

GRAFTON BRIDGE TAXI AND BUS LANE TRIAL: FIRST QUARTER MONITORING (September – November 2015)

BACKGROUND

Grafton Bridge is a two lane bridge in central Auckland spanning Grafton Gully from Symonds St in the west to Grafton Road in the east. It is a heavily used bus and cyclist route. To improve bus services on a key public transport route, part time bus lanes were installed on Grafton Bridge in 2009. These bus lanes operated between 7am and 7pm, Monday to Friday and during their hours of operation the bridge was closed to all traffic except buses, cyclists, motorcyclists and emergency services. At other times the bridge was open to general traffic.

Because of the proximity of Grafton Bridge to Auckland City Hospital and Starship Children's Hospital, both high demand destinations for passengers, AT initiated a trial on the 2nd of September 2015 allowing taxis 24 hour access to the bridge.

Several potential risks were identified with the trial including a reduction in cyclist safety and an increase in bus travel times. These risks were further reinforced during consultation with key stakeholders. Concern for cyclist safety was raised by Cycle Action Auckland and the Waitemata Local Board. It was considered that the introduction of taxis to the bridge would decrease the safety of the bridge and discourage cyclists from using this route. As a result strict taxi driver behavioural expectations were set and monitoring metrics were specified. In order to maintain a high level of service and safety for cyclists, expectations were set that taxi drivers should not overtake cyclists and should ensure they give cyclists sufficient space when following. These restrictions were not considered unreasonable as taxis would not be unduly delayed as Grafton Bridge is restricted to 30km/hr, has a relatively short span and is at a flat grade.

In order to allow taxis to use Grafton Bridge, a resolution was passed converting the bus lanes into a new form of special vehicle lane that is available to all the vehicle classes that used the bus lanes and also to taxis. Signage and road markings were updated to show the conversion of the bus lanes to 'bus and taxi' lanes.

MONITORING

The following table outlines the monitoring to be undertaken during the 12-month trial period and the key measures for before and after analysis.

Table 1. Monitoring measures for the Grafton Bridge Taxi and Bus Lane Trial.

	Monitoring measure	More than minor effect
1	Video analysis of taxi driver behaviour (CCTV and mobile enforcement cameras):	
	<ul style="list-style-type: none"> Setting down and picking up of passengers on the bridge or its approaches. 	Observed rate greater than 0.05/hr (more than 1 instance observed for every 20 hours of monitoring)
	<ul style="list-style-type: none"> Taxis u-turning on bridge 	More than 3 recorded instances of taxis making U-turn manoeuvres on the bridge.
	<ul style="list-style-type: none"> Interaction of taxis with cyclists and motorcyclists. 	More than 3 recorded instances of taxis overtaking cyclists on the bridge; More than 2 recorded instances of cyclists being required to take evasive action because of taxi driver behaviour. More than 3 recorded instances of taxis following too close to cyclists or pressuring them to cycle faster.
	<ul style="list-style-type: none"> Interaction of taxis with buses. 	More than 3 recorded instances of bus drivers being required to take evasive action because of taxi driver behaviour.
2	Travel time analysis of buses between nodes either side of Grafton Bridge. Utilising bus GPS data.	Increase in average bus travel times of 20 seconds or more which can be attributed to the presence of taxis using the bridge.
3	Analysis of queues at Grafton Bridge/Symonds St/Karangahape Rd and Grafton Bridge/Grafton Road/Park Road intersections	During peak times more than 10% of buses do not clear the intersection approaches to Grafton Bridge on one signal phase due to the presence of taxis. During peak times more than 10% of buses are unable to exit Grafton Bridge on one signal phase due to the presence of taxis.
4	Surveys of taxi speeds (30km/hr limit).	85 th percentile speed of taxis is greater than 30km/hr 95 th percentile speed of taxis is greater than 40km/hr
5	Cyclist numbers before and after.	Cyclists number drop by greater than 10%
6	Analysis of reported crashes on the bridge and the approaches to the bridge.	More than 2 reported crashes involving taxis and buses or vulnerable road users
7	Bus driver survey.	Feedback to be assessed by trial steering group.
8	Cyclist survey.	Feedback to be assessed by trial steering group.
9	Review of any public feedback submitted during trial. Posters will be displayed at each end of the bridge for pedestrians/cyclists providing details of a web site for feedback.	Feedback to be assessed by trial steering group.
10	Review of any local board feedback during trial.	Feedback to be assessed by trial steering group.
11	Review of general vehicle infringements.	Greater than 75% increase in rate of infringements
12	Review of taxi infringements in bus lanes across Auckland.	Greater than 200% increase in rate of infringements

If at any time during the trial any of the following situations occurred, the trial was to be stopped and the operation of Grafton Bridge would return to its previous state.

- If any of the individual events defining a more than minor effect in table 1 were reached.
- If any of the limits for average measures defining a more than minor effect in table 1 were exceeded in 2 consecutive quarters.
- If any injury crashes were reported involving taxis using Grafton Bridge (unless there were extenuating circumstances).
- If an increase in average bus travel times of 30 seconds or more was observed in a one month period that could be attributed to the presence of taxis using the bridge.
- If an increase of 100% in the rate of general vehicle infringements on the bridge occurred in a one month period.
- If a steering group consisting of the Transport Services Manager, the Network Operations and Performance Manager, the PT Infrastructure and Facilities Development Manager and the Travel Demand Manager considered that the presence of taxis on Grafton Bridge was having a major negative impact on other users.

FIRST QUARTER REVIEW

The following outlines the November 2015 first quarter review of monitoring conditions for the trial. The monitoring consisted of site visit observations, speed gun surveys, review of CCTV camera footage, analysis of bus GPS data and automatic cyclist counts.

CCTV footage was reviewed between 7:00-9:00, 11:00-13:00 and 16:00-18:00 on the following days:

- Tuesday 3 November
- Wednesday 4 November
- Thursday 5 November
- Tuesday 10 November

Site visits were undertaken on:

- Thursday 19 November - 10:00 - 12:00
- Thursday 19 November - 15:30 - 18:00
- Monday 23 November - 7:00 - 9:00
- Monday 23 November - 16:00 – 18:00

Volume of taxis using Grafton Bridge: The table below shows average flows during the four days of CCTV monitoring.

Table 2. Number of taxis using Grafton Bridge during surveyed hours.

Direction	AM peak (veh/2hrs)	Interpeak (veh/2hrs)	PM Peak (veh/2hrs)	Total peak volume (veh/6hrs)
Toward K' Rd	37	26	32	95
Toward Grafton	20	21	25	65

Setting down and picking up passengers: No setting down or picking up of passengers was observed during the monitoring periods.

Taxis u-turning on the bridge: No taxis were observed to U-turn on the bridge during the monitoring periods.

Interaction of taxis with cyclists and motorcyclists: On the 3rd of September, the second day of operation, a cyclist reported being passed by a taxi on the bridge which was confirmed through review of CCTV footage. On the 18th of September a second instance was reported and again confirmed via CCTV footage. Following both instances an email was sent to all ATO's informing them and reminding them of the potential for the trial to be stopped. Following these warnings no further public notifications were made.

As part of the first quarter monitoring a further 30 taxis were observed to overtake cyclists. This number exceeded the upper limit of 3 set at the beginning of the trial. See figure 1 below and Appendix A for further examples.

No instances were observed of cyclists needing to take evasive action as a result of taxis passing or undertaking any other manoeuvres. Observations also indicated a high proportion of taxi drivers did stay an appropriate distance back from cyclists. It was also observed during monitoring that buses frequently overtook cyclists on the bridge.



Figure 1. CCTV footage showing a taxi overtaking cyclists on Grafton Bridge

Interaction of taxis with buses: No instances were observed where bus drivers were required to take evasive action as a result of taxi driver behaviour.

Bus travel time analysis: Bus travel times between bus stops on either side of the bridge were similar in September/October when compared to July/August see table 3. The only instance where travel times worsened after the implementation of the trial was for westbound traffic in the AM peak between Park Road and Karangahape Road. This average travel time increased by 2 seconds or 1.4%. This increase falls within the acceptable level.

Table 3. Change in weekday average bus travel times between Park Rd and Symonds St and between Park Road and Karangahape Rd

	Weekday average bus travel times between Park Rd and Symonds St*			Weekday average bus travel times between Park Rd and K' Rd*		
	July/Aug average (s)	Sept/Oct average (s)	Change (s)	July/Aug average (s)	Sept/Oct average (s)	Change (s)
AM Peak (7:00 – 9:00)						
Eastbound	178.5	175.5	-3	123.5	117.5	-6
Westbound	174	164.5	-9.5	147.5	149.5	+2
Interpeak (9:00 – 15:30)						
Eastbound	168	162	-6	115.5	113.5	-2
Westbound	154	150	-4	138.5	133.5	-5
PM Peak (15:30 – 18:30)						
Eastbound	240.5	215	-25.5	168.5	147.5	-21
Westbound	173.5	159.5	-14	158.5	149.5	-9

*All dwell times are excluded in the analysis.

Analysis of queues at Grafton Bridge: Taxis were not observed to contribute to queue lengths at either the Park Road or Symonds Street intersection. There were no observed instances where the presence of taxis resulted in buses failing to progress on a green phase. Feedback from bus operators has however indicated that this is an issue and sometimes requires buses to take two phases to exit the bridge.

Taxi speeds: Samples of mid-bridge speeds were measured using a speed gun over several site visits. Only taxis unimpeded by other users were measured. Due to low taxi volumes and the presence of other users on the bridge only a small sample of speeds was able to be collected (57). The 85th percentile speed of these taxis was 44.3km/h which is higher than the 30km/hr limit set at the beginning of the trial.

Cyclist numbers: Cyclist numbers are counted by an automatic counter on Grafton Bridge, see table 4. The numbers of cyclists in September and October were higher than in the same months in previous years. When taken as a percentage of the year's total (excluding November and December) the number of cyclists in September and October was very similar to previous years. It does not therefore appear that the trial has had an effect on the number of cyclists using Grafton Bridge.

Table 4. Cyclist numbers on Grafton Bridge over the last three years.

	2013		2014		2015	
	No of cyclists	% of Jan-Oct total	No of cyclists	% of Jan-Oct total	No of cyclists	% of Jan-Oct total
September	12649	8.8	12072	8.8	12905	8.9
October	16017	11.1	14115	10.3	16083	11.1
Jan-Oct	143901		137422		145393	

Crashes on Grafton Bridge: Since September there have been no reported crashes on Grafton Bridge involving taxis.

General vehicle infringements: An increase in the incidence of general vehicles illegally using Grafton Bridge during the operating hours of the special vehicle lane was seen when monitoring CCTV footage. While the rate of infringement during the midday peak increased more than 100% because the rates of infringement decreased during the other peak periods, the overall increase in the rate of infringements falls within the allowable range, see table 5.

Table 5. Average rates of general vehicle infringements before and after the implementation of the Grafton Bridge Taxi and Bus Lane Trial.

	Average rate of infringement before the trial (infringements/hr)*	Average rate of infringements during the trial (infringements/hr)**	Increase in rate of infringements (%)
AM peak	2.25	1.63	-27.5
Interpeak	3.5	8.38	139.4
PM peak	9.25	6.25	-32.4
Total	5	5.42	8.4

*Rates of infringements before the trial were measured over two days

**Rates of infringement after the trial were measured over 4 days.

CONCLUSION

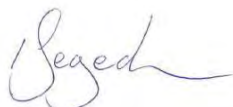
The presence of taxis did not appear to have a significant negative effect on the operation of Grafton Bridge in terms of reducing cyclist numbers or affecting bus travel times. This was because the number of taxis using the bridge during peak times was limited.

Despite a focus on educating Approved Taxi Organisations and their drivers, the monitoring highlighted a widespread failure to adhere to the set speed limit on the bridge and the requirement not to overtake cyclists on the bridge. This is concerning as during the trial taxi drivers should have been receiving significant pressure from their management to adhere to the conditions of the trial. If the trial was adopted on a permanent basis it would be expected that driver behaviour would deteriorate further.

The actual effect of taxi driver failures on safety is difficult to quantify especially when a large number of buses also regularly overtake cyclists; however a clear objective of the trial was that the presence of taxis would not decrease safety or the perception of safety for the large number of cyclists using the bridge.

RECOMMENDATIONS

Based on the number of taxis observed overtaking cyclists and the failure of taxi drivers to adhere to the speed limit on Grafton Bridge, it is recommended that the trial be stopped and Grafton Bridge return to its previous operation as a bus lane between the hours of 7:00am and 7:00pm.



Tim Segedin

edin Director

APPENDIX A: Taxis Overtaking Cyclists



