483 one-way tickets (a 72% to 28% mix).
- The trail manager suggests "The total number of trail uses equals the sum of all counters taking a single direction." This supposes that the users who are not being counted at all would roughly offset the users who pass more than one counter on a trip, which would (in this case) derive a reasonable estimate of trail uses. We have analyzed the directional data to see if this can translate to a formula similar to the other Great Rides (ie, total counts multiplied by a percentage).
- People who are riding the trail as a tourism trip/journey are likely to be riding from Nelson to Kaiteriteri, or from Nelson to Kohatu. Now that loop is nearing completion, a growing number of people will be riding the full trail, but at this time that number would still be very low, and judging from Strava Heatmap, some people will have closed the loop by riding over Pigeon Saddle (Wakefield to Woodstock).

Vincent (Railway Reserve Path)

Pedestrian count = 31,815
Cycle count = 106,791

This is a shared path used mostly by commuters. Directionally there is more walking and cycling going uphill (towards Richmond) than downhill. For cyclists, during spring and summer, twice as many counts are going uphill. The assumption is that 50% of counts are double counts (ie, return trips), therefore, to derive unique user numbers, multiply the counts by 0.75 (50%/2 +50%).

Total walkers/runner uses = 31,815 counts x 0.75 = 23,861 unique uses/annum
Total cycle uses = 106,791 counts x 0.75 = 80,093 unique uses/annum

Note: A local commuter may use the path 3 times a week, and be counted 6 times, but with this formula will be three users.

Whakatu Drive path (above trail fork)

Pedestrian count = 17,034
Cycle count = 126,916

This is also a shared path used mostly by commuters, and counter directions show that the trail is used equally in both directions. The assumption is that 90% of counts are double counts. Therefore, to derive unique user numbers, multiply the total counts by 0.55 (90%/2 + 10%).

Total walkers/runner uses = 17,034 counts x 0.55 = 9,369 unique uses/annum
Total cycle uses = 126,916 counts x 0.75 = 80,093 unique uses/annum

Fittel St (heading towards Rabbit Island)

Pedestrian count = 32,425
Cycle count = 47,436

This section is used mostly by recreational and tourist riders, equally in both directions as shown by the trail counters. The assumption is that 90% of counts are double counts, therefore, to derive user numbers, multiply the total counts by 0.55 (90%/2 + 10%).

Total walkers/runner uses = 32,425 counts x 0.55 = 17,834 unique uses/annum
Total cycle uses = 47,436 counts x 0.55 = 26,090 unique uses/annum

Pine Hill Rd (en route to Mapua) Pedestrian count = 19,297
Cycle count = 15,371

This section is used mostly by local recreational walkers and visiting riders for cycling. The trail managers are at a loss to explain why the pedestrian count might be so high, but will investigate further. There are some minor directional variances; in general pedestrians are more likely to be travelling towards Mapua and cyclists are more likely to be travelling away from Mapua. The counter location is on a less popular section of trail and not close to a major node.

The assumption is that 40% of the counts are double counts. Therefore, to derive user numbers, multiply the total counts by 0.8 (40%/2 + 60%).

Total walkers/runner uses = 19,297 counts x 0.8 = 15,438 unique uses/annum
Total cycle uses = 15,371 counts x 0.8 = 12,297 unique uses/annum

Riwaka (near bridge north of town)

Pedestrian count = 2,409
Cycle count = 11,119

The section from Riwaka to Kaiteriteri is used mostly by recreational and tourist riders travelling from Motueka/Riwaka to Kaiteriteri. More users (walkers and cyclists) travel toward Kaiteriteri than not. The assumption is that 50% of the counts are double counts. Therefore, to derive user numbers multiply the total counts by 0.75 (50%/2+50%).

Note: We have not calculated the uses for this section of the Trail, as this counter was installed in December 2019, and there is not yet 12 months of data collection.

Pugh Rd (en route to Brightwater)

Pedestrian count = 15,328
Cycle count = 47,504

This section is used mostly by recreational and tourist riders. Many people go from Richmond to a Brightwater cafe and back. There is little directional variance in walking counts, compared with moderate directional variance with cycling counts (approximately 10% more cyclists are heading north from Brightwater to Richmond).

The assumption is that on average around 80% of the counts are double counts. Therefore, to derive user numbers multiply by 0.6 (80%/2+20%).

Total walkers/runner uses = 15,328 counts x 0.6 = 9,197 unique uses/annum
Total cycle uses = 47,504 counts x 0.6 = 28,502 unique uses/annum

Spooners Tunnel

Pedestrian count = 3,702
Cycle count = 9,875

This section is used mostly by recreational and tourist riders who go to the tunnel and back. A slight majority of walkers are going towards Kohatu and a slight majority of cyclists are going towards Belgrove. This may be because locals who are shuttling this section know that it is mostly downhill from Norris Gully through Spooners to Belgrove.

The assumptions are:

- 20% are shuttling and getting counted once,
- 20% are travelling through on a longer trip than just this section (Tour Aotearoa riders, etc)
- then approximately 40% of users are being counted once and 60% are being counted twice.

Therefore, to derive total uses, multiply the total counts by 0.7 (60%/2+40%).

Total walkers/runner uses = 3,702 counts x 0.7 = 2,591 unique uses/annum
Total cycle uses = 9,875 counts x 0.7 = 6,913 unique uses/annum

Overall Trail Summary

The suggestion (by the Trail manager) is: "The total number of trail uses equals the sum of all counters taking a single direction." This supposes that the users who are not being counted at all would roughly offset the users who pass more than one counter on a trip, which would (in this case) derive a reasonable estimate of trail uses. We have analyzed the directional data to see if this can translate to a simple formula similar to the other Great Rides (ie, total counts multiplied by a percentage).

Walkers/runners per year

A simple estimate of total walkers/runners is the sum total of pedestrian counts (120,304) multiplied by 0.7.

From 1 March 2019 to 29 Feb 2020 the number of walkers and runners was approximately 84,212.

Note: This compares with a sum total of walkers/runners calculated from each counter of 87,002. A small number of walkers/runners would travel past more than one counter during their trip.

Cyclists per year

A simple formula for total number of cycling uses is to take the sum total of cycle counts (366,012) and multiply by 0.5.

From 1 March 2019 to 29 Feb 2020 the number of cycling trips was approximately 183,006.

Note: This compares with a total number of cycling trips calculated from each counter of 256,781. The difference accounts for the ability of cyclists to travel greater distances and be counted twice on average during any given trip.

Total estimate of uses over 2019/20 was 84,212 pedestrian trips + 183,006 cycling trips = 267,218 uses by pedestrians and cyclists.

Note: When the trail is completed and accommodation is available at regular intervals, a larger number of visitors will be attracted to riding the whole of the trail, and will then be counted 6 – 10 times over 2 – 4 days.

Trail counter summaries for 1 March 2019 – 28 Feb 2020

Vincent

Total walker/runner uses = 31,815 x 0.75 = 23,861 unique uses/annum
Total cycle uses = 106,791 x 0.75 = 80,093 unique uses/annum

Whakatu

Total walker/runner uses = 17,034 x 0.55 = 9,369 unique uses/annum
Total cycle uses = 126,916 x 0.55 = 69,803 unique uses/annum

Fittal

Total walker/runner uses = 32,425 x 0.55 = 17,834 unique uses/annum
Total cycle uses = 47,436 x 0.55 = 26,090 unique uses/annum

Pine Hill

Total walker/runner uses = 19,297 x 0.80 = 15,437 unique uses/annum
Total cycle uses = 15,371 x 0.80 = 12,297 unique uses/annum

Riwaka

Only counting since December 2019, so used the counts as user numbers –
Total walker/runner uses = 2,409
Total cycle uses = 11,119

Pugh Road

Total walker/runner uses = 15,328 x 0.60 = 9,197 unique uses/annum
Total cycle uses = 47,504 x 0.60 = 28,502 unique uses/annum

Spooners Tunnel

Total walker/runner uses = 3,702 x 0.70 = 2,591 unique uses/annum
Total cycle uses = 9,875 x 0.70 = 6,913 unique uses/annum

14.St James Cycle Trail

Counter	Pedestrians	Cyclists	Total
Saddle Spur counts			660
Saddle Spur uses	33	627	660
Williams Stream counts	n/a	1,885	> 1,885
Williams Stream uses	n/a	1,791	> 1,791

Counters

1. Sandy Stream (between Maling Carpark and Maling Pass)
2. Saddle Spur (south of Lake Guyon)
3. William's Stream (within 1 km of the St James Station end of the trail)

Observations and assumptions

- The St James Cycle Trail (SJCT) is a linear trail, with virtually all riders travelling north to south.
- The trail has three DOC counters and no Eco counters. (NB: There is no cellular coverage anywhere on the SJCT).
- Through riding of the full trail is affected for most of winter due to snow on Maling Pass.
- The counters are not directional, and we are unable to access any near real-time data as the data is downloaded manually every few months.
- An Easy-grade loop trail called the Homestead Run incorporates the final Peters Valley (southern) leg of the SJCT.

The St James Cycle Trail was opened in November 2011, and the start and finish are located in the Clarence Valley 50 km and 14 km respectively north of Hanmer Springs.

Counter analysis

Sandy Stream DoC (First leg of SJCT: Clarence Valley)

Sandy Stream is approximately 10 minutes ride from the start of the SJCT at Maling Pass car park. This counter uses a pad sensor that counts both walkers and cyclists and is installed at a foot bridge adjacent to a shallow ford on the Maling Pass 4WD track. There are a number of considerations associated with this counter, and unknown proportions of riders that:

- choose to use the ford rather than the bridge
- cycle either to the top of Maling Pass before returning to the carpark or Lake Tennyson
- exit via Lake Guyon and Fowlers Pass to create a loop ride.

As a result it is difficult to determine from this counter the mix of return, loop and through cyclists and walkers. Subsequently, the data from this counter is not being included in the analysis overall.

Saddle Spur DoC (Middle leg of SJCT: Waiau Valley)

Counts (pedestrians and cycles) = 660

Saddle Spur is a very remote location and there are no appealing there-and-back trips that would draw people past the counter. It is approximately at the mid-point of the trail in terms of time and distance.

The counter uses a pad sensor that counts both walkers and cyclists, and the assumption is that virtually all of the users passing this counter are doing through trips and are doing the full St James Cycle Trail. The estimations are that 95% of the counts are through cyclists and 5% are walkers.

Therefore, to derive user numbers for walkers, multiply the counts by 0.05.

For the cycle counts, to derive user numbers, multiply the counts by 0.95.

Total walker/runner trips = 660 counts x 0.05 = 33 unique uses/annum
Total cycle trips = 660 counts x 0.95 = 627 unique uses/annum

Williams Stream DoC (Final leg of SJCT: Peters Valley)

Pedestrian counts = n/a
Cycle counts = 1,885

This counter is located at the end of the trail at the St James Homestead, on the final Peters Valley leg of the Homestead Run, and captures the majority of cyclists doing the full trail. An unknown proportion of SJCT riders exit the trail via the Edwards Valley 4WD track, usually to return to vehicles parked at Maling Pass/Lake Tennyson. This counter only counts cyclists, so it is not known how many pedestrians are using the final leg of the SJCT.

The number of cyclists counts from 1 March 2019 to end of Feb 2020 = 1,885

It is estimated that 90% of the counts are through trips and 10% are there-and-back trips. Therefore, to derive user numbers, multiply the total counts by 0.95 (90% + 10%/2).

Total cycle trips = 1,885 counts x 0.95 = 1,791 unique uses/annum

Overall Trail Summary

Total number of cyclists riding the St James Cycle Trail = 627

Total number of pedestrians is unknown.

There are also a small number of people who ride the St James from Maling Pass or Fowlers Pass and head out via the Edwards Valley 4WD Track. This doesn't seem like the most obvious option because users would miss out the best bit of the trail, and Strava heat map indicates that very few people do this. However, the estimated number for this option is around 5% of Saddle Spur uses (5% of 627 = 31).

Therefore, the estimation that 95% of riders (627) doing the St James (ie, passing Saddle Spur) will pass the Williams Stream counter, which is at the southern end of the trail near the St James carpark equals to 596 riders.

Total number of cyclists riding the Homestead Run loop is 1,791 – 596 = 1,195

Total cyclists riding all/part of the St James Cycle Trail over 12 months = 1,791 + 31 = 1,822

Estimate for total number of trips (walkers and cyclists) over 12 months = > 2,000

15.The Old Ghost Road

Counter	Pedestrians	Cyclists	Total
Mokihinui counts	3,928	5,162	9,090
Mokihinui uses	2,946	4,646	7,592
Lyell counts	8,758	4,598	13,356
Lyell uses	5,342	4,138	9,480

Counters

1. Mokihinui (2 km from the trail carpark)
2. Lyell (1 km from the trail carpark)

Observations and assumptions

- Most users complete the Old Ghost Road as a through-trip, and therefore trigger the two Eco counters located near each end of the trail.
- There is an annual ultra-marathon event held in February (accounts for almost 300 individual counts on the day of the event)
- There were a number of data corrections 27 November 2019 (pedestrian count of 8,211 going uphill), 4 January 2020 (4,095 cycle counts going downhill) and 22 February, (see above pedestrian spike due to a marathon event organized by the trail trust).
- The trail manager estimates 7,300 through users in 2019, of which 500-800 went through in a day, and there were 6,000 there-and-back users.
- According to hut bookings, 68% of users in 2019 were bikers, and 32% were trampers/runners. This proxy should be reliable for 6,800 of the through users who stayed overnight on the trail.
- Commercial flights are offered to lift bikers up the Lyell Hill, and those clients miss the Lyell counter. They are estimated at 500 riders a year.

Mokihinui counter

Pedestrian count = 3,928
Cycle count = 5,162

This counter is only 2 km from the carpark and the directional data for pedestrians is highly symmetrical, indicating a high percentage of there-and-back trips. The estimation is that 50% of pedestrian counts are from there-and-back trips (being counted twice) and 50% are through trips (1,964 uses). To derive the total number of trips, multiply the counter data by 0.75 (50%/2 + 50%)

For cyclists, the directional data shows 80.7% of uses going down valley towards Seddonville. It is estimated that 500 of those are only counted at this counter because they had a helicopter fly them up the Lyell Hill and therefore missed the Lyell counter. Of the 19.3% that are riding away from Seddonville, some are riding the trail 'backwards' (counter to the publicized direction) and the rest are doing there-and-back trips. It is estimated that 20% of the counts are there-and-back trips, and 80% (4,130) are through trips. Therefore, to derive the total number of trips, multiply the counter data by 0.9 (80% through trips + 20%/2 for return trips).

Total pedestrian/runner uses = 3,928 counts x 0.75 = 2,946 unique uses/annum
Total cycle uses = 5,162 counts x 0.9 = 4,646 unique uses/annum

Lyell counter

Pedestrian count = 8,758
Cycle count = 4,598

This counter is only 1 km from the carpark and the directional data for pedestrians is highly symmetrical, indicating a high percentage of there-and-back trips. However, as estimated from the Mokihinui counter, 1,964 people are tramping/running all the way through, and only being counted once at the Lyell counter (22.4%). Therefore, 77.6% of the counts are from there-and-back users who are being counted twice. To derive the total number of trips, multiply the counter data by 0.61 (77.6%/2 + 22.4%).

The cycle count directional data shows that 80% of passes are uphill and concurs with data from the Mokihinui counter. We also expect that a small minority of counts are from people helicoptering up and riding back down to Lyell. Therefore, to derive the total number of trips, multiply the counter data by 0.9 (80% through trips + 20%/2 for return trips).

Total walkers/runner trips = 8,758 counts x 0.61 = 5,342 unique uses/annum
Total cycle trips = 4,598 counts x 0.9 = 4,138 unique uses/annum

Overall Trail Summary

Pedestrians are either doing there-and-back trips and passing a counter twice, or they are doing through trips. It is estimated that almost 2,000 people tramped/ran all the way through the Old Ghost Road over 12 months.

That accounts for 4,000 of the 12,686 counts, leaving 8,686 counts remaining, which are from 4,343 there-and-back users being counted twice.

Therefore, the total pedestrian trips over 12 months was estimated to be (2,000 through trips, plus 4,343 there-and-back trips) 6,343 trips.

A much simpler way of calculating the total pedestrian trips is to acknowledge that every user, whether they tramp through or do a short there-and-back trips, is counted twice, and therefore divide the total number of counts by two: 12,686 counts/2 = 6,343.

The total counts for cyclists are revised to reflect a number of trail users who drop into the trail via helicopter and ride out (thereby being only counted once). This is estimated to be 6%. Therefore, to derive the total number of trips for cyclists, multiply the total counts (both counters added together) by 0.53 (94%/2 + 6%).

Total cycle trips over 12 months was 9,760 counts x 0.53 = 5,173 unique uses/annum
Total number of combined trips (pedestrians and cycles) on the Old Ghost Road over 12 months was 11,516.

The number of mountain bikers estimated to be riding the full trail over 12 months is the same as the number of through trips estimated from the Mokihinui counter (80% = 4,130).

Total number of people mountain biking the full Old Ghost Road over 12 months was 4,130 riders.

Note: The average trail duration for mountain bikers doing the full trail is 2.5 days and the average trail duration for trampers walking the full trail is 5 days.

Just over 78% of mountain bikers are riding the full trail, whereas only 31% of pedestrians completed the full trail, with the remainder doing there-and-back trips (to be expected given the additional time required to tramp the full trail).

16.West Coast Wilderness Trail

Counter	Pedestrians	Cyclists	Total
Karoro counts	24,213	23,797	48,010
Karoro uses	15,738	17,848	33,586
Taramakau counts	1,525	8,442	9,967
Taramakau uses	1,296	7,176	8,472
Kaniere Water Race counts	4,383	7,807	12,190
Kaniere Water Race uses	3,725	6,636	10,361
Hokitika/Kaniere counts	12,523	17,684	30,207
Hokitika/Kaniere uses	8,140	13,263	21,403
Mahinapua counts	3,471	13,193	16,664
Mahinapua uses	2,256	9,895	12,151
Ruatapu counts	1,645	6,736	8,381
Ruatapu uses	1,480	6,062	7,542

Counters

1. Karoro (south Greymouth)
2. Taramakau (Kumara Tramway)
3. Kawhaka (near Trappers Rest)
4. Kaniere Water Race (DOC track)
5. Hokitika Kaniere (old tramway)
6. Mahinapua (new track north of Mahinapua Walkway)
7. Ruatapu (near end of Paiere Rd)

Observations and assumptions

- The trail is a linear journey connecting the four towns.
- In any given year sections of the trail may be closed by storm damage and this will have an impact on trail use and counter data.
- There is a new counter at Kawaka (the most remote location) at Trappers Rest between Kumara and Cowboys Paradise, but there is not 12 months of data yet.
- The north and south user numbers are fairly even, except during events. On 16 Nov the Ride the Wilderness event saw 261 cyclists heading north past the Karoro counter, and during the Tour Aotearoa season we see

several hundred more riders heading south. Another exception is that the Karoro counter (just south of Greymouth) is recording significantly more cyclists heading north

- The calculations below use data from 1 March 2019 to 29 Feb 2020.

Counter Analysis

Karoro

Pedestrian count = 24,213
Cycle count = 23,797

This is a semi-urban counter with high numbers of there-and-back trips from local residents. A local event (Ride the Wilderness – Nov 16) saw 261 cyclists heading north past the Karoro counter. There were 10 significant spikes around this event where 468 more cyclists rode north, than south. In total, over 12 months, 13% (3,086) more cyclists headed north. The walking directional difference was insignificant. Most of these uses will be by the locals.

The assumptions are that:

- 70% of walking/running trips are there-and-back, and 30% are through trips. Therefore, to derive user numbers, multiply the counts by 0.65 (70%/2+30%).
- 50% of cycle trips are there-and-back and 50% are through trips. Therefore, to derive user numbers, multiply the cycle counts by 0.75 (50%/2+50%).

Total walkers/runner uses = 24,213 counts x 0.65 = 15,738 unique uses/annum
Total cycle uses = 23,797 counts x 0.75 = 17,848 unique uses/annum

Taramakau

Pedestrian count = 1,525
Cycle count = 8,442

This is a new section of track built for the Wilderness Trail that feeds riders into Kumara. This counter is relatively remote and therefore experiences an estimated 30% of there-and-back trips and the remaining 70% will be through trips. Therefore, to derive user numbers, multiply the counts by .85 (30%/2+70%). Most of these uses will be by visitors.

Total walkers/runner uses = 1,525 counts x 0.85 = 1,296 unique uses/annum
Total cycle uses = 8,442 counts x 0.85 = 7,176 unique uses/annum

Kawhaka

There is not any data for the 12-month period being analyzed as this counter was installed in March 2020. Beyond March, most counts for pedestrians and cyclists are heading south. As this is the most remote counter it will give the best indication of the number of people doing the full track, and the predominant direction of those riders.

Kaniere Water Race

Pedestrian count = 4,383
Cycle count = 7,807

This is a relatively remote counter, but on a trail that was used before the Wilderness Trail was built. Although outside the evaluation period, we note that during March 2020, there were over 500 more riders heading south than north, and this is assumed to be largely due to Tour Aotearoa riders.

As above, this relatively remote counter experiences an estimated 30% of there-and-back trips and the remaining 70% through trips. Therefore, to derive user numbers, multiply the counts by .85 (30%/2+70%). Most of these uses will be by visitors.

Total walkers/runner uses = 4,383 counts x 0.85 = 3,725 unique uses/annum
Total cycle uses = 7,807 counts x 0.85 = 6,636 unique uses/annum

Hokitika - Kaniere

Pedestrian count = 12,523
Cycle count = 17,684

This is an urban counter with high numbers of there-and-back trips from local residents. For walking and running, the assumption is that 70% of the counts are for there-and-back trips, and 30% are through trips. Therefore, to derive user numbers, multiply the total counts by 0.65 (70%/2+30%).

For cycling, the assumption is that 50% of cycle trips are there-and-back and 50% are through trips. Therefore, to derive user numbers, multiply the total counts by 0.75 (50%/2+50%).

Total walkers/runner uses = 12,523 counts x 0.65 = 8,140 unique uses/annum
Total cycle uses = 17,684 counts x 0.75 = 13,263 unique uses/annum

Mahinapua

Pedestrian count = 3,471
Cycle count = 13,193

This counter is on a highly scenic section of track only a few kilometres south of Hokitika and will be experiencing a reasonably high number of locals doing there-and-back trips.

For walking and running, the assumption is that 70% of walking/running trips are there-and-back, and 30% are through trips. Therefore, to derive user numbers, multiply the total counts by 0.65 (70%/2+30%).

For cycling, the assumption is that 50% of cycle trips are there-and-back and 50% are through trips. Therefore, to derive user numbers, multiply the total counts by 0.75 (50%/2 + 50%).

Total walkers/runner uses = 3,471 counts x 0.65 = 2,256 unique uses/annum
Total cycle uses = 13,193 counts x 0.75 = 9,895 unique uses/annum

Ruatapu

Pedestrian count = 1,645
Cycle count = 6,736

This counter is quite remote and directional data clearly shows the influence of the West Coast Wilderness day event and the Tour Aotearoa season. This counter, and others, indicate that there are a high number of people riding the trail both northbound as well as southbound.

This section of trail is relatively straight compared to the rest of the trail (it follows a railway line) and has relatively few locals riding it, and therefore a lower than average percentage of there-and-back trips.

The assumption is that at this counter only 20% of trips are there-and-back. Therefore, to derive the number of uses, multiply both pedestrian and cycle counts by 0.90 (20%/2+ 80%). Most of these uses will be by visitors as the counter is so far from a town.

Total walkers/runner uses = 1,645 counts x 0.9 = 1,480 unique uses/annum
Total cycle uses = 6,736 counts x 0.9 = 6,062 unique uses/annum

Overall Trail Summary

As with most Great Rides, it is estimated that very few people walk/run the full trail, and as the counters are well spaced apart most walkers/runners will only pass one counter per trip. Furthermore, those that do run/walk past two counter locations may be offset by those who use the trail without passing a counter (especially near Greymouth). Therefore, to estimate walking/running trips add all trip estimates together. This is 15,738 + 1,296 + 3,725 + 8,140 + 2,256 + 1,480 = 32,635 tips. It is assumed that most of these trips are undertaken by residents, as the trail is not marketed as a walking trip.

The total number of walking/running trips over 12 months on the West Coast Wilderness Trail is estimate to be over 32,635.

For cyclists, we have estimated the full number of trips, and the number of people riding the full trail.

As for all Great Rides, it is the least popular cycle counter that indicates the highest possible number of people cycling the full trail. This is the Ruatapu counter, and 80% of the 6,736 cycle counts (5,389) are estimated to be riding the full trail.

Therefore, the number of cyclists estimated to be riding the full West Coast Wilderness Trail over 12 months was 5,389.

As with other trails, many more visitors will be 'cherry picking' the most scenic and accessible sections of trail. For cyclists, this may involve riding as much as Greymouth to Hokitika, because they are start/finish destinations with ample services. But it is fair to assume that most uses at the remote counters will be from visitors.

By adding **the remote counter uses** together and subtracting the number of full trail uses (5,389 cyclists) from all but one counter so that they are not counted six times, we can calculate an estimated total number of cycle trips. This is Karoro (17,848 – 5,389 = 12,549) + Taramakau (7,176 – 5,389 = 1,787) + Kaniere Water Race (6,636 – 5,389 = 1,247) + Hokitika-Kaniere (13,263 – 5,389 = 7,874) + Mahinapua (9,895 – 5,389 = 4,506) + Ruatapu (6,062 – 5,389) + full trail riders (5,389) = 33,935 cycle trips.

The total number of cycle trips on the West Coast Wilderness Trail over 12 months was 33,935.

Note: A finding of the 2017 *West Coast Wilderness Trail Economic Impact Report* is that 93% of riders are visitors and 7% are locals. If we accept this assumption for the three most remote counters (it won't hold for counters close to Greymouth or Hokitika), then from 1 March 2019 to 28 February 2020, over **14,000 people visited the West Coast to ride the West Coast Wilderness Trail**. These visitors passed one or more of the three remote counters, and as the counters are remote, they were likely to have been attracted to the coast by the West Coast Wilderness Trail.

Trail counters summaries for 1 March 2019 – 28 Feb 2020 data

Karoro

Total walkers/runner uses = 24,213 counts x 0.65 = 15,738 unique uses/annum
Total cycle uses = 23,797 counts x 0.75 = 17,848 unique uses/annum

Taramakau

Total walkers/runner uses = 1,525 counts x 0.85 = 1,296 unique uses/annum
Total cycle uses = 8,442 counts x 0.85 = 7,176 unique uses/annum

Kaniere Water Race

Total walkers/runner uses = 4,383 counts x 0.85 = 3,725 unique uses/annum
Total cycle uses = 7,807 counts x 0.85 = 6,636 unique uses/annum

Hokitika-Kaniere

Total walkers/runner uses = 12,523 counts x 0.65 = 8,140 unique uses/annum
Total cycle uses = 17,684 counts x 0.75 = 13,263 unique uses/annum

Mahinapua

Total walkers/runner uses = 3,471 counts x 0.65 = 2,256 unique uses/annum
Total cycle uses = 13,193 counts x 0.75 = 9,895 unique uses/annum

Ruatapu

Total walkers/runner uses = 1,645 counts x 0.9 = 1,480 unique uses/annum
Total cycle uses = 6,736 counts x 0.9 = 6,062 unique uses/annum

17.Alps 2 Ocean (A2O)

Counter	Pedestrians	Cyclists	Total
Mt. Cook counts	2,550	1,557	4,107
Mt Cook uses	1,785	1,090	2,875
Tekapo counts	25,807	2,195	28,002
Tekapo uses	16,775	1,602	18,377
Lake Pukaki counts	8,609	8,836	17,445
Lake Pukaki uses	5,596	6,450	12,046
Lake Ohau counts	8,262	4,119	12,381
Lake Ohau uses	6,610	3,378	9,988
Kurow counts	2,620	4,236	6,856
Kurow uses	2,358	3,812	6,170
Rakis Tunnel counts	4,146	4,386	8,532
Rakis Tunnel uses	2,695	3,881	6,576
Saleyard Rd counts	30,968	21,557	52,525
Saleyard Rd uses	18,581	12,934	31,515

Counters

1. Mt Cook (halfway to airport, beside Tasman Valley Road)
2. Tekapo Canal (7 km from Tekapo village)
3. Lake Pukaki (between dam and freedom camping)
4. Lake Ohau (1 km south of lodge)
5. Kurow (halfway between Kurow and Duntroon)
6. Rakis Tunnel (just east of tunnel)
7. Saleyard Rd (on section of rail trail, off-road).

Observations and assumptions

- Tourism Waitaki has provided valuable comments, which are considered in the counter analysis.
- The number of counters has reduced from 12/13 to seven.
- There are no counters in the middle two days of the trail, from just south of Ohau Lodge to east of Kurow.
- As expected, the number of uses is lowest at Mt Cook and highest at Oamaru.

Mt Cook

Pedestrian count = 2,550
Cycle count = 1,557

Of the 1,557 cycle counts, 468 are heading from the airport up to Mt Cook village. The assumption is these are local commuters undertaking short there-and-back trips and being counted twice, (as we have never heard of anyone getting the helicopter across the Tasman and landing at the airport).

This indicates that an estimated 628 cyclists are starting the A2O from Mt Cook.

The assumption is that 60% of the counts are there and back trips, and 40% are through trips. Therefore, to derive the number of uses, multiply both pedestrian and cycle counts by 0.7 (60%/2 for there-and-back trips plus 40% through trips). Most of these uses will be from visitors.

Total walkers/runner uses = 2,550 counts x 0.7 = 1,785 unique uses/annum
Total cycle uses = 1,557 counts x 0.7 = 1,090 unique uses/annum

Tekapo

Pedestrian counts = 25,807
Cycle count = 2,195

The pedestrian numbers are particularly high mainly because this section of trail is used for training by the nearby Tekapo Army Camp. It is also part of the Te Araroa Trail (2,000 full length walkers a year) and is also used by people fishing in the area. The estimation is that 70% of the pedestrian counts are there-and-back trips. Therefore, to derive the number of uses by walkers and runners, multiply the counts by 0.65 (70%/2+30%).

Of the 2,195 cycle counts 577 were going toward Tekapo, mainly doing there-and-back trips and being counted twice. Approximately up to 1,041 cyclists (2,195 minus 577 x 2) are starting the A2O from Tekapo. This results in an estimation that 53% of the cycle counts are there-and-back trips and 47% are through trips. Therefore, to derive the number of uses by cyclists, multiply the counts by 0.73 (53%/2 + 47%).

Total walkers/runner uses = 25,807 counts x 0.65 = 16,775 unique uses/annum
Total cycle uses = 2,195 counts x 0.73 = 1,602 unique uses/annum

Lake Pukaki

Pedestrian count = 8,609
Cycle count = 8,836

This counter is between a freedom camping area and a dam, so will be getting a reasonable number of walkers doing short there-and-back trips. Apparently not many of the campers have bikes.

The estimation is that 70% of pedestrian counts are there and back trips. Therefore, to derive the number of uses by pedestrians/runners multiply counts by 0.70/2 + 0.30 = 0.65.

Of the 8,836 biking counts 1,915 are heading east towards Tekapo, counter to the main flow of users. This means approximately 3,830 counts will be from there-and-back trips. Therefore, the assumption is that approximately 5,070 counts are through trips.

The Pukaki through cyclists minus the Cook and Tekapo through cyclists (5,070 – 628 – 1,047= 3,395) gives an approximate maximum number of A2O riders that are not starting at Mt Cook or Tekapo. The number, 3,395, is quite high and may reflect the fact that for many riders the distance from either Mt Cook village or Lake Tekapo village to Twizel is too far for one day and there are few accommodation options in between.

The estimation for cyclists is approximately 55% of counts represent there-and-back trips and 45% of counts are through trips. Therefore, to derive the number of uses by cyclists, multiply the counts by 0.73 (55%/2 + 45%).

Total walkers/runner uses = 8,609 counts x 0.65 = 5,596 unique uses/annum
Total cycle uses = 8,836 counts x 0.73 = 6,450 unique uses/annum

Lake Ohau

Pedestrian count = 8,262
Cycle count = 4,119

The counter is only 1 km south of Lake Ohau Lodge and within easy distance for a return walk. It is also passed by some staff working at the lodge.

The directional count data for pedestrians indicates that 40% of the counts are there-and-back trips. Therefore, to derive the number of uses by pedestrians, multiply the counts by 0.8 (40%/2 for there-and-back trips plus 60% through trips).

Of the 4,119 cycle counts, 765 are heading north to the lodge. The estimate is that up to 1,500 counts (36%) are there-and-back trips and 2,619 counts (64%) are

through trips. Therefore, to derive the number of uses by cyclists, multiply cycle counts by 0.82 (36%/2 + 64%).

Total walkers/runner uses = 8,262 counts x 0.8 = 6,610 unique uses/annum
Total cycle uses = 4,119 counts x 0.82 = 3,378 unique uses/annum

Kurow

Pedestrian count = 2,620
Cycle count = 4,236

This counter is halfway between Kurow and Duntroon (a remote location) and as such, is not a likely spot for there-and-back trips. Also, due to its remote location there are far fewer pedestrian counts for this counter. This section is also much flatter and accounts for the assumption that traditional cycle tourers (and a growing number of e-bikers) are doing through trips from the Ocean towards the Alps.

The assumptions are that 80% of counts are through trips and 20% are there and back trips. Therefore, to derive the number of uses, multiply the counts by 0.9 (80% + 20%/2).

Total walkers/runner uses = 2,620 counts x 0.9 = 2,358 unique uses/annum
Total cycle uses = 4,236 counts x 0.9 = 3,812 unique uses/annum

Rakis Tunnel

Pedestrian count = 4,146
Cycle count = 4,386

This counter is located just east of the tunnel, which is 27 km from Oamaru. For walkers, the proportion of there-and-back trips is likely to be 70%, as this is a remote counter. The tunnel is likely to present a destination for some to drive to. Therefore, to derive the number of uses by walkers/runners, multiply the pedestrian counts by 0.65 (70%/2 + 30%).

For a fit or e-assisted cyclist the ride to the tunnel is an achievable there-and-back trip from Oamaru. The estimation is that a similar number of through riders are passing this counter as the Kurow counter (3,389 Kurow counts), which equals approximately 77% of the Rakis Tunnel counts. Therefore, to derive the number of uses by cyclists, multiply the cycle counts by 0.885 (77% + 0.23%/2).

Total walkers/runner uses = 4,146 counts x 0.65 = 2,695 unique uses/annum
Total cycle uses = 4,386 counts x 0.885 = 3,381 unique uses/annum

Saleyards Rd

Pedestrian count = 30,968
Cycle count = 21,557

This counter is on a pleasant section of rail trail on the eastern edge of Oamaru, and for pedestrians a high percentage (80%) will be doing there-and-back trips (both for recreation and commuting). Therefore, to derive the number of uses by walkers/runners, multiply the pedestrian counts by 0.6 (80%/2 + 20%).

For cyclists, this section of trail presents an achievable there-and-back trip for local users heading to Weston and back, or further as they wish. However, the estimation is that there are still approximately 3,000 long distance A2O riders passing this counter.

The rest of the cycle counts – approximately 80% - are there and back trips. Therefore, to derive the number of uses by cyclists, multiply the cycle counts by 0.6 (80%/2 + 20%).

Total walkers/runner uses = 30,968 counts x 0.6 = 18,581 unique uses/annum
Total cycle uses = 21,557counts x 0.6 = 12,934 unique uses/annum.

Overall Trail Summary

For the total number of walkers/runners passing the seven counters we have added all unique walker/runner estimates, and subtracted 5,000 to take into account those long-distance walkers/runners passing more than one counter (120 ultra-runners passing several counters, 2,000 Te Araroa trail walker passing 2-3 counters, etc).

Total number of trips by walkers/runners passing the counters is estimated to be 55,838 – 5000 = 50,838 walkers/runners trips per year.

At over 300 km long, the Alps 2 Ocean is the longest of the NZ Cycle Trails and is likely to have a higher than normal percentage of people riding just sections. Furthermore, the trail is not complete between Sailors Cutting and Kurow. Based on the Ohau, Kurow and Rakis Tunnel counters all counting around 3,000 cyclists doing through trips, the estimation is that **around 3,000 people per year are cycling the majority of the A2O**. This number is likely to be growing.

For the total number of cyclists passing the seven counters we have added the number of there-and-back trips for Mt Cook and Tekapo to the rest of the counter uses, minus 3,000 for the through riders, then added the 3,000 through riders at the end. The calculation looks like this: (60% of 1,557/2) + (53%of 2,195/2) + (6,450-3,000) + (3,378-3,000) + (3,812-30,000) + (3,881-3,000) + (12,934-3,000) + 3,000 = 19,504 cycle trips.

The number of cycle trips on the Alps 2 Ocean Trail over 12 months is estimated at 19,504.

Notes:
There will be thousands more users on short sections of trail that are not passing the seven trail counters (eg, holiday makers between Omarama and Kurow and in Oamaru).

The main commercial operator on the trail estimates full trail uses to be at 4,341 based on their business numbers and Otago Central Rail Trail proportions of numbers guided/supported vs DIY users. Unfortunately, the counter data does not yet support such a high estimate of full trail uses.

Total number of trips by walkers, runners and cyclists on the Alps 2 Ocean Trail over 12 months is estimated to be over 70,342.

Recommendation

- Install a counter between Omarama and Otematamata.

Trail counter summaries for 1 March 2019 – 28 Feb 2020

Tekapo

Total walkers/runner uses = 25,807 counts x 0.65 = 16,775 unique uses/annum
Total cycle uses = 2,195 counts x 0.73 = 1,602 unique uses/annum

Lake Pukaki

Total walkers/runner uses = 8,609 counts x 0.65 = 5,596 unique uses/annum
Total cycle uses = 8,836 counts x 0.73 = 6,450 unique uses/annum

Lake Ohau

Total walkers/runner uses = 8,262 counts x 0.8 = 6,610 unique uses/annum
Total cycle uses = 4,119 counts x 0.82 = 3,378 unique uses/annum

Kurow

Total walkers/runner uses = 2,620 counts x 0.9 = 2,358 unique uses/annum
Total cycle uses = 4,236 counts x 0.9 = 3,812 unique uses/annum

Rakis Tunnel

Total walkers/runner uses = 4,146 counts x 0.65 = 2,695 unique uses/annum
Total cycle uses = 4,386 counts x 0.885 = 3,381 unique uses/annum

Saleyards Rd

Total walkers/runner uses = 30,968 counts x 0.6 = 18,581 unique uses/annum
Total cycle uses = 21,557 counts x 0.6 = 12,934 unique uses/annum

18.Otago Central Rail Trail

Counter	Pedestrians	Cyclists	Total
Airport Road counts			40,446
Airport Road uses			30,335
Chatto Creek counts			15,114
Chatto Creek uses			14,509
Poolburn counts			21,915
Poolburn uses			19,723
Wedderburn counts			13,183
Wedderburn uses			13,051
Wedderburn Private			13,217
Waipiata counts			13,928
Waipiata uses			13,649
Hyde counts			14,814
Hyde uses			14,370

Counters

1. Airport Road (between Alexandra and Clyde) DOC
2. Chatto Creek - DOC
3. Eco-Visio counter (between Chatto Creek and Ophir)
4. Poolburn - DOC
5. Wedderburn - private counter
6. Wedderburn – DOC
7. Waipiata – DOC
8. Hyde – DOC
9. Rock & Pillar – DOC

Observations and assumptions

- The DOC counter data beyond December 2019 was not available to us. We have used DOC data from mid-2018 to mid-2019, and checked that against the previous two years of data.
- There are 7 DOC counters and 5 of them show growth (from between 7% and 35%) from 2016/17 to 2018/19
- The counters do not differentiate between walkers and cyclists, and do not show direction of travel. This means we cannot apply the same logic to trail analysis as we have for the other Great Rides.
- For all other Great Rides, the estimate for full trail use has been taken from the counter with the lowest numbers. On the Otago Central Rail Trail (OCRT) this has been done differently. One method is just to use the private (farmer's) Wedderburn count because it is a reliable counter in the middle of the trail (estimate = 13,217 uses). The other method, used by DOC, is to compile data from three counters (estimate = 14,441). Our estimate is 13,000 (see below for analysis).
- The OCRT Trust estimates there are more than 80,000 people a year that use the trail for short walking, daily exercise, day trips on certain sections and for workplace commuting. Some of these may trip the counter close to Alexandra but many would not show on any of the counters.

Airport Road

Counts
2016-17 = 29,899
2017-18 = 26,699
2018-19 = 40,446

This is the most popular counter on the trail, mainly because it is closest to Alexandra (the largest population centre on the trail). Numbers appear to have risen significantly in 2018-2019. This may be a counter error, or it could be because of mountain bikers accessing new trails near the airport are passing the counter.

We also know from Strava heatmap that there is a popular loop trip around the Alexander Anniversary Track to Clyde and back along the OCRT. Based on overall counter analysis, the estimation is that 13,000 people a year are riding the full trail (see below for calculations leading to this estimate). These 13,000 people will only be counted once, and the loop riders will only be counted once. That accounts for approximately half the total counts.

So, the formula for this estimation is that 50% of counts are through counts and 50% are passing the counter twice (there-and-back walkers/runners/riders). Therefore, to derive the number of uses multiply the counts by 0.75 (50%/2 + 50%).

Total uses = counts 40,446 x 0.75 = 30,335 unique uses/annum

Chatto Creek

Counts
2016-17 = 14,112
2017-18 = 15,114
2018-19 = 12,196 (likely to be an undercount)

This counter is within moderate riding distance of Alexandra, but there is some uncertainty as to its location, ie, before or after Chatto Creek where there is a popular café destination.

The 2018-19 counter data may not be entirely reliable as the total counts went down while counters on either side of it went up, and the number was less than more remote counters, which also seems unlikely. Therefore, the analysis is being undertaken on the more reliable 2017-18 count of 15,114.

The estimation is that this count minus 13,000 shows the number of day riders, and that 50% of the day riders will be doing there-and-back trips. The assumptions are:

- approximately 86% of the count (that is 13,000 of 15,114) are through riders doing the whole trail and being counted once
- 6% are through riders doing just a day trip and being counted once
- 8% are there-and-back riders who are being counted twice.

Therefore, to derive the number of uses multiply the counts by 0.96 (86% + 6% + 8%/2).

Total uses = counts (17/18 data) of 15,114 x 0.96 = 14,509 unique uses/annum

Poolburn

Counts
2016-17 = 20,387
2017-18 = 20,778
2018-19 = 21,915

This counter is on a section of the trail with arguably the most stunning scenery, and consequently is being used by a significant number of day riders. The estimate is that this count minus 13,000 shows the number of day riders and that 50% of the day riders will be doing there-and-back trips. The assumptions are: around 60% of the count is through riders doing the whole trail and being counted once, 20% are through riders doing just a day trip and being counted once, and 20% are there and back riders who are being counted twice. Therefore, to derive the number of uses multiply the counts by X 0.9 (60% + 20% +20%/2).

Total uses = counts 21,915 x 0.9 = 19,723 unique uses/annum.

Wedderburn (private)

Counts
1 March 2019 – 28 Feb 2020 = 13,217

This is the longest-running counter on the trail and has been used as an estimate of people riding the full trail for many years. It matches very closely with DOC's Wedderburn counter (see below) with fewer than a 100-count difference.

Theoretically, every person riding the full OCRT must pass this counter, and therefore it is not possible that more than this number is riding the full trail. It is possible that a small number of people may only be riding this middle section of trail, and possibly doing there-and-back trips. However, this would be a very small number, approximately 1-2%, as this is a remote part of the trail and not particularly scenic compared to other sections with tunnels and viaducts.

The estimation is that 98% of the counts (approximately 13,000) represent people doing the full trail, with the remainder doing short trips and may be counted twice. Therefore, to derive the number of uses multiply the counts by 0.99 (98% + 2%/2).

Total cycle uses = counts 13,217 x 0.99 = 13,085 unique uses/annum.

Wedderburn (DOC)

Counts
2016-17 = [missing data]
2017-18 = 13,335
2018-19 = 13,183

The number of counts and location are similar to the private counter and the same logic is applied. Therefore, to derive the number of uses multiply the counts by 0.99 (98% + 2%/2).

Total cycle uses = counts 13,183 x 0.99 = 13,051 unique uses/annum

Waipiata

Counts
2016-17 = 12,138
2017-18 = 13,224
2018-19 = 13,928

This counter is relatively remote, but is in a location with good scenery and is likely to be picking up slightly higher numbers of day trippers. The estimation is that 7% of the counts are day trippers and that 4% are there-and-back trips being counted twice. Therefore, to derive the number of uses multiply the counts by 0.98 (96% + 4%/2).

Total cycle uses = counts 13,928 x 0.98 = 13,649 unique uses/annum

Hyde

Counts
2016-17 = 13,208
2017-18 = 13,304
2018-19 = 14,814

This counter is also relatively remote, is also in a very scenic location and is picking up higher numbers of day trippers again. The estimation is that 12% of the counts are day trippers and that 6% are there-and-back trips being counted twice. Therefore, to derive the number of uses multiply the counts by 0.97 (94% + 6%/2).

Total cycle uses = counts 14,814 x 0.97 = 14,370 unique uses/annum

Rock & Pillar Counter

Counts
2016-17 = (incomplete data)
2017-18 = 10,575
2018-19 = 11,606

This counter is telling a different story from the rest. Generally, the assumption would be that the counter with the lowest numbers, indicates the number of people doing the full trail. However, in this case, the three counters before it, strongly indicate that around 13,000 people are riding the full trail, which is more than are being counted here. Two possible explanations are:

1. The counter is faulty
2. Up to 1,577 people (13,183 Wedderburn counts – 11,606 Rock and Pillar counts) are avoiding this counter location, either because they are finishing the trail early, or they are riding via a nearby road.

Overall Trail Summary

The estimate for riders doing the full OCRT over 12 months was 13,000 people.

Additionally, the counters show considerably higher sectional use of the trail by:

- visiting day trippers,
- local recreational riders, and
- commuters.

There will be many more people using the trail in sections than are being counted by the 7 trail counters. In particular, we expect there will be many people walking, running and cycling short sections of trail around Alexandra, both visitors and residents, that are not being counted by the one counter near Airport Road.

Based on the 7 counters alone, if we subtract 13,000 full trail uses from each of the total counter trail user estimates, we calculate (17,335 + 1509 + 6724 + 51 + 649 +

1370) there are 27,638 additional uses. We recommend that this number multiplied by 2 provides a conservative estimate of section uses.

Therefore, it can be estimated that there were (13,000 full trail uses plus 27,638 x 2 partial trail uses) over **68,275 uses of the Otago Central Rail Trail** over 12 months.

Based on other similar Great Rides that have counters that differentiate between pedestrians and cyclists (28.9% pedestrians for Timber Trail, 38.5% pedestrians for Hauraki Rail Trail, 29.1% pedestrians for Motu Trails) the estimation is that the Otago Central Rail Trail is used by 32% pedestrians and 68% cyclists.

Therefore, over 12 months the Otago Central Rail Trail was used by 21,848 pedestrians and 46,427 cyclists.

Recommendations:

- DOC/Trail Trust check:
    - for data gaps in the Rock and Pillar counter
    - the location of the Rock and Pillar counter to see if riders are avoiding it in any way.

Trail counters summaries

Airport Road

Total uses = counts 40,447 x 0.75 = 30,335 unique uses/annum

Chatto Creek

Total uses = counts (17/18 data) of 15,114 x 0.96 = 14,509 unique uses/annum

Poolburn

Total uses = counts 21,915 x 0.9 = 19,723 unique uses/annum

Wedderburn DOC Counter

Total cycle uses = counts 13,183 x 0.99 = 13,051 unique uses/annum

Waipiata

Total cycle uses = counts 13,928 x 0.98 = 13,649 unique uses/annum

Hyde

Total cycle uses = counts 14,814 x 0.97 = 14,370 unique uses/annum

19.Roxburgh Trail

Counter	Pedestrians	Cyclists	Total
Alexandra counts	11,860	14,206	26,066
Alexandra uses	6,523	7,955	14,478
Roxburgh Dam counts	7,288	4,278	11,566
Roxburgh Dam uses	4,008	2,802	6,810

Counters

1. Alexandra – approx. 2km from town
2. Roxburgh Dam – approx. 1km from top carpark

Observations and assumptions

- The main change from the previous evaluation is the addition of the counter at the Roxburgh Dam end of the track.
- The 12 km gap remains, but additional data was obtained from the boat operators that suggests 1,350 people are making through trips over 12 months (1,340 cyclists and only 10 walkers). This aligns reasonably well with the counter directional data.
- Both counters are within easy walking and cycling distance of the trail start/end.
- There are pedestrian data spikes for Roxburgh Dam that may be an indication of stock on the trail or vegetation in front of the counter (or events). Therefore, the pedestrian count may be an overestimation by as much as 1,000.

Counter analysis

Alexandra

Pedestrian count = 11,860
Cycle count = 14,206

The Alexandra counter trips are considered to be a mix of through trips (1,340 continuing by boat), there-and-back trail riders, and mountain bikers riding to/from Flat Top Hill.

For pedestrian counts, very few are taking the boat, and the directional data is reasonably symmetrical with 56% going down valley. There are not a lot of easy loop options, and therefore the estimate is that 90% of counts are there-and-back trips. Therefore, to derive trips/uses for pedestrians, multiply the total counts by 0.55 (90%/2 + 10%).

For cyclists, the picture is more complicated. We know that approximately 1,340 riders are catching the boat and only being counted once. Some of the cycle counts will be mountain bikers riding from Alexandra up onto Flat Top Hill and back (estimate 2,000, which = 4,000 counts). Other counts will be mountain bikers starting at Flat Top Hill and riding down to Alexandra (estimate 350 counts). And most of the rest of the counts will be there-and-back rides from Alexandra.

To derive the number of there-and-back riders: take 14,206 counts minus 1,340 through trips (boat), minus 350 MTB through trips (Flat Top Hill downhillers), leaves 12,516 counts (88%) which will be there-and-back riders being counted twice. Therefore, to derive the number of cycle trips/uses multiply the counts by 0.56% (88%/2+12%)

Total walker/runner uses = 11,860 counts x 0.55 = 6,523 unique uses/annum
Total cycle uses = 14,206 counts x 0.56 = 7,955 unique uses/annum

Roxburgh Dam

Pedestrian count = 7,288
Cycle count = 4,278

The Dam section of the Roxburgh Trail is a combination of there-and-back trips being counted twice, and through trips. There are no commuters using this trail and no overnight stays.

The boat estimates indicate that an insignificant number of walkers catch the boat. However, the counter directional data is not perfectly symmetrical, and shows that a small percentage of walkers are passing the counter only once (possibly private boat trips and people walking off track). Therefore, to get the walker/runner trail usage, multiply total pedestrian counts by 0.55 (90%/2 + 10%).

The boat estimates also indicate that 1,340 cyclists are doing a through trip, and the rest of the counts (4,278 – 1340 = 2,938) are there-and-back trips. Consequently, 31% of counts are through trips and 69% of counts are there-and-back (ie, double counts). Therefore, to derive cycle user numbers, multiply the total counts by 0.655 (31% + 69%/2).

Total walker/runner users = 7288 counts x 0.55 = 4,008 unique uses/annum
Total cycle users = 4,278 counts x 0.655 = 2,802 unique uses/annum

Overall Trail Summary

A growing number of users are using a boat to ride both sections of the trail. However, the majority are using the trail as two separate trails. Use at the Alexandra

end is over double the use at the Roxburgh end due to its proximity to the town, and Flat Top Hill trails. To calculate total pedestrian use, simply add total trips from each counter together (3,975 + 6,523).

Total number of walker/runner uses of the Roxburgh Gorge Trail over 12 months was 10,531 uses.

To calculate the total number of cycle uses, the number of boat users must be subtracted, as they are counted at both counters during a single trip. Therefore, add each counter use together then subtract 1,340.

Total number of cycle uses of the Roxburgh Gorge Trail over 12 months was 9,417.

The calculation for the total number of uses is the total pedestrian use plus the total cycle uses (alternatively, a simpler formula is the total raw counts multiplied by 0.53).

Total number of all uses of the Roxburgh Gorge Trail over 12 months was 19,948 uses.

20.Clutha Gold Trail

Counter	Pedestrians	Cyclists	Total
Roxburgh counts	2,587	6,253	8,840
Roxburgh uses	1,423	5,440	6,863
Lawrence counts	5,719	3,736	9,455
Lawrence uses	3,145	3,549	6,694

Counters

1. Roxburgh – between Roxburgh town and Millers Flat
2. Lawrence

Observations and assumptions

- There are many more cyclists near Roxburgh than Lawrence, and many more pedestrians near Lawrence than Roxburgh.
- Roughly 90% of cyclists passing the Lawrence counter are doing the full trail and have also passed the Roxburgh counter.
- As per the Roxburgh Gorge Trail virtually no one is walking/running the full trail.
- Covid-19 had an impact on the February 2020 numbers of cyclists, although overall this was not a significant downturn.

Counter analysis

Roxburgh

Pedestrian count = 2,587
Cycle count = 6,253

For pedestrians, the same assumption is applied – that 90% of walkers/runners are doing there-and-back trips, and 10% are doing through trips. Therefore, to derive the number of pedestrian trips/uses, multiply total counts by 0.55 (90%/2 + 10%).

For cyclists, the estimate as calculated above is that 2,988 counts (approximately 48%) are from people riding the full Clutha Gold Trail. Of the remaining counts it is assumed that half are there-and-back riders and half are through riders who are likely to be riding to Millers Flat, or Beaumont.

Therefore, to derive the number of cycle uses, multiply total counts by 0.87 (48% + 26% + 26%/2).

Total walker/runner uses = 2,587 counts x 0.55 = 1,423 unique uses/annum
Total cycle uses = 6,253 counts x 0.87 = 5,440 unique uses/annum

Lawrence

Pedestrian count = 5,719
Cycle count = 3,736

Because the Lawrence counter is so close to town, the assumption is that 90% of the Lawrence pedestrian counts are there-and-back trips with users being counted twice, and 10% are through trips (ie, Beaumont to Lawrence only). Therefore, to derive the number of pedestrian trips/uses, multiply total counts by 0.55 (90%/2 + 10%).

Cyclists have a greater range than walkers and are much more likely to be riding past this counter once. Given the Lawrence cycle count is so much lower than the Roxburgh cycle count, it can be regarded as a close estimate for the number of cyclists riding the full trail. The assumption is that 90% of the counts (3,362) are through cyclists and 10% are from shorter there-and-back trips and will be counted twice. Therefore, to derive the number of cycle trips/uses, multiply total counts by 0.95 (90% + 10%/2).

Of the 90% that are passing this cycle counter once (3,362 riders), it is assumed that the majority are riding the full trail, and most of the remainder are riding from Beaumont, or thereabouts. To obtain an estimate of **full trail use**, multiply Lawrence counts by 0.8 (3,736 x 0.80 = **2,988 riders**).

Total walker/runner uses = 5,719 counts x 0.55 = 3,145 unique uses/annum
Total cycle uses = 3,736 counts x 0.95 = 3,549 unique uses/annum

Overall Trail Summary

Walkers/runners per year

A simple estimate of total walkers/runners uses is the sum total of pedestrian counts (8,306) multiplied by 0.55 (90%/2 + 10%).

Total number of people walking/running on the Clutha Gold Trail over 12 months was 4,568.

Cyclists per year

An estimated 2,988 people have ridden the full Clutha Gold Trail over 12 months. These cyclists were counted twice (once at each counter).

The remainder of estimated cycle trips (3,549 trips - 2,988 full trail riders + 5,440 trips - 2,988 full trail riders) = 3,013 shorter cycle trips. The total number of unique trips is 3,013 shorter trips + 2,988 full cycle trail trips = 6,001.

The total number of cycle trips on the Clutha Gold Trail over 12 months was 6,001.

A simpler formula to estimate the cycle usage is to take the total cycle counts (9,989) and multiply by 0.6 = 5,993 total uses.

Total number of uses/trips (walkers, runners and cyclists) on the Clutha Gold Trail over 12 months was 10,569.

21.Queenstown Trails

Counter	Pedestrians	Cyclists	Total
Frankton counts	10,463	29,160	39,623
Frankton uses	8,370	24,786	33,156
Kawerau Falls counts	154,105	58,522	212,627
Kawerau Falls uses	84,758	32,187	116,945
Riverside Road counts	42,677	32,449	75,126
Riverside Road uses	34,142	25,959	60,101
Kelvin Peninsula counts	27,898	45,776	73,674
Kelvin Peninsula uses	15,343	25,177	40,520
Jack's Point counts	18,885	10,483	29,338
Jack's Point uses	15,084	8,386	23,470
Old Shotover River Bridge counts	89,740	48,058	137,798
Old Shotover River Bridge uses	53,844	31,328	85,172
Old School Road counts	19,609	42,929	62,538
Old School Road uses	11,765	30,050	41,815
Billie's Bridge counts	8,281	20,634	28,915
Billie's Bridge uses	5,383	14,444	19,827
Lake Hayes counts	52,732	17,725	70,457
Lake Hayes uses	47,459	15,953	63,412
Speargrass Flat counts	11,599	25,048	36,647
Speargrass Flat uses	7,539	18,786	26,325
Arrow River counts	160,649	62,480	210,129
Arrow River uses	88,357	43,736	132,093
Swain Bridge counts	30,741	35,093	65,834
Swain Bridge uses	21,519	28,074	49,593
Morven Ferry Road counts	13,713	43,410	58,509
Morven Ferry Road uses	10,285	39,069	49,354
Gibbston counts	10,463	29,160	39,623
Gibbston uses	8,370	24,786	33,156

Counters

1. Frankton (near Queenstown)
2. Kawarau Falls (near Frankton)
3. Riverside Road (back of Frankton)
4. Kelvin Peninsula
5. Jacks Point
6. Old Shotover River Bridge
7. Old School Road (just south of Shotover bridge)
8. Billies Bridge (beside Kawarau River)
9. Lake Hayes (northern end)
10. Speargrass Flat Road
11. Arrow River (next to Arrowtown)
12. Swain Bridge
13. Morven Ferry Road
14. Gibbston

Observations and assumptions

- Queenstown Trails have 14 counters (up from the previous 10).
- To calculate the overall trail use, surveys have been run to derive a moderation factor of 3.85. This involved surveying 230 people (most recently in 2017) to determine how many counters they were passing. The sum total of raw data is divided by 3.85 to estimate total number of uses. (In 2015 we used a moderation factor of 4).
- Major events (eg, Queenstown Marathon) draw from 1,000 to 12,000 people a year to the trails.
- Data on some of the pedestrian counters had very high use. Where this was the case the trail trust was asked if there was an event on during the relevant days, and if not, the data was adjusted. Also, for one counter, the pedestrian counter data was missing.

Counter Analysis

Frankton

Pedestrian count = 126,703
Cycle count = 100,486

This counter is on the waterfront, 1 km east of Queenstown. November has an unusually high number of pedestrian counts due to data spike of 5,600 counts into town on the 16 November owing to the Queenstown Marathon. Otherwise, directional data is reasonably symmetrical.

The pedestrian data indicates a high proportion of there-and-back trips, and probably high commuting use. The estimation is that 20% of counts are for through trips.

Therefore, to derive the number of pedestrian trips/uses, multiply the total counts by 0.6 (80%/2 + 20%).

The cycling data is more closely matched for each direction, with 50.65% in one direction (away from Queenstown). This indicates a very low proportion of through trips. The estimation is that 10% are through trips, with the remaining 90% representing users doing there-and-back trips. Therefore, to derive the number of cycle trips/uses, multiply total counts by 0.55 (90%/2 + 10%).

Total walker/runner uses = 126,703 counts x 0.6 = 76,022 unique uses/annum
Total cycle uses = 100,486 counts x 0.55 = 55,267 unique uses/annum

Kawarau Falls

Pedestrian count = 154,105
Cycle count = 58,522

This counter is located just east of the new highway bridge underpass. There are data spikes on 9 and 10 Nov 2019 (3,992 Pedestrians and 17,820 pedestrians respectively) heading towards the Kelvin Peninsula. Data spikes are also present in the pedestrian counts on 4 Dec (5,895), 5 Dec (4,380), 7 Dec (1,846), 8 Dec (8,699) and 9 Dec (5,022).

The pedestrian data is virtually identical for each direction, indicating high proportion of there-and-back trips, and probably high commuting use. The estimation is only 10% of counts (ie, 18% of uses) are through trips. Therefore, to derive the number of pedestrian trips/uses, multiply total counts by 0.55 (90%/2 + 10%).

The cycling data is even more closely matched for each direction, with 50.8% in one direction (towards Queenstown) and 49.2% in the other (towards Kelvin Peninsula). This indicates a very low proportion of through trips. The estimation is that 10% are through trips, and 90% are users doing there-and-back trips. Therefore, to derive the number of cycle trips/uses, multiply total counts by 0.55 (90% + 10%/2).

Total walker/runner uses = 154,105 counts x 0.55 = 84,758 unique uses/annum
Total cycle uses = 58,522 counts x 0.55 = 32,187 unique uses/annum

Note: The pedestrian data needs checking, and will probably have to be cleaned.

Riverside Road

Pedestrian count = 42,677
Cycle count = 32,449

The counter is on a section of trail just south of the end of Riverside Road, and close to the Kawarau River. November has an unusually high number of pedestrians count

due to a data spike of 5,499 counts heading east towards Frankton on the 16 November. This was the day of the Queenstown Marathon.

The directional data indicates there is no one direction stronger than the other (likely because this is a flat section of track with lots of options for loops). However, the best direction for a loop is as yet undecided by the public at large. This suggests higher than normal proportion of through trips.

The estimation is that 60% of pedestrian counts are from users doing through trips. Therefore, to derive the number of pedestrian trips/uses, multiply total counts by 0.8 (40%/2 + 60%).

The cycling data also indicates 60% through trips for cyclists. Therefore, to derive the number of cycle trips/uses, multiply total counts by 0.8 (60% + 40%/2).

Total walker/runner uses = 42,677 counts x 0.8 = 34,142 unique uses/annum
Total cycle uses = 32,449 counts x 0.8 = 25,959 unique uses/annum

Kelvin Peninsula

Pedestrian count = 27,898
Cycle count = 45,776

This counter is on the waterfront, approximately halfway between Kawarau Falls and Kelvin Heights. There are no data anomalies and directional data is highly symmetrical indicating mostly there-and-back trips by walkers, runners and cyclists.

The pedestrian data is almost identical for each direction, also demonstrating a high proportion of there-and-back trips, and probably high commuting use. The estimation is only 10% of counts (ie, 18% of users) are doing through trips. Therefore, to derive the number of pedestrian trips/uses, multiply total counts by 0.55 (90%/2 + 10%).

Cycling data is even more closely matched for each direction, with 50.7% in one direction (towards Frankton) and 49.3% in the other (towards Kelvin Heights). This indicates a very low proportion of through trips. The estimation is that 10% are through trips, and 90% are users doing there-and-back trips. Therefore, to derive the number of cycle trips/uses, multiply total counts by 0.55 (10%/2 +90%).

Total walker/runner uses = 27,898 counts x 0.55 = 15,343 unique uses/annum
Total cycle uses = 45,776 counts x 0.55 = 25,177 unique uses/annum

Jack's Point

Pedestrian count = 18,855
Cycle count = 10,483

There is a huge spike in pedestrian counts on 5 Jan 2020 (1,694 heading towards Jacks Pt) and 12 Jan 2020 (2,422 heading towards Jacks Pt). Both these dates were Sundays, and suggest there was an event.

The directional data is relatively asymmetric, suggesting a high proportion of through trips for pedestrians and cycles. Heading towards Jacks Point is the preferred direction for both counter types, nonetheless, Jacks Point is the least popular cycling track in the Queenstown Network.

The estimation is 60% of pedestrian counts are from users doing through trips. Therefore, to derive the number of pedestrian trips/uses, multiply total counts by 0.8 (40%/2 + 60%).

The cycling data also indicated 60% through trips. Therefore, to derive the number of cycle trips/uses, multiply total counts by 0.8 (40%/2 + 60%).

Total walker/runner uses = 18,855 counts x 0.8 = 15,084 unique uses/annum
Total cycle uses = 10,483 counts x 0.8 = 8,386 unique uses/annum

Old Shotover River Bridge-Lower

Pedestrian count = 89,740
Cycle count = 48,058

The counter is located at the end of the old bridge, and there is a pedestrian data spike in November (4,900 pedestrian counts on the 16 November) owing to the Queenstown Marathon.

Otherwise, the directional data is reasonably symmetrical with more variance during holiday periods, indicating a moderately high proportion of there-and-back trips (probably people going to the bridge and back). The estimation is that 20% of counts are doing through trips. Therefore, to derive the number of pedestrian trips/uses, multiply total counts by 0.6 (80%/2 + 20%).

The cycling data is similarly closely matched for each direction, with 54% in one direction and 46% in the other. The estimation is that 30% of the counts are for through trips, with the remaining 70% of the counts representing users doing there-and-back trips. Therefore, to derive the number of cycle trips/uses, multiply total counts by 0.65 (70%/2 + 30%).

Total walker/runner uses = 89,740 counts x 0.6 = 53,844 unique uses/annum
Total cycle uses = 48,058 counts x 0.65 = 31,238 unique uses/annum

Old School Road

Pedestrians = 22,298 – 2,689 = 19,609
Cycle count = 42,929

This is a relatively remote counter, south of the Old Shotover Bridge. There is a spike in the pedestrian count data over 6 days from 18 Feb to 23 Feb 2020 (163, 966, 190, 689, 216, 645). The more typical count is for around 30 per day on either side of that week. The assumption is there was no event and the spike were caused by vegetation or animal in front of counter. Therefore, to derive a more typical count for this period – subtract 2,689 pedestrian counts from the total counts and replace the six days of overcounting with an average of 30/day (22,298 – 2,869 +180 = 19,609).

Otherwise, the walking data is very similar for each direction, indicating high proportion of there-and-back trips. The estimation is that 20% of counts are from users doing through trips, and 80% doing there-and-back trips. Therefore, to derive the number of pedestrian trips/uses, multiply total counts by 0.6 (80%/2 + 20%).

The cycling data is similar for each direction indicating a moderate proportion of through trips (40%) with the remaining 60% doing there-and-back trips. Therefore, to derive the number of cycle trips/uses, multiply total counts by 0.7 (60%/2 + 40%).

Total walker/runner uses = 19,609 counts x 0.6 = 11,765 unique uses/annum
Total cycle uses = 42,929 counts x 0.7 = 30,050 unique uses/annum

Billie's Bridge

Pedestrian count = 8,281
Cycle count = 20,634

The counter is at the bridge over the side stream leading into the Kawarau River (near Hayes Creek Road). There is a higher number of cycles count than expected for November, and a lower count than expected for December. Directional data for walkers/runners is strongly symmetrical (48.8% pedestrians heading east), and less so for cyclists (46.6% cycles heading east).

The walking data is very similar for each direction, indicating a high proportion of there-and-back trips. It is estimated that 30% of counts are from users doing through trips and 70% doing there-and-back trips. Therefore, to derive the number of pedestrian trips/uses, multiply total counts by 0.65 (70%/2 + 30%).

The cycling presents similarly for each direction indicating a moderate proportion of through trips (40%) with the remaining 60% doing there-and-back trips. Therefore, to derive the number of cycle trips/uses, multiply total counts by 0.7 (60%/2 + 40%).

Total walker/runner uses = 8,281 counts x 0.65 = 5,383 unique uses/annum
Total cycle uses = 20,634 counts x 0.7 = 14,444 unique uses/annum

Lake Hayes

Pedestrian count = 52,732
Cycle count = 17,725

This counter is located at the northern end of Lake Hayes, a few hundred metres from the carpark and toilets. This track provides a good loop, and directional data indicates a high level of through traffic, rather than there-and-back trips. Most pedestrians and cycles head in an anticlockwise direction. The exception to this was a pedestrian data spike of 2,000 heading north on Saturday 16 November 2019 – the day of the Queenstown Marathon.

The estimation is that 80% of pedestrian counts are from users doing through trips, and 20% doing there-and-back trips. Therefore, to derive the number of pedestrian trips/uses, multiply total counts by 0.8 (20%/2 + 80%).

The cycling data also indicated an estimated 80% through trips and 20% doing there-and-back trips. Therefore, to derive the number of cycle trips/uses, multiply total counts by 0.9 (20%/2 + 80%).

Total walker/runner uses = 52,732 counts x 0.9 = 47,459 unique uses/annum
Total cycle uses = 17,725 counts x 0.9 = 15,953 unique uses/annum

Speargrass Flat Road

Pedestrian count = 30,757 (raw data) – correction 19,918 (faulty counts) + 760 (average estimate) = 11,599
Cycle count = 25,048

This counter is on a section of trail that branches off from Speargrass Flat Road, between Lake Hayes and Arrowtown. There were a number of spikes in the pedestrian counter data (January 3-20), so the data has been cleaned and replaced with an average estimate per day. There was also a cycle spike of 419 cyclists heading south to north on Monday 2 Dececember 2019. Otherwise, directional data is highly symmetrical for pedestrians, and moderately symmetrical for cycles. There does not appear to be a strong directional preference for walkers with 53% going one way and 47% the other.

The estimation is only 30% of pedestrian counts are from walkers/runners doing through trips and 70% doing there-and-back. Therefore, to derive the number of pedestrian trips/uses, multiply total counts by 0.65 (70%/2 + 30%).

For cycling, 56% of the counts are from north to south (heading downhill) to Speargrass Flat Road. At a daily level the directional data has more variance, indicating a higher proportion of through trips 50%. Therefore, to derive the number of cycle trips/uses, multiply total counts by 0.75 (50%/2 + 50%).

Total walker/runner uses = 11,599 counts x 0.65 = 7,539 unique uses/annum
Total cycle uses = 25,048 counts x 0.75 = 18,786 unique uses/annum

Arrow River

Pedestrian count = 150,649 + 10,000 (correction) = 160,649
Cycle count = 59,480 + 3,000 (correction) = 62,480

The counter is located at the edge of Arrowtown, by the bridge at the bottom of Tobins Track.
Counter data is missing for most of November 2019. A simple estimate (for correction) is to add 10,000 pedestrian counts and 3,000 cycle counts.

Walking data is virtually identical for each direction, indicating high proportion of there-and-back trips (90%). The estimation is that only 10% of counts (ie, 18% of users) are doing through trips. Therefore, to derive the number of pedestrian trips/uses, multiply total counts by 0.55 (90%/2 + 10%).

The cycling data is very similar for each direction, but has 59.4% of users heading away from Arrowtown, indicating a moderate proportion of through trips (minimum of 20% are through trips away from Arrowtown - 40% total through trips in both directions is estimated). Therefore, to derive the number of cycle trips/uses, multiply total counts by 0.7 (60%/2 + 40%).

Total walker/runner uses = 160,649 counts x 0.55 = 88,357 unique uses/annum
Total cycle uses = 62,480 counts x 0.7 = 43,736 unique uses/annum

Swain Bridge

Pedestrian count = 30,741
Cycle count = 35,093

This counter is in a remote location, about halfway between Arrowtown and Kawarau Bridge. The location shown on eco Visio map is not at a bridge, but at a track fork (presumably south of Swain Bridge). This whole valley is a stunning area and is attracting high user numbers.

There is a pedestrian data spike of 1,889 counts on 16 November, the day of the Queenstown Marathon, but otherwise, the data looks clean.

Apart from the day of the Queenstown marathon, walking data is reasonably similar for each direction with 58.8% of pedestrian counts going towards Centennial Ave. However, there is more variance during holiday periods. It is estimated that overall, 40% of counts are doing through trips. Therefore, to derive the number of pedestrian trips/uses, multiply total counts by 0.7 (60%/2 + 40%).

The cycling data shows somewhat more variance, with 61% of counts going towards Centennial Ave, and asymmetrical daily data. Therefore, the estimate is that 60% of counts are through trips, with the remaining 40% representing users doing there-and-back trips. Therefore, to derive the number of cycle trips/uses, multiply total counts by 0.8 (40%/2 + 60%).

Total walker/runner uses = 30,741 counts x 0.7 = 21,519 unique uses/annum
Total cycle uses = 35,093 counts x 0.8 = 28,074 unique uses/annum

Morven Ferry Road

Pedestrian count = 15,099 – 1,386 (correction) = 13,713
Cycle count = 43,410

The counter is on the trail just off Morven Ferry Road, halfway between Arrow Junction and the Kawarau Bridge. The first week of March 2019 had several high counts and have been replaced with an average of 40/day for counts heading south. It was likely the counter had vegetation in front of it.

From 25 June to 30 July there are no cycle counts, but pedestrian counts are higher than normal.

Directionally, pedestrians (69%) travel in a southerly direction (going towards Kawarau Bridge or Queenstown). This indicates a higher than normal proportion of through trips. The estimation is 50% of pedestrian counts are from users doing through trips. Therefore, to derive the number of pedestrian trips/uses, multiply total counts by 0.75 (50%/2 + 50%).

Cycle direction is 62% in a southerly direction, but from looking at the daily data there don't appear to be many there-and-back trips. This is not a logical part of the network for there-and-back trips. The estimation is for 80% through trips, with remaining 20% of counts representing users doing there-and-back trips). Therefore, to derive the number of cycle trips/uses, multiply total counts by 0.9 (20%/2 + 80%).

Total walker/runner uses = 13,713 counts x 0.75 = 10,285 unique uses/annum
Total cycle uses = 43,410 counts x 0.9 = 39,069 unique uses/annum

Gibbston

Pedestrian count = 10,463
Cycle count = 29,160

The counter is at the western end of Gibbston Track, near the Kawarau Bridge carpark. The data for this counter looks clean and there have not been any adjustments made.

The directional data is asymmetric, with 66% of cycle counts, and 58% of walking counts heading east towards Gibbston. This suggests a high proportion of through trips for pedestrians and cycles.

The assumption is that 60% of pedestrian counts are from users doing through trips and 40% doing there-and-back. Therefore, to derive the number of pedestrian trips/uses, multiply total counts by 0.8 (40%/2 + 60%).

The cycling data indicates that 70% of the users are doing through trips (30% there-and-back). Therefore, to derive the number of cycle trips/uses, multiply total counts by 0.85 (30%/2 + 70%).

Total walker/runner uses = 10,463 counts x 0.8 = 8,370 unique uses/annum
Total cycle uses = 29,160 counts x 0.85 = 24,786 unique uses/annum

Overall Trail Summary

The Queenstown Trails are a complex network of high-quality trails, both urban and rural, that offers multiple opportunities, and are popular with visitors and locals alike. The use ranges from 8,386 cycle uses/year on the Jacks Point Track to 55,267 cycle uses/year on the Frankton Track. Use by walkers/runners is also high and ranges from 5,383 on Billie's Bridge (beside Kawarau River) to over 75,000 uses/year at Frankton, Kawarau Falls, and Arrowtown.

The Queenstown Trails Trust estimates the overall use of the trail network by adding all counts together and dividing by 3.85. Following this formula for the 12 months analysed (1 March 2019 to 28 Feb 2020), the **estimated number of uses of the Queenstown Trails was 350,714** (1,350,251 / 3.85). However, utilising the same methodology as for the other Great Rides, this analysis has examined pedestrian and cycle counts separately as well as every counter separately.

For walking/running trips, it is first noted that this trail has more counters than any other Great Ride, and some of these counters are within an hour's walking distance (ie, Kawarau Falls, Riverside Road, and Kelvin Peninsula). The estimation is that on average a walker/runner will pass two counters per trip.

Therefore, the formula for estimating total walking/running trips/uses over 12 months, is the sum total of pedestrian uses (as calculated per counter above) divided by 2.

Total number of walking/running trips estimated over 12 months = 239,935

Calculation (76,022 + 84,758 + 34,142 + 15,343 + 15,084 + 53,844 + 11,765 + 5383 + 47,459 + 7,539 + 88,357 + 21,519 + 10,285 + 8,370 = 479,870 uses divided by 2 = 239,935).

Meanwhile, because of the increased range, cyclists are likely to pass anywhere from 1 to 10 counters per trip (ie, Queenstown commuters might pass 1 counter, while Tour Aotearoa riders pass 9 counters). Based on:

- the location of the counters
- Strava heatmaps indicating how the trails are used
- the survey used for the Queenstown Trail Trust moderation factor; and
- the fact that the counter data has already been processed to estimate uses (rather than using raw counts);
- the estimation is that cyclists pass an average of 3 unique counters per trip.

Therefore, the formula for estimating the total cycling trips/uses over 12 months is the sum total of cycle uses (as calculated per counter) divided by 3.

Total number of cycle trips/uses estimated over 12 months = 131,037

Calculation (55,267 + 32,187 + 25,959 + 25,177 + 8,386 + 31,238 + 30,050 + 14,444 + 15,953 +18,786 + 43,736 + 28,074 + 39,069 + 24,786 = 393,112 uses divided by 3 = 131,037).

Total number of trips (walkers, runners and cyclists) over 12 months = 370,972

Trail counter summaries for 1 March 2019 – 28 Feb 2020

Frankton

Total walker/runner uses = 126,703 counts x 0.6 = 76,022 unique uses/annum
Total cycle uses = 100,486 counts x 0.55 = 55,267 unique uses/annum

Kawarau Falls

Total walker/runner uses = 154,105 counts x 0.55 = 84,758 unique uses/annum
Note: This data needs checking, and will probably have to be cleaned
Total cycle uses = 58,522 counts x 0.55 = 32,187 unique uses/annum

Riverside Road

Total walker/runner uses = 42,677 counts x 0.8 = 34,142 unique uses/annum
Total cycle uses = 32,449 counts x 0.8 = 25,959 unique uses/annum

Kelvin Peninsula

Total walker/runner uses = 27,898 counts x 0.55 = 15,343 unique uses/annum
Total cycle uses = 45,776 counts x 0.55 = 25,177 unique uses/annum

Jacks Point

Total walker/runner uses = 18,855 counts x 0.8 = 15,084 unique uses/annum
Total cycle uses = 10,483 counts x 0.8 = 8386 unique uses/annum

Old Shotover River Bridge

Total walker/runner uses = 89,740 counts x 0.6 = 53,844 unique uses/annum
Total cycle uses = 48,058 counts x 0.65 = 31,238 unique uses/annum

Old School Road

Total walker/runner uses = 19,609 counts x 0.6 = 11,765 unique uses/annum
Total cycle uses = 42,929 counts x 0.7 = 30,050 unique uses/annum

Billies Bridge

Total walker/runner uses = 8281 counts x 0.65 = 5383 unique uses/annum
Total cycle uses = 20,634 counts x 0.7 = 14,444 unique uses/annum

Lake Hayes

Total walker/runner uses = 52,732 counts x 0.9 = 47,459 unique uses/annum
Total cycle uses = 17,725 counts x 0.9 = 15,953 unique uses/annum

Speargrass Flat Road

Total walker/runner uses = 11,599 counts x 0.65 = 7539 unique uses/annum
Total cycle uses = 25,048 counts x 0.75 = 18,786 unique uses/annum

Arrow River

Total walker/runner uses = 160,649 counts x 0.55 = 88,357 unique uses/annum
Total cycle uses = 62,480 counts x 0.7 = 43,736 unique uses/annum

Swain Bridge

Total walker/runner uses = 30,741 counts x 0.7 = 21,519 unique uses/annum
Total cycle uses = 35,093 counts x 0.8 = 28,074 unique uses/annum

Morven Ferry Road

Total walker/runner uses = 13713 counts x 0.75 = 10,285 unique uses/annum
Total cycle uses = 43,410 counts x 0.9 = 39,069 unique uses/annum

Gibbston

Total walker/runner uses = 10,463 counts x 0.8 = 8370 unique uses/annum
Total cycle uses = 29,160 counts x 0.85 = 24,786 unique uses/annum

22. Around the Mountains Trail

Counter	Pedestrians	Cyclists	Total
Mt Nicholas Rd counts		1,735	1,735
Mt Nicholas Rd uses		1,692	1,692
Mossburn counts	1,779	1,631	3,410
Mossburn users	1,423	1,468	2,891
Lumsden counts	3,245	2,942	6,187
Lumsden users	1,234	2,059	3,293
Athol counts	875	2,240	3,115
Athol users	700	1,568	2,268

Counters

1. Mount Nicholas Rd (near Oreti River)
2. Mossburn (on trail 1 km north of Mossburn)
3. Lumsden (north of SH94, 4 km north of Lumsden)
4. Athol (2 km east of Athol)

Observations and assumptions

- Peak use months are February and March.
- There is exceptionally low use on all four counters over winter.
- There is higher pedestrian use than cycle use where counters are close to towns (ie, Mossburn and Lumsden).
- The Trail is promoted in a counterclockwise direction, however the counters show significant use in both directions.
- There was not particularly good weather in the summer of 2019-20, and the trail was damaged by two storms, although not closed.
- There are three major events on the trail (Cycle and Celebrate – Five Rivers – Lumsden 24 November 2019; Down River Dash – Centre Hill – Mossburn – 22 December 2019; Tour Aotearoa – Centre Hill – Mossburn - Feb/March 2020)
- Occasionally a large flock of sheep are moved across the counter at Lumsden, which can show a spike in stats. This could inflate numbers by several hundred.

Mount Nicholas Rd

Pedestrian count = Nil
Cycle count = 1,735

This counter records cyclists but not walkers/runners. Mt Nicholas Road is part of Tour Aotearoa, and also a traditional cycle touring route from Queenstown to Southland via the Mavora Lakes. In 2019 the directional split was 530 heading north and 716 heading south = 57%. In 2020 the directional split so far has been 295 heading north and 786 south (73%); this is a Tour Aotearoa year.

The assumption is, on average that 67% of counts are heading south, and that 95% are going in one direction only. Therefore, to derive cycle trips/uses, multiply the number of counts x 0.975.

Total cycle trips/uses = counts 1,735 x 0.975 = 1,692 unique uses/annum

Mossburn (on the trail just northwest of town)

Pedestrian count = 1,779
Cycle count = 1,631

Observations: This counter:

- is only 1 km from the centre of Mossburn
- gets a high use of pedestrians
- 70% of the pedestrian counts are towards Mossburn.

In 2019 the directional split shows 63% of the cycle counts are towards Mossburn. In the first half of 2020 this increased to 76% heading towards Mossburn. By far the highest level of use was 654 cyclists towards Mossburn in March 2020 (most whom were doing Tour Aotearoa), although this was outside the period for which data was analyzed.

For pedestrians, the assumption is that 40% of the pedestrian counts are there-and-back trips. Therefore, to derive the number of trips/uses by pedestrians, multiply the number of counts x 0.8.

For cyclists, the assumption is that, on average, 70% of cyclists are riding to Mossburn and 10% of the counts are there-and-back trips. Therefore, to derive the number of cycle trips/uses, multiply the number of counts x 0.9.

Total pedestrian trips/uses = 1,779 counts x 0.8 = 1,423 unique uses/annum
Total cycle trips/uses = 1,631 counts x 0.9 = 1,468 unique uses/annum

Note: By far the highest level of use was 654 cyclists towards Mossburn in March 2020 (most whom were doing Tour Aotearoa).

Lumsden

Pedestrian count = 3,245
Cycle count = 2,942

This counter is located on a section of track that may have stock movements (high number of pedestrians (462) recorded in September 2019). In examining daily counts we have observed up to 97 counts one way during certain weekdays, which is happening throughout the year. Therefore, the assumptions are: approximately 1,000 of the pedestrian counts are actually stock movements, and that 90% of the pedestrian movements are there-and-back trips.

Therefore, to derive number of pedestrian trips/uses , subtract 1,000 from the total counts as likely stock movements and multiply the revised number of counts (2,245) x 0.55.

For cyclists, the direction is very evenly matched, approximately 50% go north and 50% go south. This indicates a high level of there-and-back trips (the estimation is that 60% of the counts are there-and-back, and 40% are through trips). Therefore, to derive the number of cycle trips/uses, multiply the number of counts x 0.7 (60/2 + 40).

Total pedestrian trips/uses = 2,245 counts x 0.55 = 1,234 unique uses/annum
Total cycle trips/uses = 2,942 counts x 0.7 = 2,059 unique uses/annum

Athol

Pedestrian count = 875
Cycle count = 2,240

For this counter, the pedestrian numbers are much lower than cyclists. Around 75% of pedestrians are going from Garston to Athol. It is likely that some people are walking there-and-back, but not a high proportion. The estimation is that only 40% of the counts are there-and-back, and 60% are through trips. Therefore, to derive the number of pedestrian trips/uses, multiply the number of counts x 0.8.

The cyclist direction is also very evenly matched for this section of the trail. Approximately 50% go north and 50% go south. This indicates a high level of there-and-back trips (the estimation is 60% of the counts are there and back, and 40% are through trips). Therefore, to derive the number cycle trips/uses, multiply the number of counts x 0.7 (60/2 + 40).

Total pedestrian trips/uses = 875 counts x 0.8 = 700 unique uses/annum
Total cycle trips/uses = 2,240 counts x 0.7 = 1,568 unique uses/annum

Overall Trail Summary

A total of 3,357 pedestrian trips are being counted on various sections of the trail over the 12-month period. It is expected that almost all pedestrian counts are walkers and runners doing discrete sections of the trail, rather than the full trail. Furthermore, short there-and-back trips from Kingston are not being counted.

Therefore, there are more than 3,357 walking and running trips on the Around the Mountains Trail over 12 months from 1 March 2019 to 28 February 2020.

For the cyclists being counted, it is assumed that there are several types of users.

- Those riding Tour Aotearoa from Walter Peak to Mossburn and branching off down the Southern Traverse Heartland Ride were estimated to be 500 over 12 months (note that this number is growing).
- Those riding the full trail, plus Tour Aotearoa riders, equal the Mossburn counter = 1,468 riders.
- The assumption is that with approximately 1,000 people riding the full trail, and 500 doing Tour Aotearoa, the total cycle use is those riders (1000 + 500) plus Mt Nicolas Rd uses minus 1,500 (192) plus Lumsden uses minus 1,000 (1,059) plus Athol uses minus 1,000 (568) = 3,319.

Note: Any overcounting that may occur because some people not doing the full trail may ride past both the Lumsden and Athol counters will compensate for those who ride sections of the trail without being counted at all, in particular between Fairlight and Kingston.

Total number of cycle trips on the Around the Mountains Cycle Trail over 12 months was 3,319.

Lower number of users are likely to be attributable to a few key reasons.

1. The accommodation gap between Walter Peak and Mossburn is 103 km. There is camping at Mavora Lakes, (and a shuttle service is available), but it is not hugely appealing.
2. The Trail is not yet completed through to Oreti; it follows the Mavora Lakes Road, turning onto a dedicated cycle trail at Centre Hill.
3. The on-road section south of Mavora Lakes can be unpleasant due to unconsolidated gravel, cambered corners, and traffic.
4. There are guided trips out of Queenstown, which shuttle people to the top of Von Hill. These uses are not being counted by the Mt Nicolas Road counter.
5. There is no counter at the Kingston end of the trail, so people riding/walking between Kingston and Fairlight are not being counted.

6. The trail's reputation has yet to catch up with recent improvements, and this will result in increased use.

Recommendations

- Install a counter between Kingston and Fairlight.
- Install a counter at the northern end of the Southland Traverse heartland ride so that trail use is better understood.

Appendix 1: Documents Review

Great Lake Trail Get Smart User Survey, May 2020

Gurden Consulting Ltd. (2016/17). *Economic Impact of the West Coast Wilderness Trail.*

McDermott, P. (2020). *An Economic Assessment of the Pou Herenga Tai Twin Coast Cycle Trail: Prepared for the Pou Herenga Tai Twin Coast Cycle Trail Trust*.

Ministry of Business, Innovation and Employment. (2020). *Goods and Services Agreement – Cycle Trail Reporting Solutions EE-2020-002.*

Tayawa Figuracion, M. (2016). Ministry of Business, Innovation and Employment. *Ngā Haerenga NZ Cycle Trail Evaluation Report.*

Queenstown Trails Trust. *Annual Report, 2018/19*.

Queenstown Trails Trust. *Queenstown Trail for the future 2015-2025, A strategic plan for the Queenstown Trails Trust.*

Victorio, A. (2016). *Nga Haerenga The Great Rides of the New Zealand Cycle Trails: Some Benefits in Relation to Costs.*

Wilson, J. (2015/16). *Alps 2 Ocean Cycle Trail: User Survey 2015/16*. Land Environment and People.

Appendix 2: Introductory Email

Introductory email and information gathering

My name is Marilyn Northcotte and I am a researcher working for the Kennett Brothers on the evaluation of the NZCT Great Rides trail counters for the Ministry of Business, Innovation and Employment (MBIE).

We are beginning the data gathering over the next few weeks. Please see the information below, and please do let me (Marilyn) know if you have any questions.

We look forward to working with you.

Kind regards

Marilyn & Jonathan

NZ GREAT RIDES EVALUATION

Introduction

The Ministry of Business, Innovation and Employment (MBIE) has partnered with The Kennett Brothers and Marilyn Northcotte (Researcher) to analyse trail user data from counters for all 22 New Zealand Great Rides.

Evaluation aims

The main aims of the evaluation are:

- Gather counter data on the total number of trail users (across all 22 Great Rides) **for the 12 months - beginning 1st March 2019 – 28th Feb 2020.**

- Develop a consistency in methodologies being used to collect and analyse trail counter data presently (i.e. develop weightings and formulae relative to each great ride)

- These data and analyses will be used by eco-Visio to create a live dashboard for each counter, trail and the overall network:

    - Total trail users

    - Each trail to include total numbers of:

▪ Walkers

- Cyclists

Data gathering

This evaluation was most recently undertaken in 2016 (when Jonathan worked at MBIE) and the data had a number of limitations. This year (through MBIE) we will have access to all trail counter data which we can download for direct analysis.

As with the previous evaluation, we will be taking into consideration any prior methodology/logic model used with your trail data. The logic model that applied to your Great Ride in the 2015/16 evaluation is as follows. However, there is a possibility that logic models may require some adjustment depending on the analysis from this evaluation.

Clutha Gold Trail:

Two counters operating.

Whole trail - the assumption is 50% are doing the full trail and are being counted three times. Therefore, multiply the sum total of the three counters by 0.4.

For day use assume a 2 -day trip for half of the users (i.e. 60% of data) and day trippers for the rest (i.e. 40% of the data) and therefore multiply data by 0.6.

In order to capture current trail user numbers and methodology/logic models, as accurately as possible, for this count we are taking into consideration a number of changes that may/may not have occurred with your Great Ride. So, please note any changes such as, an increased number of counters, any counters that may have been moved to another location, any trail extensions/completions, any major events that may have taken place during the above time period, or since the last evaluation. Any of which may have some influence with regards to the counts.

Therefore, we are asking that you **please provide the following information by Monday 11th May** to assist in the evaluation:

- the total number of counters on the trail
- if any of those counters have been relocated to another site (different to 2015/16 count)
- what methods you currently use to analyse the counter data
- any major events (eg, Tour Aotearoa or trail closures) that have occurred over the time period in question.

Who should provide this data?

This data gathering exercise is for trail managers, administrators, or whomever is responsible in trails relationships for managing the counter data. We ask that the questions about 'current user numbers' are answered by one representative only (to prevent double-ups).

Timing

- Data gathering exercise - Friday 24th April to **Monday 11th May**
- Analysis - Friday 15th May
- Final report - submitted Thursday 30th July.

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Mā te wā

Marilyn & Jonathan

Appendix 3: Glossary of Terms

Assumptions - Assumptions are things that are accepted as true, or at least plausible, and are a necessary part of the estimating process when some detail may not be available.

Cyclist - also referred to as biker, mountain biker, downhiller, bikepacker.

Descriptive analysis – summarising what we can know from the data.

Estimate – making an estimate involves a number of considered criteria and based on the best information available, which is current, accurate and complete. Estimates are open for review and can change as more/newer information becomes available.

Formula/e – collecting, classifying, arranging and presenting the numerical data related in some context.

Great Ride – one of 22 trails that have been funded by MBIE and are predominantly off road, as opposed to Heartland Rides, which are not included in this evaluation.

Limitations – potential weaknesses associated with the analysis for example, data quality, or period of analysis.

NZCT - New Zealand Cycle Trail.

Pedestrian – someone who passes the counters on foot, also referred to as pedestrians, walker/s, runners.

Tacit knowledge - the knowledge that we possess that is garnered from personal experience and context.

Use/Uses/Trips - estimated individual visits by a person or people, as opposed 'users'. This recognises the fact that counter data cannot identify people (most likely residents living close to a trail counter) making multiple trips past a trail counter.

Weighting – an adjustment technique used with the data to reflect a more accurate account from how the raw data presents.