

Assessing the value of bus priority in Hamilton's City Centre



Andy Lightowler
(BSc (Hons), FCILT)
Technical Director (Beca)

Kirsty Horridge
Network Engineer
Public Transport
(Hamilton City Council)

Background

Hamilton Transport Centre is the main passenger transport interchange in the City of Hamilton. It is key boarding, transfer and exit point for many bus users in the City. All bus services to and from the Transport Centre use some or all of the 'precinct' around it that is formed by Bryce Street between Tristram Street and Victoria Street.

Traffic on the approaches to and exit routes from the Transport Centre can become congested at peak times

on weekdays, adversely affecting the reliability and journey time bus services.

Use of bus services in the Hamilton area has increased significantly over recent years. Bus patronage across the Hamilton City network has increased from approximately 1.5 million passenger boardings in 2002/3 to nearly 3.5 million in 2007/8 and more than five million at present.



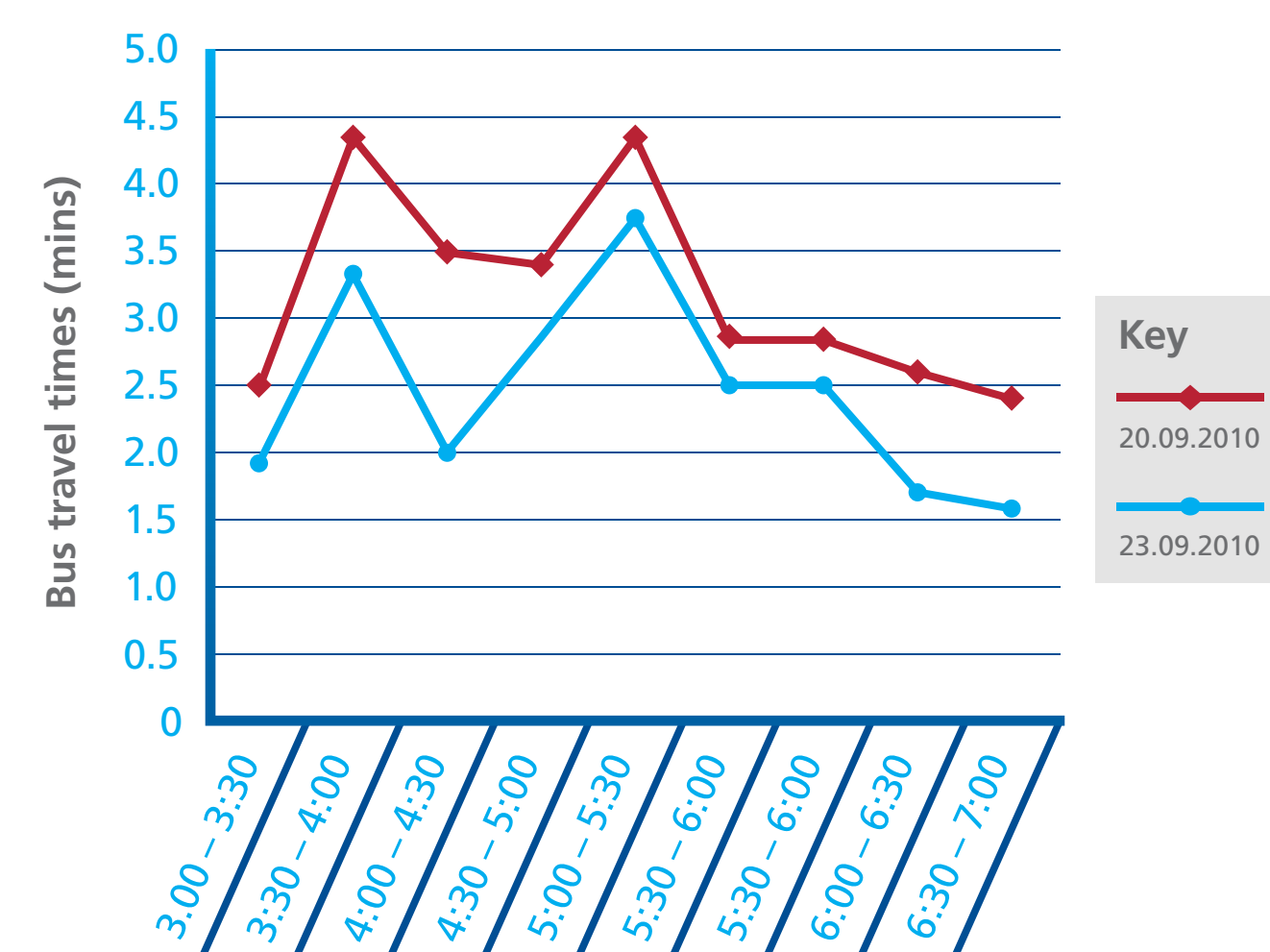
▲ Hamilton Transport Centre



▲ Hamilton City Centre

Identification of Current Problems and Issues

The range of times it takes for a bus leaving the Hamilton Transport Centre to travel along Bryce Street and pass through to the Bryce Street / Victoria Street intersection is summarised below.



▲ Mean Bus Travel Times from Hamilton Transport Centre to Victoria Street

A number of problems and issues were identified, as summarised below.

Transport Centre Exit

In the PM peak on Mondays to Fridays, buses experience delays egressing the Transport Centre onto Bryce Street. Delays occur for four main reasons:

- The Transport Centre exit only has a single lane

- There is a heavy east/west pedestrian flow on the north side of Bryce Street, delaying existing buses
- Bus departure times are co-ordinated so that most services are bunched together
- Traffic flows on Bryce Street at the Transport Centre exit are heavy.

Bryce Street between the Transport Centre Exit and Anglesea Street

At peak times on weekdays buses experience delays on Bryce Street between the Transport Centre exit and Anglesea Street. These delays occur principally because of:

- The limited capacity of the Bryce Street / Anglesea Street intersection
- The high volume of pedestrian crossing demand at the Bryce Street / Anglesea Street intersection.

Bryce Street between Anglesea Street and Victoria Street

At peak times, eastbound buses experience delays on Bryce Street between Anglesea Street and Victoria Street principally because of:

- The limited capacity of the Anglesea Street / Victoria Street intersection
- Vehicles parking for short durations illegally on the north side of Bryce Street in order to access businesses and services located on the north side of the road.

Potential Solutions

It was established during the course of the study that Environment Waikato have plans to revise the timetable of bus services to minimise the 'bunching' of departures from the Transport Centre. However, given the uncertainty which exists over whether these timetable changes will be implemented, a number of other options were identified to address issues at the Transport Centre exit. These are as follows:

- Options to improve the Transport Centre exit
- Options to provide priority for buses on Bryce Street between the Transport Centre exit and Anglesea Street
- Options to provide priority for buses on Bryce Street between Anglesea Street and Victoria Street.

Transport Centre Exit

The following broad options were identified to address traffic and pedestrian crossing issues at the Transport Centre exit, as summarised in the table below.

Option	Option Description	Traffic Operations	Pedestrians	Road Safety	Cost	Overall Score
A.1	Widening of the Transport Centre exit to two lanes	3	-2	-3	3	1
A.2	Provision of traffic signal control at the Transport Centre exit	3	-1	-2	2	2
A.3	Provision of traffic signal control with an all-red pedestrian crossing phase	2	2	2	2	8
A.4	Widening of the Transport Centre exit and provision of traffic signal control with pedestrian crossing facilities to a Central island at the Transport Centre exit	3	-1	-1	1	2
A.5	Widening of the Transport Centre exit and provision of traffic signal control with pedestrian crossing facilities at the west side of the exit	2	0	0	1	3
A.6	Widening of the Transport Centre exit and provision of traffic signal control with pedestrian crossing facilities at the east side of the exit	2	1	1	1	5
A.7	Widening of the Transport Centre exit and provision of traffic signal control with an all-red pedestrian crossing stage	2	2	2	1	7
A.8	Widening of the Transport Centre exit and provision of traffic signal control with 2-stage pedestrian crossing facilities at the west side of the exit	2	0	0	1	3
A.9	Widening of the Transport Centre exit and provision of traffic signal control with 2-stage pedestrian crossing facilities at the east side of the exit	2	1	1	1	5



Priority for Buses on Bryce Street between the Transport Centre Exit and Anglesea Street

Two options were identified to provide priority for eastbound buses travelling on Bryce Street between the Transport Centre exit and Anglesea Street. There were a bus lane on the left hand side of the road **Option B.1** and a bus lane on the right hand side of the road **Option B.2**

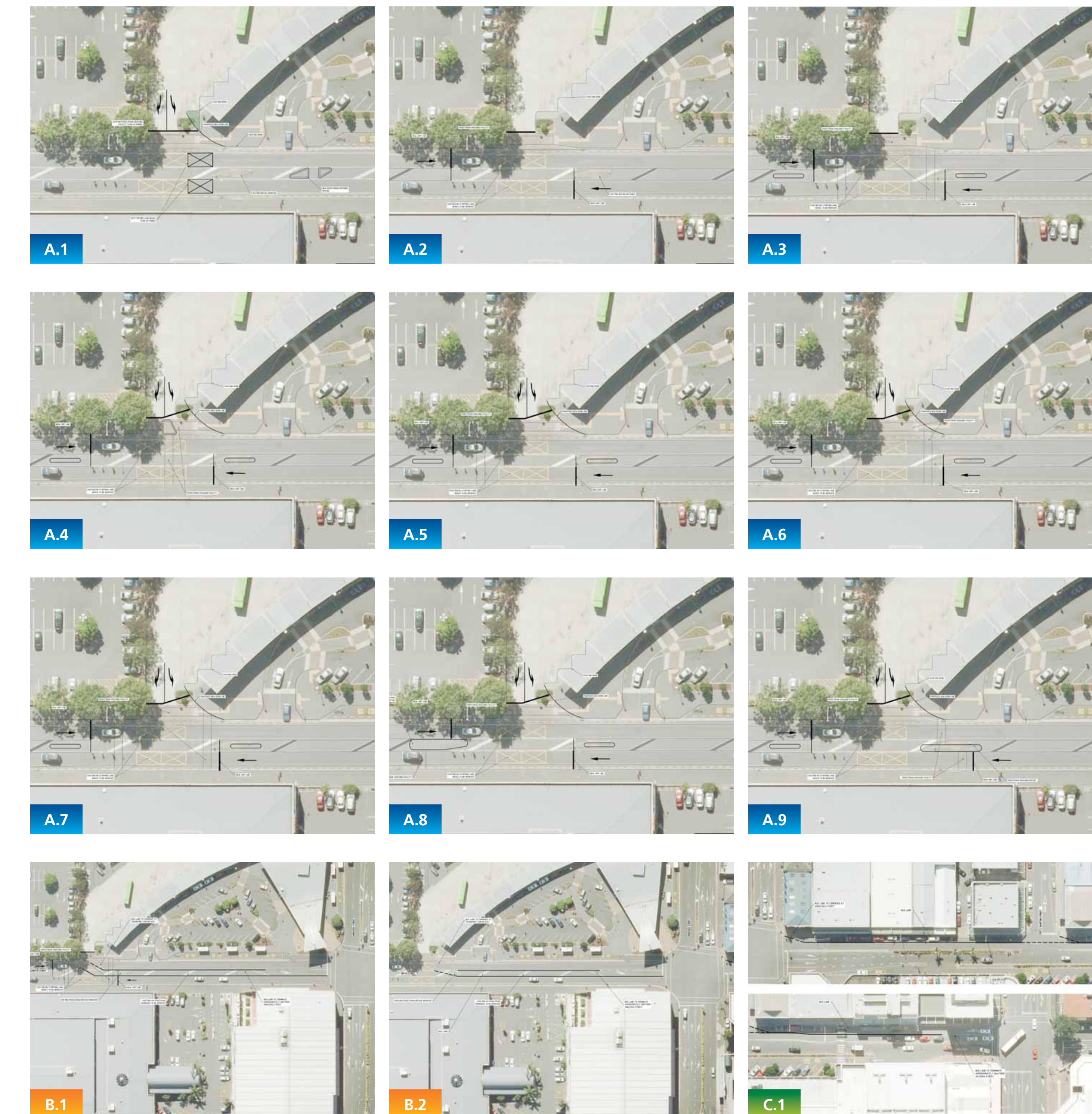
Priority for Buses on Bryce Street between Anglesea Street and Victoria Street

A narrow eastbound bus lane can be provided on the left hand (near) side of Bryce Street, between Anglesea Street and Victoria Street **Option C.1**

Evaluation of Options

The table below provides an overall ranking of the options for the Transport Centre Exit in relation to the evaluation criteria considered.

Option Plans



Conclusions and Recommendations

Transport Centre / Bryce Street Exit

The evaluation of options indicated that the best option was to widen the Transport Centre exit from one to two lanes (Option A.1). However, as this would require pedestrians on the north side of Bryce Street to cross a wider length of road at the Transport Centre exit, it was not recommended to be implemented.

The introduction of traffic signal control to the existing intersection layout (Option A.2) is predicted to reduce delays to buses, but does not incorporate any formal pedestrian crossing facilities, it was not recommended.

The provision of traffic signal control incorporating an 'all red' pedestrian phase (Option A.3) provides formal pedestrian crossing facilities for all pedestrian crossing movements, and was predicted to reduce delays to buses and have no significant adverse impacts on other road users.

Options A.4 to A.9 involves widening of the exit from the Transport Centre from one to two lanes. Options A.4 and A.9 have sub-standard design features and options A.5, A.6 and A.8 do not provide adequate facilities for pedestrians.

Implementation of the Option A.7 scheme (which is the same improvement as Option A.3 but incorporates widening of the Transport Centre exit) may be justified in the longer term, but does not appear to be necessary at present. This option could be implemented as a subsequent stage of the Option A.3 scheme.

Overall, Option A.3 was found to be the preferred scheme. This is subject to more detailed analysis of the impact of the proposal at other times of the day and the impact of traffic signal control on the operation of the wider road network in Hamilton city centre.

It was recommended that further discussions take place with Environment Waikato to implement bus service timetable changes to reduce the amount of bunching of services.

Priority for Eastbound Buses on Bryce Street between the Transport Centre Exit and Anglesea Street

Implementation of a bus lane on Bryce Street has the potential to contribute to reduced bus travel times, whilst having no significant impact on other road users. The

scheme complements the recommended improvements to the Transport Centre exit and could be implemented as an initial or subsequent phase of the Option A.3 scheme.

A left hand side bus lane (Option B.1) was concluded to be preferred to a right hand bus lane (Option B.2), as the majority of buses turn left or travel straight ahead at the Bryce Street / Anglesea Street intersection.

Priority for Eastbound Buses on Bryce Street between Anglesea Street and Victoria Street

There is insufficient room for a bus lane to be provided on Bryce Street between Anglesea Street and Victoria Street at present. As the majority of delays to bus services using Bryce Street appear to be caused by parked cars, it was recommended that the hours of operation of the existing clearway be extended. It was also suggested that current delays to bus services are addressed by additional measures to ensure enforcement of the existing traffic regulations.