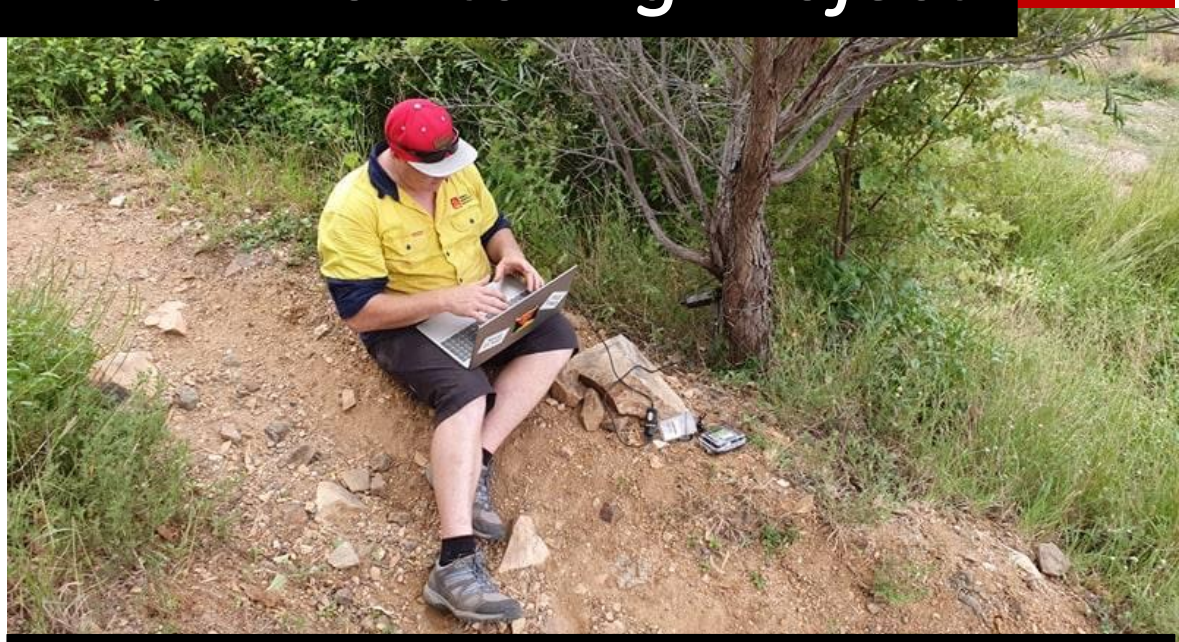
TOWNSVILLE ROCKWHEELERS MOUNTAIN BIKE CLUB

2019/2020

Douglas Mountain Bike Reserve Trail Monitoring Project



Trail Usage Data Report

Travis Bailey

Land Access Coordinator

Townsville Rockwheelers MTB Club Inc

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Trail Usage Data Report

Executive Summary

The Rockwheelers Mountain Bike Club has created an outstanding national level facility in the Douglas Mountain Bike Reserve (Townsville's premier mountain biking location). Trail usage data collected by Townsville Rockwheelers demonstrates that Townsville has a large mountain biking community taking full advantage of this facility. In addition, the data results show that the Douglas Mountain Bike Reserve has higher usage than two nationally recognised mountain bike destinations, Blue Derby (Tasmania) and Sugar Bag Road (Sunshine Coast, Queensland)

Since April 2019, the Townsville Rockwheelers Mountain Bike Club has been conducting a trail monitoring program at the 116ha Douglas Mountain Bike Reserve (a $1.5m mountain bike facility developed by Townsville Rockwheelers over 10 years from 2009). This monitoring program is a club initiative aimed at creating a better understanding of how the facility is utilised by club members and the broader Townsville community.

Trail counters collected both mountain bike movements and pedestrian movements. The result combined with peer-reviewed research draws comparisons to trail usage data from two nationally recognised mountain bike destinations, Blue Derby and Sugar Bag Road. Subsequently begins a compelling discussion for future mountain biking management opportunities in Townsville.

This report offers three usage scenarios; high, medium and low. Based on the low conservative annual average usages of Douglas Mountain Bike Reserve (Mountain Bikes - 38,707, Pedestrians - 24,325, and combined - 63,032) has higher usage than both nationally recognised mountain bike destinations; Blue Derby (35,000) and Sugar Bag Road (15,000). When compared to Blue Derby with a trail network of 100km, the usage at Douglas Mountain Bike Reserve with a trail network of 38km, has a greater impact per trail metre in relation degradation and maintenance.

Of note Blue Derby and Sugar Bag Road facilities are Council (Local Government) managed and operated, compared to Townsville's facility which is entirely managed and operated by Townsville Rockwheelers Mountain Bike Club Inc.

It is recommended that:

- This baseline data be accepted as a good starting point for measuring usage growth at the Reserve.
- Data collection be continued, and where possible utilise superior resources to enhance the robustness of the results.
- The Club explore sustainable management options which are required with regards to mountain biking, hiking and trail running, in the interest of Townsville's community, environment and economy.
- The Club explore acquiring resources to investigate sustainable management options, primarily focusing on maximising the net benefits for Townsville's community, environment and economy e.g successful outcomes are evident in the two locations compared in this report. See Appendix 6.3 for memorandum of understanding for partnership employed by the Sunshine Coast Council.

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Trail Usage Data Report

1. Introduction

Townsville Rockwheelers Mountain Bike Club (The Club) is a not for profit, volunteer organisation. Since 1996, the Club has constructed 38km of single track mountain bike (MTB) trails at the 116ha Douglas Mountain Bike Reserve (The Reserve) (Townsville Rockwheelers MTB Club, 2020 & Trailforks, 2020). Over this time, the Club has grown from 50 members to a peak of 507 members in September 2018 (MTBA, 2020). The Club has had a total of 4804 members current and past over this period (MTBA, 2020). Currently, the Club remains the second-largest MTB club in Australia with 431 members as of February 2020 (MTBA, 2020). Over the past 5 years, a perceived rapid growth in the usage of the Reserve has been observed by the Club. This perceived growth was the catalyst to capture usage data to aid in the future management of the Reserve.

The purpose of this report is to present and discuss the findings of MTB and pedestrian data collected by the Club at the Reserve from May 2019 to December 2019. Due to the limited funding available to a volunteer organisation, the pedestrian data was only captured in two of the five entry/egress locations around the Reserve. The usage data collected is compared to two different Council managed MTB trail network locations in Australia to offer perspective. These locations are; Blue Derby, Dorset Council, Tasmania and Sugar Bag Road Sunshine Coast Council, Queensland. In the past, claimed usage of the Reserve relied on social media data, this lacks validity (Norman & Pickering 2019). Social media may be able to identify locations that are being used for the activity; however, it cannot provide a comprehensive data set of usage (Norman & Pickering 2019). For this reason, TRAFx magnetic MTB counters and infrared laser pedestrian counters were placed at strategic locations in the Reserve in an attempt to create a comprehensive data set.

The report layout consists of the “Method” where the equipment location and validation of the data is explained. The findings are presented, and a discussion is put forward acknowledging the Club’s conflict of interest with this report and their current management position. Research is added to the discussion to aid in the identification of potential future impacts under business as usual. From this, recommendations are made with regards to strengthening the data and the opportunity of future management options.

2. Method:

The TRAFx user manuals were examined to gain an operational understanding for the installation and usage of the infrared counters, MTB counters and the data analysis tool, DataNet, see Appendix 1. Local knowledge and understanding of the Reserve were utilised to select the geographical locations for the counters in an attempt to create a comprehensive data set, see Table 1 and Figure 1. The data collected from May 2019 to December 2019 was a sample used to calculate the average annual usage of the Reserve. To capture the usages of cyclists a magnetic MTB counter is used. To capture the usages of pedestrians, an infrared counter needs to be mounted near a magnetic MTB counter. The difference can be calculated by subtracting the magnetic counts from the infrared laser counts. The requirements considered for suitable counter locations include:

- Near entrance and egress locations to the trails.
- At a location where a typical user would only pass at the beginning and end of their ride.
- At a bottleneck point in trails to capture all users.
- Inconspicuous locations to minimise corruption of the data.
- Minimal gradient or slow points to enable counters to register all users in tightly bunched groups.

For this report quantitative primary and secondary data were used, the equipment used for the primary data collection includes:

- TRAFx data net subscription plan
- TRAFx MTB counters x 5
- TRAFx Infrared (IR) counters x 2
- TRAFx Dock G4
- TRAFx data package
- TRAFx Data cable with 9 pin USB adapter

For further equipment details see Appendix 1.

The secondary data is used to add perspective to the primary data, enabling annual average usages to be compared between the three locations. The secondary data consists of interviews and email correspondence of annual average usage from two different council-managed and maintained trail networks in Australia. The figures stated for Derby were from data sourced from Tourism Tasmania, a copy of this information was not made available. The points of contact for this data were:

- Kurt Martin, Recreation Trails Activation Officer for the Sunshine Coast Council in charge of the Caloundra Town Reserve, Sugar Bag Road.
- Peter Coleborn, Trails Maintenance Manager for Dorset Council in charge of Blue Derby.

The primary data are statistically analysed using the TRAFx DataNet data analysis tool. The secondary data is used as a rudimentary direct comparison to the primary data, offering perspective on the level of usage of the Reserve.

Trail Usage Data Report

Table 1 Counter location, latitude and longitude

Counter Number	Location Name	Type of Counter	Latitude and Longitude
1	Easy Street	Magnetic Bike Counter	Lat S 19° 19'51.804" Long E 146° 44'5.226"
2	Easy Street	Infrared Laser	Lat S 19° 19'51.804" Long E 146° 44'5.226"
3	Keelback	Magnetic Bike Counter	Lat S 19° 21'27.21" Long E 146° 49'16.704"
4	Pump Track	Magnetic Bike Counter	Lat S 19° 19'55.59" Long E 146° 44'5.04"
5	Windarra	Magnetic Bike Counter	Lat S 19° 19'26.676" Long E 146° 44'44.868"
6	Wobbegong	Magnetic Bike Counter	Lat S 19° 19'39.516" Long E 146° 45'5.352"
7	Wobbegong	Infrared Laser	Lat S 19° 19'39.516" Long E 146° 45'5.352"

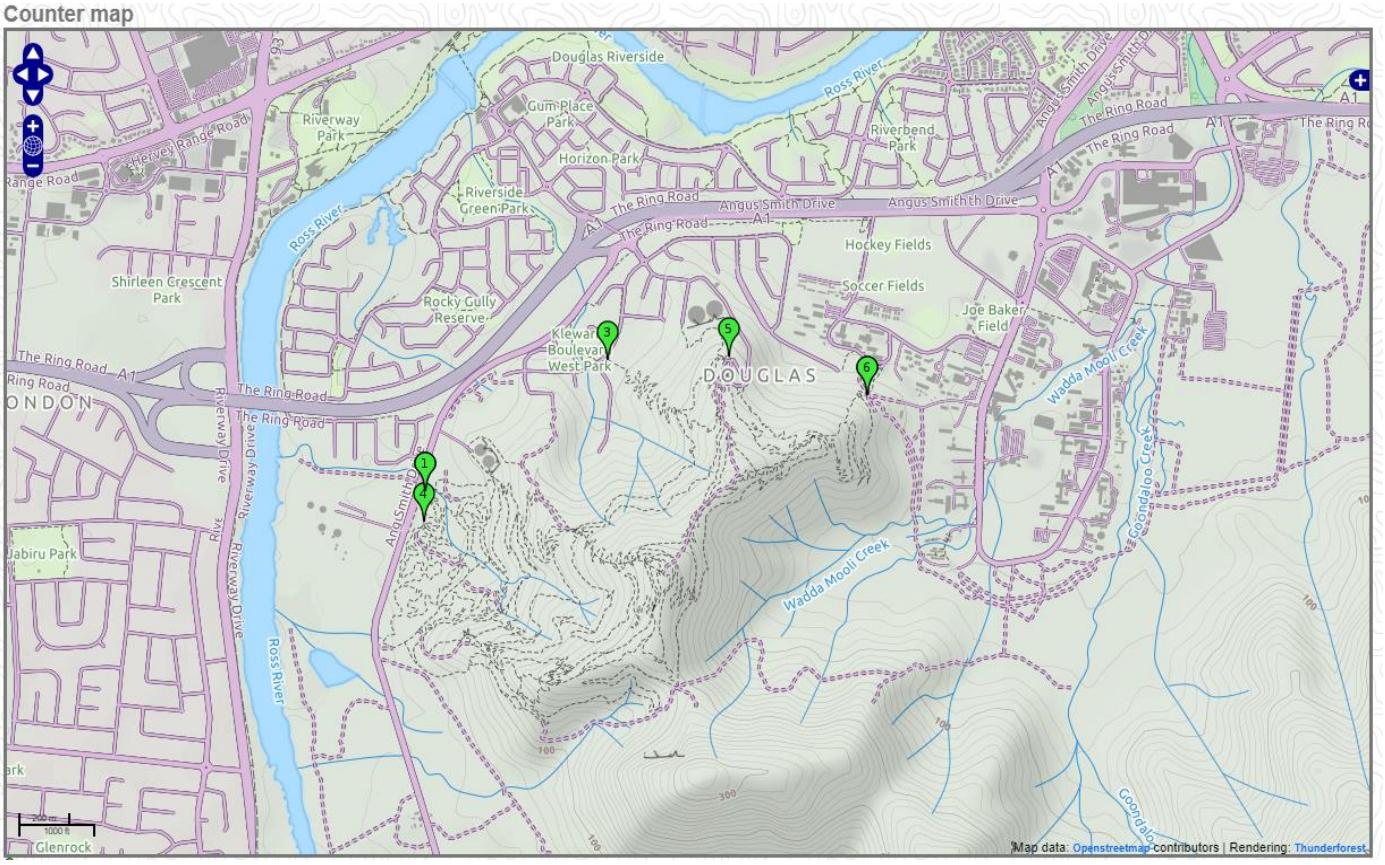

Figure 1 Counter location map, note counters 1&2 and 6&7 are in the same location respectively (TRAFX DataNet, 2020)

2.1 MTB Usage Data Validation

The raw data was initially smoothed, excluding any anomalies that fell outside of the norm understood from local knowledge of operations within the Reserve. That is large spikes in the data that did not fit with the Club's event calendar or other known increased use periods i.e. school holidays. Causes of large spikes in data can be attributed to construction and maintenance work carried out in the vicinity of counters. The process for identifying and eliminating corrupt data will now be examined.

The process begins by examining the daily totals data, see Appendix 3.1. Spikes in the data that appeared above the averages were then inspected on an hourly scale. Local knowledge of operation suggests a semidiurnal pattern of usage should be exhibited, morning and afternoon, creating to a bimodal representation in the data. Any data that did not fit with this pattern was inspected, validated and if deemed to be corrupt it was removed using the DataNet exclusion tool. After validation and exclusion, only one counter did not conform to this pattern. This is due to a race being run through the Windarra counter in the middle of the day, see Appendix 3.2. The daily average usage totals are indicative and align with local knowledge of operations, i.e. use rising through the week to a peak on Thursdays for the Club's Junior Social Day, followed by drop on Friday to weekend peaks, see Appendix 3.3. Inspecting the monthly data shows marginally higher usage during the cooler months and local knowledge can add reason to fluctuations in counters, see Appendix 3.4.

2.2 Pedestrian Usage Data Validation

Due to the fact that the pedestrian data is derived from a calculation of the infrared and magnetic counter the DataNet tool cannot provide dedicated graphs and tables. The graphs and table are a combination of the magnetic counter and the infrared counter data, the infrared counters are denoted with the letter W for walker/pedestrian. It is less obvious to recognise spikes in the infrared data; however, it is noted that in general, the infrared counters count lower than the magnetic counters. This is due to failure to discriminate between objects, further discussion on this can be found in the limitations. This is evident in the data from Easy Street where the infrared counter is constantly lower than the magnetic counter. For this reason, the data displays as a negative and therefore, it has been calculated at zero, effectively resulting in the total pedestrian data coming from just one the counter at Wobbegong W, see Table 3.

3. Results

3.1 MTB Usage for Douglas MTB Reserve

The results presented in this report are an annual averaged usage figure. The primary data collected for the Reserve is from an 8-month sample which has been extrapolated by the TRAFx DataNet data analysis tool to give an average daily total (ADT). This is then multiplied by 365 days. The ADT x 365 has then been divided by two (2), to produce the average MTB usage. This is to account for users entry and egress from the Reserve. The average annual MTB usages for the Douglas MTB reserve is 46,794, see Table 2.

Table 2 Average annual MTB usage of the Reserve (TRAFX DataNet, 2020)

TRAFx Mountain Bike Usage Master Summary May 2019 - December 2019														
Year	Site	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ADT	ADTx365	Days with data	Year start	Year end
2019	Easy st	*4,169*	4,418	4,411	3,979	3,857	4,073	3,862	3,946	133.498	*48,727*	237	2019-01-01	2020-01-01
	Keelback	*289*	159	184	150	189	191	200	169	6.238	*2,277*	244	2019-01-01	2020-01-01
	Pump track	*2,555*	2,533	2,776	2,550	2,710	3,084	2,881	2,364	87.586	*31,969*	244	2019-01-01	2020-01-01
	Windarra Ave	*693*	*668*	567	*726*	*428*	296	517	*813*	18.509	*6,756*	216	2019-01-01	2020-01-01
	Wobbegong	*367*	306	298	281	364	344	349	*281*	10.579	*3,861*	242	2019-01-01	2020-01-01
Total MTB Counts										**256.41**	**93,589.44**			
Average Annual MTB usages = Counts / 2										**128.20**	**46794.72**			

3.2 Pedestrian Usage for Douglas MTB Reserve

Obtaining the pedestrian usages data was not as straight forward as the MTB usages data. The infrared pedestrian counter data needed to be subtracted from the magnetic MTB counter. The assumption is made that the difference is pedestrians. Once the total counts for pedestrians were calculated it was divided by the same factor of two (2) as the MTB data, to produce the average annual pedestrian usages, which is 28,425, see Table 3. This figure creates a total combined annual average usage from MTB and pedestrians at the Reserve of 75,219.

Table 3 average annual pedestrian usage of the Reserve (TRAFX DataNet, 2020)

TRAFx Pedestrian Usage Master Summary May 2019 - December 2019														
Year	Site	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ADT	ADTx365	Days with data	Year start	Year end
2019	Easy st	*4,169*	4,418	4,411	3,979	3,857	4,073	3,862	3,946	133.498	*48,727*	237	2019-01-01	2020-01-01
	Easy St W	*4,717*	5,278	5,178	4,662	1,218	2,139	2,249	2,864	115.381	*42,114*	244	2019-01-01	2020-01-01
	Wobbegong	*367*	306	298	281	364	344	349	*281*	10.579	*3,861*	242	2019-01-01	2020-01-01
	Wobbegong W	*5,645*	5,305	4,813	5,543	5,921	6,259	4,204	3,077	166.332	*60,711*	244	2019-01-01	2020-01-01
Easy St Total Walkers Counts										-18.12	-6,612.61			
Wobbegong Total Walkers Counts										155.75	56,850.01			
Average annual Pedestrian Usages = Counts/2										77.88	28425.01			

3.3 Results from Derby and Caloundra

The annual average usage figure for 2019 stated for Blue Derby is 35,000 usages on 100km of trails.

The annual average usage figure for 2019 provided for the Caloundra Town Reserve is 15,000 usages for 9km of trails, see Appendix 2.

Table 4 Comparison of Management, MTB Usage, Quantity of Trails. Note Douglas MTB Reserve usage is highest, additionally, it has less quantity of trails than the next highest usage, see recommendations for the synthesis of Medium and Low figures.

Location	Management Type	Annual Average MTB Usage 2019	Length of Trails
Douglas MTB Reserve	Club - Townsville Rockwheelers MTB Club	High 46,794 Med 43,008 Low 38,707	38km
Blue Derby	Council - Dorset Council	35,000	100km
Caloundra Town Reserve (Sugar Bag Road)	Partnership - Between Sunshine coast Council and Mapleton Community District Association	15,000	9km

4. Discussion

It is acknowledged there is a conflict of interest, as this data and report have been compiled by the Rockwheelers MTB Club with the optimism of the findings being beneficial to the future mountain biking community in Townsville. For this reason, the best attempt has been made to clarify how the data has been validated and an extensive list of limitations will be offered. It is considered that the data presented for this report is veracious and of value, as it is primary data generated within the last 12 months (Berti-Equille & Ba, 2016). With the data presented, the implications can be explored.

With the high average annual usage at the Reserve, the Club is providing benefit for their members and additionally for the greater Townsville community. With the combined annual averaged usage at the Reserve at 75,219, this means for the 431 club members to be receiving the full benefits of their membership, they are each utilising the Reserve 3.4 times a week per year. This is possible, although highly unlikely. Therefore, based on the data it is an assumption that free riders are present in the market, utilising the Club's asset without paying the full cost (Field, 2016). Therefore, the Club is providing the greater Townsville community

with benefits in the form of a maintained 38km trail network with comprehensive signage. The perceived benefit to the community utilising the trails come at a cost to the environment.

The next consideration is that a socially efficient allocation of trails has been constructed by the Club for its members. The Club is responsible for maintenance and management of the Reserve as per the permit to occupy, see Appendix 5. Research shows pedestrians create a wider trails tread than MTB riders, 32.1in to 23.8in respectively (Marion, 2006). In addition, MTB riders cause less erosion than pedestrians, cross-sectional area analysis shows mountain biking has 5.9% impact on the trail tread erosion; whereas, pedestrians had an impact of, 18.8% (Marion, 2006). This research highlighting both MTB riders and pedestrians have external impacts on the environment in term of increased erosion and loss of soil formation (Robertson, 2017). With the annual averaged usage likely above just the club members, the trails are now being utilised unsustainably and the net benefits are failing to be maximised. (Field, 2016 & Marion, 2006). This implies sustainable management options need to be investigated.

Currently, the Club manages the Reserve. The park is managed to a reasonable standard although this is taxing on the volunteers. This leads to reasonable outcomes for the community, environment and economy of Townsville. Logically, this raises the question, what would the outcome be if management options akin to Blue Derby or Caloundra Town Reserve were implemented?

4.1 Limitations

The data validation process indicates to the robustness of this data, however, as mentioned there are limitations to consider before drawing conclusions. The limitations of the data consist of, the equipment used, the manner the data was collect and temporal considerations. After using the equipment for a year, the most obvious limitation is the infrared counters. Their failure to discriminate between bunched targets lead to constant low counts. Additionally, the infrared lasers are prone to sabotage, placing stickers over the lens and spider webs blocking the lens, see Figure 3. The magnetic counters provide more reliable counts; however, they are prone to ferrous mineral and electromagnetic interference, see Appendix 1. Although prone to some interference, following the prescribe validation process aforementioned, they can still present robust data. This leads to the next type of limitation, the manner the data was collected.

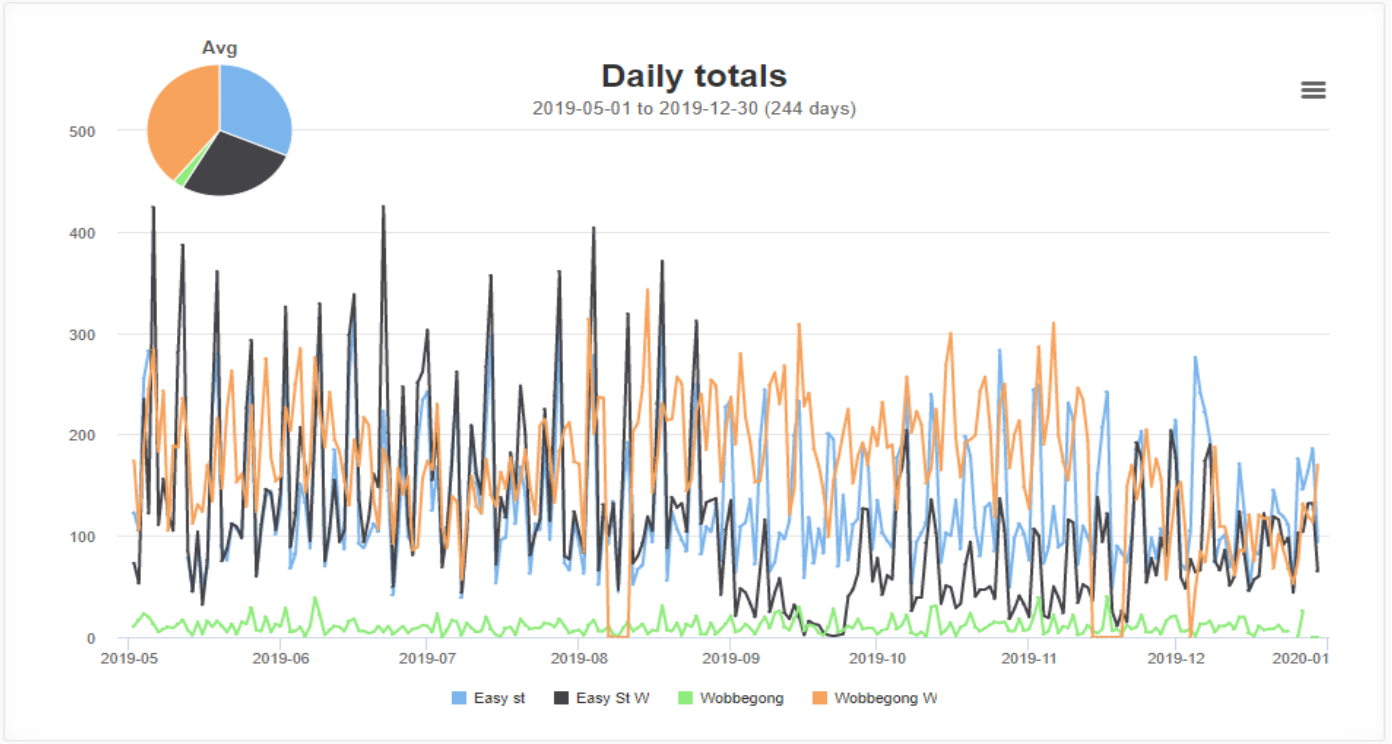

Figure 2 Daily totals for pedestrians. Note the two zero count periods from Wobbegong W due to sabotage and the constant low counts to Easy Street W after 2019-09 due to spider web infestation (TRAFX DataNet, 2020).

This data has been funded by a not for profit organisation. The installation of equipment, collection and management of the data has been conducted by a sole volunteer. These factors created limitations including:

- The quality of equipment used is reasonable, however, more expensive and precise equipment is available.

- The time required to compile data and perform the comprehensive analysis is challenging for a volunteer. Data was collected and rudimentarily analysed on a monthly basis. If collection and analysis are conducted weekly more robust results may be achieved.

- The installation of equipment, sampling and analysis of data has been a trial by error.

These points lead to the final limitation, temporal considerations. The data provided does not include information from the wet season. The figure giving in this report is the average annual usage for 2019. Due to the 2019 January/February floods the Reserve was closed for the month and limited use followed for 2 months. Data was not collect at this time, therefore, higher average daily totals from the sample period have been used for the annual average. see Appendix 4. For these reasons and the fact that this is baseline data, it

is purposed that three scenarios be considered: High, as the data is presented; Medium adjust for impacts from the 2019 January/February floods; and, Low apply a conservative factor to account for the limited resources, collection schedule and analysis of the data.

- High, the sample data presented, actual annual average usages: MTB 46,794; pedestrian 28,425; combined 75,219.

- Medium, due to the 2019 Jan/ February floods and closure of the Reserve, a factor of 3,786 should be subtracted from the MTB data and 1,397 from the pedestrian data to offer a plausible representation of actual annual average usage of the Reserve. December has been chosen as it is the only month with a complete sample data set with similar weather to February. This would result in the adjusted annual average usages: MTB 43,008; pedestrian 27,028; combined 70,036.

- Low, due to the insufficient resources, collection and analysis schedule it would be further prudent to apply a conservative discount factor of 10%. Resulting in the conservative annual average usages: MTB 38,707; pedestrian 24,325; combined 63,032.

4.2 Recommendations

It is recommended that:

- This is baseline data be accepted and as a good starting point for measuring usage growth at the Reserve.

- Data collection be continued, and where possible utilise superior resources to enhance the robustness of the results.

- The Club explore sustainable management options which are required with regards to mountain biking, hiking and trail running, in the interest of Townsville's community, environment and economy.

- The Club explore acquiring resources to investigate sustainable management options, primarily focusing on maximising the net benefits for Townsville's community, environment and economy e.g successful outcomes are evident in the two locations compared in this report. See Appendix 6.3 for memorandum of understanding for partnership employed by the Sunshine Coast Council.

5. Conclusion

This research was conducted on behalf of the Rockwheelers MTB Club, land managers of the Douglas MTB Reserve.

The purpose was to create a robust baseline data set of MTB and pedestrian usage for the Reserve. Then adding perspective to the findings by comparing the Reserve to two nationally recognised mountain bike destinations; Blue Derby and Sugar Bag Road.

The data was collected using TRAFx infrared and magnetic trail counters and analysed using the TRAFx DataNet. Limitations discussed lead to the recommendation of considering three scenarios of use, high, medium and low. The finding displayed that the Douglas MTB Reserve had had the largest annual average usage for 2019 even when using the low figure of 38,707. The length of trails at the reserve is 38km, less than the second-highest usage location, Blue Derby with 35,000 usages and 100km of trails. Combining the MTB and pedestrian usage at the low figure totals 63,032 annual average usages that the Club is liable to manage. Whereas Blue Derby and Sugar Bag Road for 2019 managed 35,000 usages and 100km of trails and 15,000 usages and 9km respectively.

This report is a baseline for the average annual usage of the Reserve. As recommended, continued data collection and analysis is required to measure the growth of the Reserve, in addition, future sustainable management decisions are required with regards to mountain biking, this will result in benefits for Townsville's economy, environment and community.

References

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Appendices

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Appendix 1: TRAFx Instruction Manuals

https://www.trafx.net/downloads/TRAFx_Manual_Part_I.pdf?v=191210

https://www.trafx.net/downloads/TRAFx_Mountain_Bike_Counter_Instructions.pdf?v=191210

https://www.trafx.net/downloads/TRAFx_Infrared_Trail_Counter_Instructions.pdf?v=191210

https://www.trafx.net/DataNet%20Quick%20Guide.pdf?v=191219

Appendix 2: Caloundra Town Reserve Trail Data

Travis Bailey

From: Kurt Martin <Kurt.Martin@sunshinecoast.qld.gov.au>
Sent: Thursday, 6 February 2020 11:05 AM
To: Travis Bailey (Tsv Rockwheelers)
Subject: RE: Sunshine coast trial usage data.
Attachments: Caloundra Town Reserve Landscape Concept Plan(endorsed).PDF; Signed MOU.PDF; Trailworx Sugar Bag Road MTB Concept Design v1.3.PDF

Travis,

Happy to discuss, I'm fairly free today any time after 2:30 or so. If you have the time have a look at the attached and then feel free to ring on the desk number below, If I'm out of the office if you let it ring it will go thru to the mobile.

I have attached them just for your interest and some background info for Sugar Bag.

Sugar Bag endorsed Landscape Plan : this gives a good overview of council's main MTB trails site and the future direction we are generally heading in.

Signed MOU, about to be renewed: that has formed the working relationship between council and the local club CORCA

Trail plan: that flowed out of the overarching landscape design.

I just collected the trail counter data from our network and the numbers show that we likely got somewhere around 15k riders in the network in 2019. In short I think we are getting between 250-300 riders a week with about 20 -25 daily riders during the work week and 50-60 riders on a Saturday or Sunday. And that falls in line with what I see happening on the ground across the year.

Individual counts

Beez Kneez : 48,185 rides (Trails is ridden by riders 2-3 times on average from on the ground observations)

Party Mix: 12,591 rides (Our green x-country loop, normally only ridden once per visit, but ignored by a lot of the kids, they just loop Syrup or Beez Kneez)

Milky Way: recorded 109,806 rides in that period, it is the feeder/multiuse use trail and it has been impacted by some changes due to the new carpark and the profile of the counts tells me the data is bad. Due to changes in background vegetation and solar exposure most likely. I need to have it moved.

Look for the double hump daily profile(morning and afternoon peaks) also a weekly profile that has a weekend spike. If the counters are showing something else than that there is likely errors in the data unless you can explain a pattern that is outside the normal use patterns you see for trails.

I also trim all data points out that show a peak use more than double the average, unless I can map it to a known event. Otherwise I play it safe and assume some sort of error, blowing vegetation etc.. and remove it from the data set.

For example when the club has a local ride on the network it almost doubles the traffic on that day against the average, so I keep it in the count. A lot of the club will be riding at other locations on their Saturday club ride so I can clearly see the "Backyard Blast" in the data when they ride the home trails.

All of these things are how I make sure I'm reporting data that I can stand behind when I take it to my internal council stakeholders and will likely be critical for making your case for your strategy.

I'm always happy to set-up an onsite and can get out local club members to be there so we can check out the trails and you can get their take on working with council. So if you and some of your members ever want to come down I'm sure CORCA would love to host you and can make it a info sharing event as well.

Anyway give me a ring and I'd be happy to talk thru this provide any advice I can.

I also have time tomorrow morning if this afternoon doesn't work as I'm on the train to Brisbane for 10am meeting.

Kurt Martin
Recreation Trails Activation Officer | Environmental Operations
Liveability and Natural Assets | Sunshine Coast Regional Council

Sunshine Coast COUNCIL

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Appendix 3: MTB Data Graphs and Tables

3.1 Daily Totals

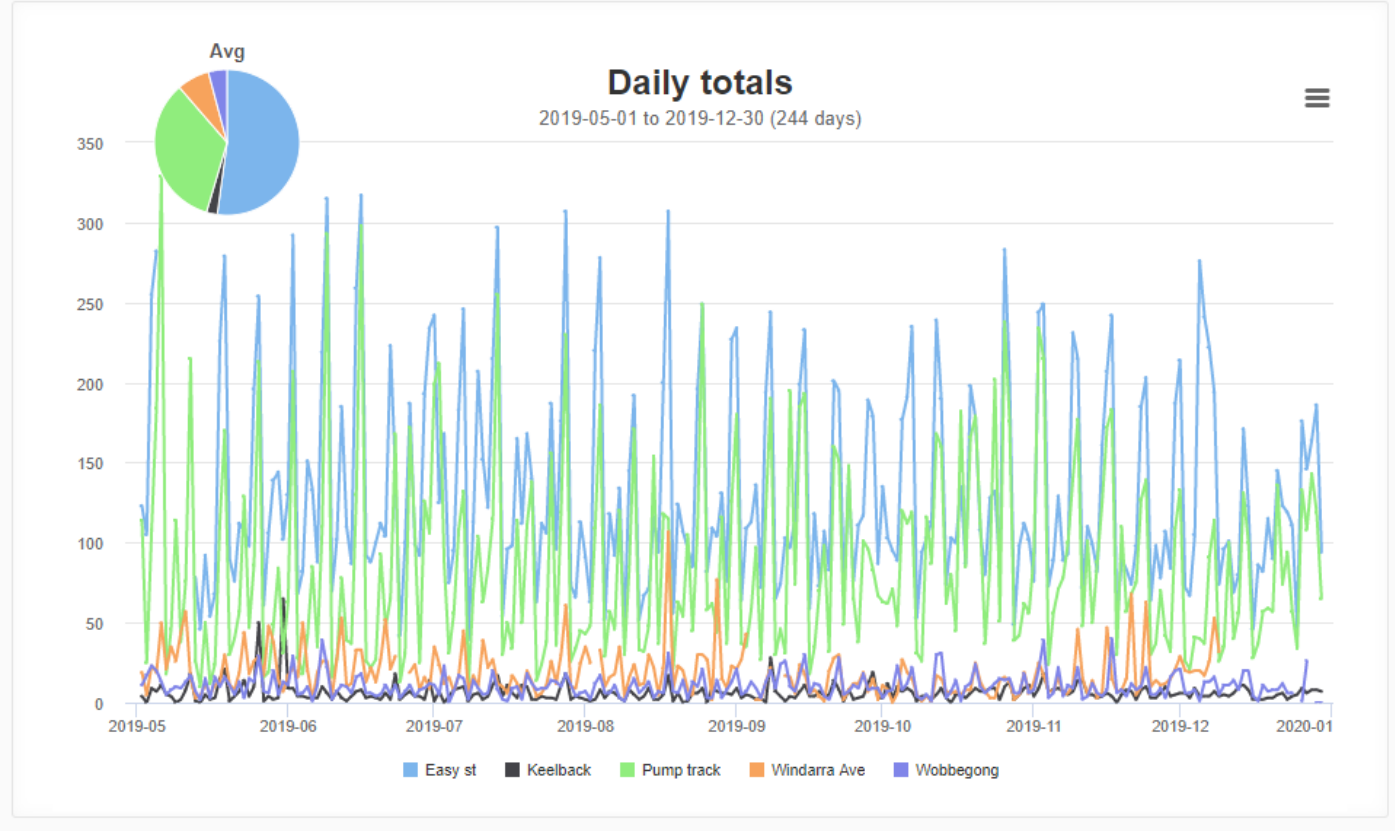
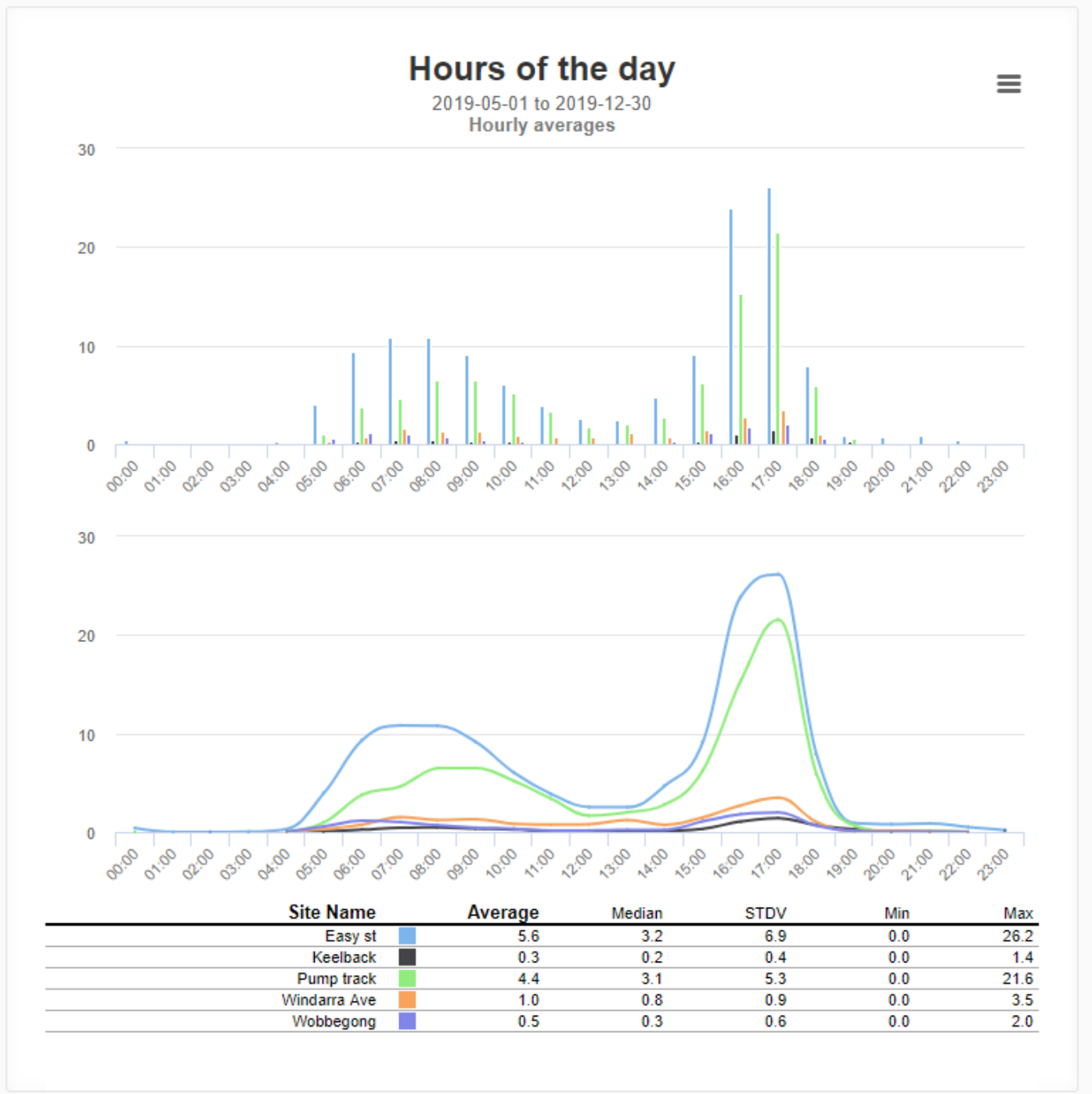


Figure 3 Daily totals. Note the relatively uniformed spikes (TRAFX DataNet, 2020).

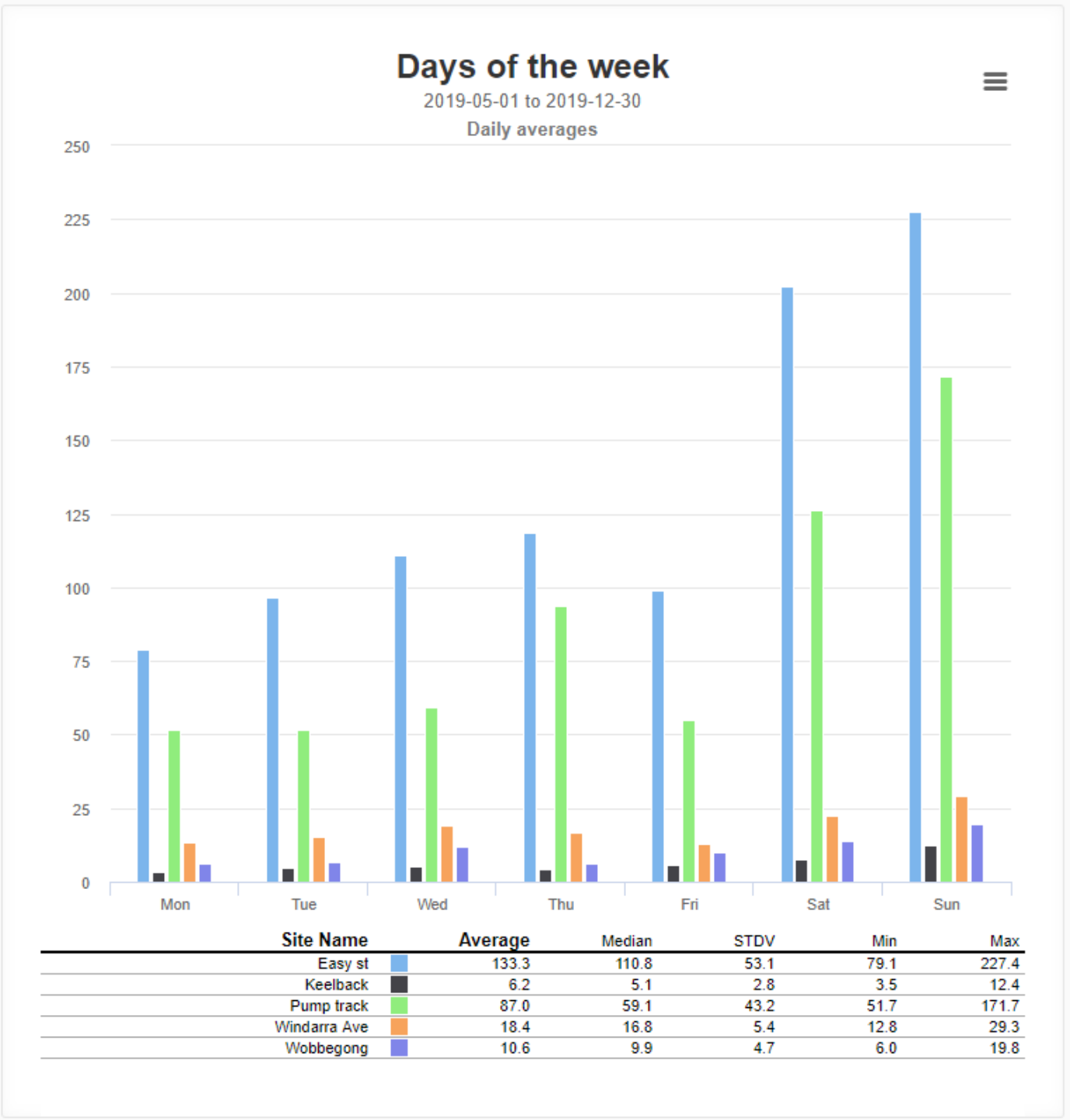
3.2 Hours Averages



Site Name	Average	Median	STDV	Min	Max
Easy st	5.6	3.2	6.9	0.0	26.2
Keelback	0.3	0.2	0.4	0.0	1.4
Pump track	4.4	3.1	5.3	0.0	21.6
Windarra Ave	1.0	0.8	0.9	0.0	3.5
Wobbegong	0.5	0.3	0.6	0.0	2.0

Figure 4 Semidiurnal bimodal pattern with the exception of Windarra. Windarra had a race run through the counter in the middle of the day. It is assumed that due to Windarra being relatively low in counts cased to race to affect the overall bimodal appearance of the data (TRAFX DataNet, 2020).

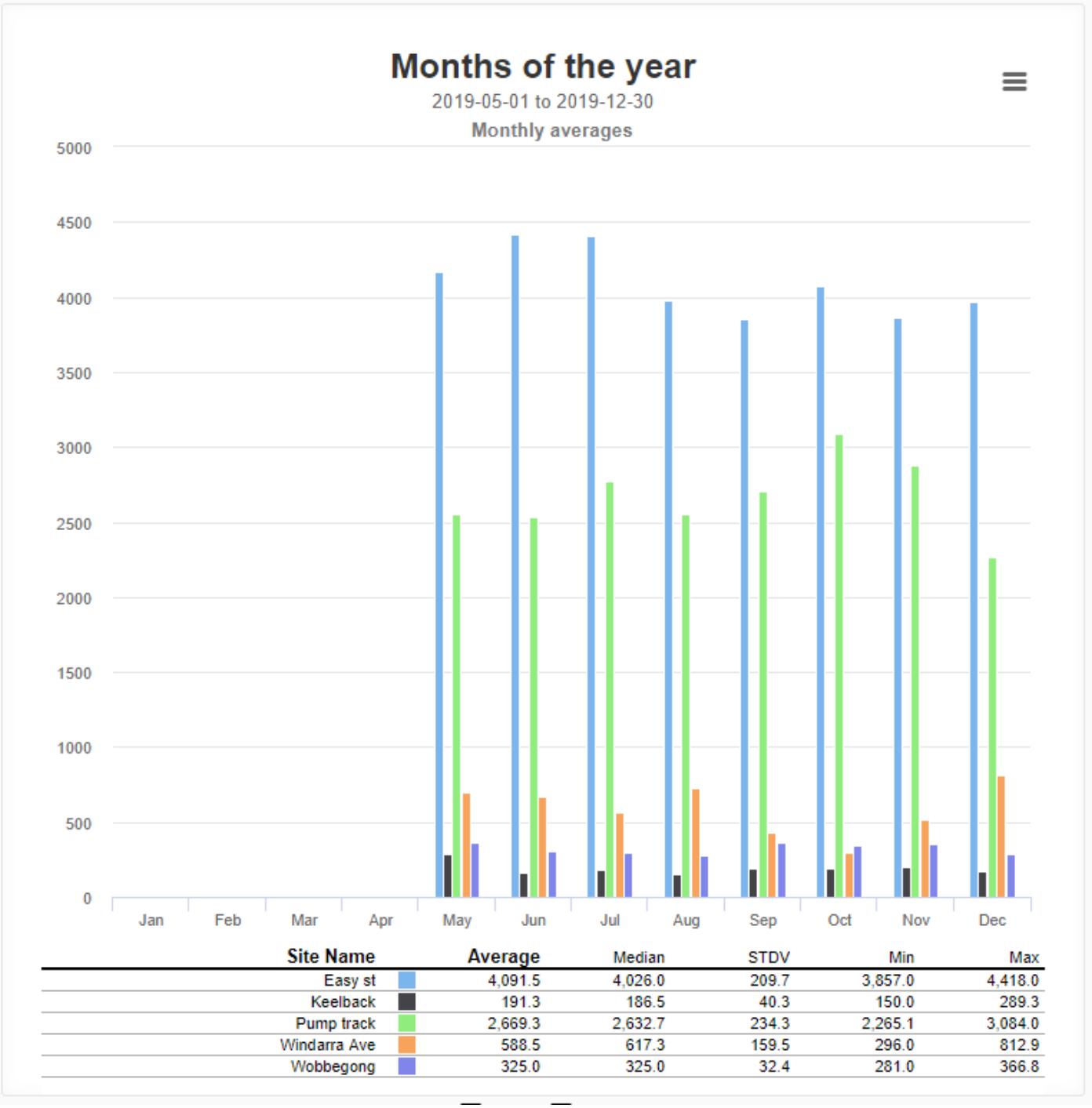
3.3 Daily Averages



Site Name	Average	Median	STDV	Min	Max
Easy st	133.3	110.8	53.1	79.1	227.4
Keelback	6.2	5.1	2.8	3.5	12.4
Pump track	87.0	59.1	43.2	51.7	171.7
Windarra Ave	18.4	16.8	5.4	12.8	29.3
Wobbegong	10.6	9.9	4.7	6.0	19.8

Figure 5 Days of the week display expected pattern of usage from local knowledge of operations. Note the spike in the pump track counter on Thursday where approximately 40 – 80 kids use the trials accessed past this counter during the school term. (TRAFX DataNet, 2020).

3.4 Monthly Averages



Site Name	Average	Median	STDV	Min	Max
Easy st	4,091.5	4,026.0	209.7	3,857.0	4,418.0
Keelback	191.3	186.5	40.3	150.0	289.3
Pump track	2,669.3	2,632.7	234.3	2,265.1	3,084.0
Windarra Ave	588.5	617.3	159.5	296.0	812.9
Wobbegong	325.0	325.0	32.4	281.0	366.8

Figure 6 Monthly averages display marginally higher usage in the coolers months. Note the drop in usage at the Windarra counter through Sep to October, this is due to construction in this area of the Reserve causing limited riding options (TRAFX DataNet, 2020).

Appendix 4: 2019 Sample Data

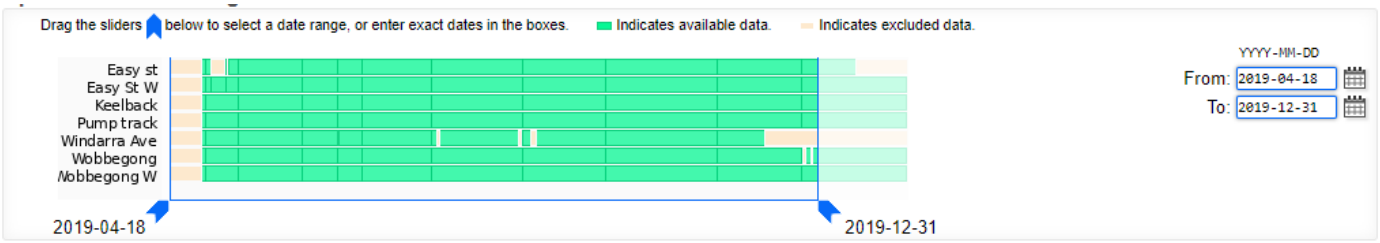


Figure 7 Data sample used to create the annual average for 2019 is shown in green. data in beige has been deemed corrupt and excluded from the sample, (TRAFX DataNet, 2020).

Appendix 5: Permit to Occupy

Author: Madonna Reid
Departmental File / Ref number: 2007/006449
Directorate / Unit: State Land Asset Management

Queensland Government

Department of
Environment and Resource Management

7 August 2009

Peter McLean
Townsville Rockwheelers Mountain Bike Club Inc
PO Box 413
Townsville Qld 4810

Dear Mr McLean

Proposed Permit to Occupy over Lot A on AP13582

It is advised that a Permit to Occupy issued on the 6 August 2009.

The details relating to the new tenure are as follows:

Title Reference: 40058914

Lot	Plan	Parish
A	AP13582	Stuart

Area (ha): 116 (ha) About

Tenure Ref: PO 0/233510

Tenancy: Permittee

Grantee Townsville Rockwheelers Mountain Bike Club Inc

Your application is now finalised. Please find enclosed a copy of the recording advice for your records.

Wherever possible, it is appreciated if correspondence is directed to State Land Asset Management (SLAM) electronically. Our email address for this purpose is Townsville.SLAMS@derm.qld.gov.au (please no larger than 4MB). Any hard copy correspondence received is electronically scanned and filed to enable processing. For this reason, it is recommended that any attached plans, sketches or maps be no larger than A3-sized.

Should you require any additional information on the above, you may contact Colleen Mann on telephone number (07) 4760 7450, quoting reference number 2007/006449. Please also quote such reference in any future correspondence.

Yours sincerely

Madonna Reid
Land Administration Officer
State Land Asset Management
Land and Vegetation Services
North Region

6 August 2009

Enquiries to: Reid, Madonna
Telephone: (07)47997200

RECORDING ADVICE - NEW DOCUMENT

Case: 2007/006449 Action: 1 NT - Permit to Occupy

Service Centre: Townsville

Permit to Occupy No.233510 commenced on 23 June 2009.

Other details relating to the new tenure are as follows:

Title Reference: 40058914

Lot	Plan	Parish
A	AP13582	Stuart

Area (ha): 116.0000 (ha) About.

Tenancy: PERMITTEES

Permittee
TOWNSVILLE ROCKWHEELERS MOUNTAIN BIKE CLUB INC

Tenant Correspondent: Townsville Rockwheelers / Townsville
Correspondence Address: PO Box 413
TOWNSVILLE QLD 4810

Conditions:

A92

(1) The permittee must use the permit area for recreation purposes namely mountain bike riding only and excluding motorbikes and off-road cars.
(2) This permit may be cancelled if not used for the purpose stated above.
(3) The permit may be cancelled after giving the permittee reasonable notice in writing, in accordance with the Land Act 1994 .
(4) The annual rent must be paid in accordance with the Land Act 1994.
(5) The Parties acknowledge that GST may be payable in respect of a supply made under this permit. Where GST becomes payable in respect of a supply made under this permit, the State (lessor) may recover the GST from the permittee by increasing the consideration payable by the permittee to the State by an amount equal to that which the State is obliged to remit to the Commonwealth as GST on the supply and that amount may be recovered from the permittee as part of the money payable to the State under this permit. The State will upon request by the permittee, issue to the permittee a valid GST tax invoice in respect of any taxable supply made under this permit. (NOTE: For the purposes of this condition "GST" means the goods and services tax which results from the enactment of A New Tax System (Goods and Services Tax) Act 1999 and the related Acts which constitute the Commonwealth taxation reform (as amended from time to time)).
(6) The permittee must not under any circumstances enter into any arrangements to sublet, dispose of or transfer the permit.
(7) The permittee must pay the cost of any required survey or re-survey of the permit area.
(8) The permittee must control pest plants and animals, on the permit area, in accordance with the Land Protection (Pest and Stock Route Management) Act 2002

and the Local Laws and requirements of the Townsville City Council.

(9) The permittee has the responsibility for a duty of care, to take all reasonable and practicable measures to sustainably manage the permit area by conserving the physical, biological, productive and cultural values, either on the permit area or in areas affected by the management of the permit area.

(10) The permittee must ensure that the use and development of the permit area conforms to the Planning Scheme, Local Laws and requirements of the Townsville City Council, binding on the permittee.

(11) The permittee must give the Minister administering the Land Act 1994, information about the permit, when requested.

(12) The permittee must not clear any vegetation on the permit area, unless in accordance with the Integrated Planning Act 1997.

(13) No compensation for improvements or developmental work is payable by the State at the cancellation or surrender of the permit, but the permittee has the right to remove the permittees moveable improvements within a period of three months from the cancellation or surrender of the permit, provided all money due by the permittee to the State on any account whatsoever has been paid, or be required to remove those improvements as specified in any further condition of permit.

(14) This permit is subject to the Land Act 1994 and all other relevant State and Commonwealth Acts.

E17 The permittee must manage the permit area in a manner that will protect the natural vegetation, as far as is consistent with the purpose of this permitand no environmental harm (including, but not limited to environmental nuisance) is to be made in the preparation and use of the land.

H126 The permittee must, at all times during the currency of the permit, allow Townsville City Council free and unrestricted access to the permit area.

I66 The permittee indemnifies and agrees to keep indemnified the Minister administering the Land Act 1994, and the State of Queensland, (the "Indemnified parties") against all actions, suits, proceedings, claims, demands, costs, losses, damages and expenses ("Claim") arising out of or in any way connected to or resulting from the granting of this permit to the permittee or which is connected to or resulting from the permittees' use and occupation of the permit area (all of which are referred to as "the indemnified acts or omissions") save to the extent that the Claim arises as a result of any negligent act or omission of the Indemnified parties, however, any negligent act or omission of one of the Indemnified parties does not negate the indemnity to any of the other Indemnified party/ies.

The permittee hereby releases and discharges the Indemnified parties from any Claim relating to the indemnified acts or omissions which may be made against the Indemnified parties.

M551 Should it be determined at some future date by any Court that native title exists over the subject land, this permit may be terminated and the permittee or any subsequent permittee may be required to remove any works established under this permit at the permittee's or any subsequent permittee's own cost, expense and risk. In that event, no compensation for works, development costs or loss of income shall be payable to the permittee or any subsequent permittee by the State of Queensland.

Appendix 6: Recommendations

6.1 December MTB Monthly Average Usage

TRAFx Mountain Bike Usage Master Summary May 2019 - December 2019														
Year	Site	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ADT	ADTx365	Days with data	Year start	Year end
2019	Easy st	*4,169*	4,418	4,411	3,979	3,857	4,073	3,862	3,946	133.498	*48,727*	237	2019-01-01	2020-01-01
	Keelback	*289*	159	184	150	189	191	200	169	6.238	*2,277*	244	2019-01-01	2020-01-01
	Pump track	*2,555*	2,533	2,776	2,550	2,710	3,084	2,881	2,364	87.586	*31,969*	244	2019-01-01	2020-01-01
	Windarra Ave	*693*	*668*	567	*726*	*428*	296	517	*813*	18.509	*6,756*	216	2019-01-01	2020-01-01
	Wobbegong	*367*	306	298	281	364	344	349	*281*	10.579	*3,861*	242	2019-01-01	2020-01-01
Total MTB Counts		**8,073.79**	**8,083.50**	**8,236.00**	**7,686.43**	**7,547.78**	**7,988.00**	**7,809.00**	**7,573.03**	**256.41**	**93,589.44**			
Average Annual MTB usages = Counts / 2		**4036.90**	**4041.75**	**4118.00**	**3843.22**	**3773.89**	**3994.00**	**3904.50**	**3786.51**	**128.20**	**46794.72**			

Figure 8 Due to the February floods and closure of the Reserve a factor of 3,786 should be subtracted from the MTB data to offer a plausible representation of actual annual average usage of the reserve. December has been chosen as it is the only month with a complete sample data set with similar weather to February, (TRAFX DataNet, 2020).

6.2 December Pedestrian Monthly Average Usage

TRAFx Pedestrian Usage Master Summary May 2019 - December 2019														
Year	Site	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ADT	ADTx365	Days with data	Year start	Year end
2019	Easy st	*4,169*	4,418	4,411	3,979	3,857	4,073	3,862	3,946	133.498	*48,727*	237	2019-01-01	2020-01-01
	Easy St W	*4,717*	5,278	5,178	4,662	1,218	2,139	2,249	2,864	115.381	*42,114*	244	2019-01-01	2020-01-01
	Wobbegong	*367*	306	298	281	364	344	349	*281*	10.579	*3,861*	242	2019-01-01	2020-01-01
	Wobbegong W	*5,645*	5,305	4,813	5,543	5,921	6,259	4,204	3,077	166.332	*60,711*	244	2019-01-01	2020-01-01
Easy St Total Walkers Counts										-18.12	-6,612.61			
Wobbegong Total Walkers Counts		**5,278.27**	**4,999.00**	**4,515.00**	**5,262.00**	**5,557.00**	**5,915.00**	**3,855.00**	**2,795.86**	**155.75**	**56,850.01**			
Average annual Pedestrian Usages = Counts/2		**2639.13**	**2499.50**	**2257.50**	**2631.00**	**2778.50**	**2957.50**	**1927.50**	**1397.93**	**77.88**	**28425.01**			

Figure 9 Due to the February floods and closure of the Reserve a factor of 1,397 should be subtracted from the pedestrian data to offer a plausible representation of actual annual average usage of the reserve. December has been chosen as it is the only month with a complete sample data set with similar weather to February, (TRAFX DataNet, 2020).

6.3 Sunshine Coast Council Memorandum of Understanding

Sunshine Coast COUNCIL

Sunshine Coast Regional Council ABN 37 876 973 913
Locked Bag 72 Sunshine Coast Mail Centre Qld 4560
T 07 5475 7272 F 07 5475 7277 mail@sunshinecoast.qld.gov.au
www.sunshinecoast.qld.gov.au

Officer: Clare Staines
Direct telephone: 07 5420 8798
Email: clare.staines@sunshinecoast.qld.gov.au
Our reference: P-H1599

22/02/2017

Mr. Burnie Collins
Mapleton and District Community Association

Dear Burnie

RE: Memorandum of Understanding

Please find attached a copy of the Memorandum of Understanding (MOU) between Sunshine Coast Council and the Mapleton and District Community Association. This MOU is to confirm the agreement between council and the association with regard to the financial arrangement to supply and install fitness equipment at Mapleton Lillyponds. Please sign the MOU and return a copy to council for our records.

The project officer allocated to the project is Damien Large and any correspondence regarding the MOU is to be directed through him.

I trust everything is in order and thank the Association for being successful in contributing funds towards this project to improve park facilities for the community to enjoy.

Yours sincerely

Mark Presswell
PARKS & GARDENS MANAGER

Memorandum of Understanding

This document represents an agreement between

Sunshine Coast Council
And
Mapleton and District Community Association.

Description of collaborating organisation/s
Mapleton and District Community Association seeks to provide a forum for residents of Mapleton and District to express their opinions on any matter affecting the community. MADCA attempts to act in the interests of residents in dealing with the various levels of government and other parties and organizations and Sunshine Coast Council have agreed to enter into a joint funding arrangement for the supply and installation of exercise equipment at Mapleton Lillyponds.

Objectives and scope
This is a joint venture between two organisations to establish an outdoor fitness equipment for the local community. The objective is to provide community infrastructure that promotes an active and healthy lifestyle. The equipment to be installed is to be of good quality and meet the requirements of the local and wider community.

The nature of the collaboration
Sunshine Coast Council and Mapleton and District Community Association will work in partnership to achieve the agreed outcome for all stakeholders. Partial funding for this project will be provided by Mapleton and District Community Association and input into design and specification of fitness equipment. SCC will provide funding for an amount of $35,000 (Ex GST) as part of council's contribution and will undertake the following:

- Procurement for supply and install of exercise equipment;
- Site establishment;
- Site Supervision;
- Approval of claims for payment by successful contractor as per terms and conditions of contract.
- Communication to Mapleton and District Community Association including project status updates and media opportunities promoting joint arrangement for funding of project.

The terms of the agreement
Duration of MOU will remain current until Practical Completion of successful contractor for Mapleton Lillyponds fitness equipment being for the supply and install of acceptable submission.
Extensions of time if applicable will be coordinated by council as per the terms and conditions of the construction contract.

Roles and Responsibilities

The role of each member of the MOU is detailed below:

Mapleton and District Community Association:

- Ensure the project meets the objectives of the Mapleton and District Community Association activities and operations;
- Ensure the project aligns to the defined scope of works;
- Ensure a representative from the association is available for attendance as requested for key milestone timeframes;
- Provide any information required by council as reasonably requested by council's project officer;
- Review and provide feedback at hold points of the project; and
- Regular communication with council's project officer.

Sunshine Coast Council:

- Coordination and management for the delivery of the agreed scope of works;
- Undertake tender process for the project;
- Oversee the process of construction includes contract management;
- Ensure appropriate insurance and adherence to legislative requirements as required under contract law;
- Provide technical advice as required; and
- Ensure workplace health and safety practices are undertaken for the duration of the contract works.

Financial arrangements

Financial contributions between the Mapleton and District Community Association and Sunshine Coast Council are outlined below:

Council's contribution will be capped at $35,000.00 (Ex GST) – refer previous comments in "Nature of the Collaboration".

The Mapleton and District Community Association contribution will be capped at $31,818.18 (Ex GST). The club will also be responsible for payment of GST for this amount being $3,181.82 being a total amount of $35,000.00 (Inc. GST). Council will issue an invoice for payment for this amount. The invoice is payable by the Association when practical completion is received.

These terms of reference remain in force until all obligations and responsibilities of both parties are fulfilled.

Name: Barnara COLLINS	Name: Mark Presswell	Name: Tom Jamieson
Position: President MADCA	Position: Branch Manager, Parks and Gardens	Position: Branch Manager, Project Delivery
Signed on behalf of the Mapleton and District Community Association	*Signed on behalf of Sunshine Coast Council*	*Signed on behalf of Sunshine Coast Council*
Date: 5/4/17	Date: 28.2.17	Date 1/3/17