
REPORT 2
(1215/52/IM)

BUS PRIORITY PLAN UPDATE AND TRIALLING TAXI USE OF BUS LANES

1. Purpose of Report

To update Committee on Bus Priority initiatives and seek approval for trialling taxis in a number of existing bus lanes.

2. Executive Summary

The SPC committee approved a Bus Priority Plan for Wellington in April 2007. While it is accepted Wellington City will continue to grow, there is a need for a strong and reliable transport system to meet the current and future demand for travel through the prudent allocation of road space to buses. This can be achieved as buses are recognised as the most efficient movers of large numbers of people. By giving targeted priority to buses in some areas of the network we can improve journey times and improve the reliability of the service which in turn enhances the attractiveness of public transport.

Monitoring of existing bus priority schemes continue to show sustained benefits for bus travel times. These travel time savings have had no detrimental effect on general traffic travel times and in some instances reduced general traffic travel times have also been achieved.

Where bus lanes would not be fully utilised under current demand, spare capacity can be utilised by allowing vehicles, including taxis with a number of passengers, to use them. This would encourage ride sharing and improve the efficiency of private car use. The bus lanes can also be used for cyclists, giving riders a degree of priority.

It is considered that the same rationale could be extended to a number of existing bus lanes which would allow greater opportunity for taxis to use bus lanes. As a means of monitoring the effect of making this change it is proposed that taxis be approved to use bus lanes for a trial period and that the effect of this be monitored. This would be restricted to "in service" taxis.

In line with the economic analysis it is proposed to give priority to developing schemes for the central city first. This is because central city schemes will give the greatest benefit to the most people and achieve the biggest improvement in bus journey times and reliability. The first proposed schemes will cover

Courtenay Place and the supporting streets of Taranaki St, Kent Terrace and Cambridge Terrace. The proposal is in line with the Courtenay Place precinct plan. This and each individual scheme will be brought back to Committee for approval prior to implementation.

3. Recommendations

It is recommended that the Committee:

1. *Receive the information.*
2. *Agree to the trial of “in service” taxis using existing bus lanes in Adelaide Rd, Glenmore St, Chaytor St, Kaiwharawhara Rd for one year. The trial will be monitored and results reported to SPC.*
3. *Note that detailed bus priority schemes are being developed, firstly for Courtenay Place, Kent/Cambridge Tce and Taranaki Street, followed by the central city. The first of which will be brought back to committee for approval in June 2008.*

4. Background

4.1 Introduction

Wellington is a dynamic and growing city, and transport has an important part to play in supporting and directing that growth. Transport affects the liveability of the city, the economic growth and it influences where people choose to live. Ultimately, these factors affect our international competitiveness, and our long-term future as a city.

On many indicators Wellington’s transport system is performing well: our traffic congestion levels are lower than many comparable cities and our public transport rider-ship is higher. We are a compact city with short travel distances and a good level of connectedness.

However, Wellington’s transport needs are continuing to increase in line with the economic expansion and population growth. These changes are placing added demands on the transport infrastructure needed to support the city. Our good use of bus and rail needs to increase even further in the future. Otherwise, the growing population and increasing urban development will lead to greater congestion. Greater use of public transport will make the city more liveable and support our desires for intensification particularly along the growth spine. A successful transport system will benefit the economy by ensuring people and goods can be more efficiently and easily moved around the city. It is also a more energy efficient and environmentally sustainable option than private cars.

4.2 Strategic Direction Supporting Bus Priority Measures

The further introduction of bus priority measures in the city will support a number of strategic directions.

The long term directions detailed in Council's Transport Strategy and draft Ngaurangi-Airport Corridor Study include:

- seamless passenger transport system along the growth spine. (Johnsonville to the Airport)
- bus priority measures on all main arterial routes to and through the central area
- a comprehensive travel demand management programme aimed at reducing the need for travel
- improving safety and personal security.

Specifically identified and supported in the Councils Long-Term Plan (2006-2016) as a priority in the next three years is to:

- *improve the performance of the city's passenger transport system through bus priority measures.*

4.3 Previous Committee Decisions

In April 2007 SPC considered a paper on the draft Bus Priority Plan. While there was general acceptance of the need for a bus priority plan as a means to effectively gain more efficiency out of the existing road network there were still questions on the detail of implementation.

Specifically more work was requested

- on the economic evaluation of each route to substantiate implementation priority, and
- to investigate taxis using bus lanes with a view to trialling the concept.

5. Discussion

5.1 The Bus Priority Plan

The Council has successfully introduced bus priority lanes and bus priority signals to speed up bus trips. Over the coming years it is planned to expand the network of bus priority lanes further. We have investigated each of the city's main transport corridors and analysed the implications of expanding bus lanes along each of these to grow patronage, to improve bus travel times, and improve reliability. The Plan extends to all areas where there are known or growing constraints in accessing the city or suburbs particularly at peak travel times.

The potential routes to be covered by the Plan are shown in Appendix 1.

5.2 Impacts of the Bus Priority Plan

Bus priority measures will:

- improve the reliability of bus travel times
- help reduce pressure on private transport, particularly on commuter car use

- reduce passenger trip times
- move large volumes of people efficiently.

However there will be impacts on other users of the road network. These will include:

- restrictions on parking
- some loss of private transport capacity on bus routes
- some restrictions on vehicle movements.

Currently traffic is growing at 2-3% a year. For every 1.3 people attracted to use the bus because they choose to, one car is removed from the road. And if every year 2-3% of car users can be encouraged to use the bus, current traffic capacity can be maintained and the current levels of congestion can be kept in check. To do better will improve the current situation and level of service for private vehicle users.

5.3 Implementation and Cost of Draft Bus Priority Plan

The draft bus priority plan presented in April 2007 was estimated to cost \$33 million to implement. This is expected to be reduced to between \$16 and \$20 million by the innovative use of dynamic lane lines. Dynamic lane lines will enable the traffic lanes on the roadway to be reconfigured to suit traffic conditions at different times of the day. This will reduce the extent to which physical road works are required to accommodate a bus lane and will better utilise the existing carriageway. We are currently working with Land Transport NZ to agree a national standard for the deployment of this technology.

5.3.1 Route Benefits - Costs

As requested by committee more work was carried out to establish the economic efficiency of each scheme. The results of this are shown in Table 1 below. This table shows the benefits by route for each of the schemes.

Location	Total Benefits \$000	Capital cost (non dynamic) \$000	Capital cost (dynamic) \$000	BCR (dynamic)	BCR (non-dynamic)
Adelaide Rd to Luxford	\$1,725	\$385	\$385	4.5	4.5
Newtown (Rintoul)	\$712	\$2,400	\$236	3.0	0.3
Newtown (Constable)	\$2,439	\$3760	\$2,739	0.9	0.6
Hataitai	\$2,256	\$1,802	\$1,227	1.8	1.3
Berhampore	\$852	\$6,293	\$295	2.9	0.1
Adelaide - Cam/Kent	\$2,128	\$220	\$220	9.7	9.7
CBD N & S bound	\$13,187	\$2,383	\$2,383	5.5	5.5
Willis St	\$2,101	\$2,053	\$2,053	1.0	1.0

Brooklyn	\$255	\$400	\$375	0.7	0.6
Glenmore	\$2,936	\$2,200	\$1,977	1.5	1.3
Northland	\$377	\$722	\$722	0.5	0.5
Karori	\$617	\$8,162	\$247	2.5	0.1
Molesworth St	\$482	\$196	\$196	2.5	2.5
Old Hutt Rd	\$0	\$2,915	\$2,915	0.0	0.0
Taranaki St	\$1,936	\$1,158	\$1,158	1.7	1.7
The Terrace	\$215	\$1,417	\$740	0.3	0.2
Total	\$32,219	\$36,466	\$17,869	1.80	0.88

Table 1

Each of the schemes investigated shows a positive Benefit to Cost Ratio (BCR) of up to 10 based on existing bus use. While areas closer to the central city show higher benefits, where there are greater numbers of buses and passengers, there is still merit in establishing a network into the suburbs.

The table shows the monetary benefits for passenger travel time savings and reliability. Costs are shown for both conventional and dynamic lane lining options. This in turn generates the BCR's shown in the table. When additional revenue expectations are built in as a result of increased ridership then the BCR's increase on the values shown in the table.

Our application to Land Transport NZ (LTNZ) for funding has been approached as a package. This is to ensure the package of work is funded rather than implementing the first stages of schemes where the benefits are high and potentially eroding qualifying benefits for the end of routes which are proposed to be implemented at a later date and may not attract subsidy. As a package the BCR is 1.8. This is considered good for a public transport scheme. If the extra revenue expected to be generated by increased ridership is acknowledged, then the BCR has been calculated to increase to 2.2.

This analysis is carried out by route. However it is envisaged that implementation will be carried out by installing sections which give the greatest benefits to the most users first.

5.3.2 Transit lanes

To further improve the viability of establishing the dedicated road space for buses, it is proposed that the under utilised road space be effectively used to its capacity by allowing vehicles carrying a specified number of passengers to use the lanes.

Special vehicle lanes allowing buses and vehicles carrying the specified number of passengers, including taxis, are called "Transit Lanes". This will enable the maximum benefit to be gained from any road space set aside until it can be fully utilised by buses. It is expected that any bus lane carrying less than 20 buses an hour would be designated a Transit Lane. The use of transit lanes will also allow the city a tangible means to promote and encourage ride sharing.

5.3.3 Taxi Use of Transit Lanes

Designating bus lanes as “Transit Lanes” will allow Taxis to use them. It is considered that a number of existing bus lanes could be re-designated as Transit Lanes. This would meet an expectation from the taxi industry to use bus lanes. It is proposed to trial this on bus lanes identified as suitable for transit lanes. This would provide an opportunity to monitor the effect of such a change as an incremental step to reclassifying low use bus lanes.

In discussion with industry representatives it has been agreed that the following conditions should be met during a trial:

- Taxis only use bus lanes when “in service”
- Drivers to be trained to safely use the bus lane to address earlier issues raised over safety matters.
- Trial includes Adelaide Rd, Chaytor St, Glenmore Street, and Kiawharawhara Rd.

Lambton Quay, Willis St, and Thorndon Quay are unsuitable as these areas operate as contra-flow bus lanes, in the centre of the road or carry bus numbers far in excess of 20 buses per hour.

It is expected a trial could begin once these operational issues are worked through to the satisfaction of all parties, and last for one calendar year.

5.3.4 Enforcement

To use bus lanes as transit lanes will require an adequate level of enforcement to ensure the benefits to buses are not eroded by a high level of non compliance sparked by allowing complying private vehicles to use bus lanes.

The Council has been advised by the Commissioner of Police that we can now apply to warrant enforcement officers to carry out the enforcement of bus lanes. This requires the Council to institute an approved training programme and apply to have enforcement officers warranted. This services will be available through Council’s enforcement contractor, Tenix who would be deployed as appropriate to ensure compliance on the bus lanes and in particular Transit Lanes in the future. Tenix have advised that the background systems are also in place to process bus lane infringements.

5.4 Monitoring

We have been monitoring the performance of bus lanes since their introduction in 2002. This includes the level of cycle, pedestrian and business activity adjacent to the bus lanes. The first schemes were introduced to reduce bus travel times without unduly impacting on general traffic. This has been achieved and the last surveys carried out by Traffic Design Group in 2007 continue to

show sustained travel time savings on all routes. Results for Adelaide Rd, Chaytor St, Kaiwharawhara Rd, Glenmore St, and Victoria St are shown in Appendix 2.

These results show we are still getting travel time savings for buses of 2 minutes in Adelaide Rd and a minute in Chaytor St. Some reduction in general traffic travel times is also being achieved which is particularly noticeable in Adelaide Rd. Of interest is the further drop in delays in Adelaide Rd travel times for both buses and cars this year. This is attributed to traffic signals being installed at the Basin Reserve end of the road which has brought order to the high number of pedestrian who interrupted the traffic flow. The signals have also improved pedestrian safety in this location.

Monitoring results also show a general trend towards increased cycling and walking in the vicinity of the bus lanes. It is evident from these results that the bus lanes have no detrimental effect on these modes.

Similarly the monitoring of adjacent land use has shown no discernable influence on nearby businesses from the operation of bus lanes.

The illegal use of bus lanes is also monitored. Infringement by unauthorised vehicles ranges from 0.1% in Glenmore St to 11% in Victoria St. More typical is Adelaide Rd at about 3%. While there is some infringement the levels are considered tolerable. The period of infringement is in the last 15 minutes of the peak which is arguably the busiest time. So that we do not get complacent, relying on the goodwill of law abiding drivers, the Council will need to consider enforcement, from time to time in the future, to ensure the gains made for buses are not eroded.

5.5 Forward Programme

As all routes have merit for implementation additional criteria to economic benefits was developed to help determine the proposed priority for implementation of schemes in the Plan. The criteria are:

- practical feasibility of introducing the priority measure
- projects which give the greatest travel benefit to the most people according to a ranking system
- addressing known constraints and problems in the road network
- that the impact the scheme will have on the community is manageable.

Based on this the proposed Implementation Plan will see detailed schemes developed in the following order:

- the central city
- radial routes that feed the central city
- the growth spine, taking in routes to Newtown and Kilbirnie in the south and Johnsonville in the north
- remaining key suburban routes.

This is generally shown by the plan in Appendix 1 where the routes shown in green will be implemented first, followed by those in blue, with the plan being completed by implementation of those routes shown in red.

Priority is given to schemes in the CBD area because the benefit to cost ratio (BCR) is highest and there is evidence that buses are being caught up in congestion. On some routes in the CBD the BCR is as high as 10. This indicates that a successful scheme will provide significant economic and travel benefits for the community.

It is proposed to develop detailed schemes and consult on these in line with the above priority order. Each individual scheme will be brought back to Committee for approval prior to implementation. It is expected that the first scheme covering Courtney Place, Taranaki Street, and Kent/Cambridge Tce will be brought back to Committee for approval and implementation from June 2008 onwards.

We also expect the Bus Priority Plan to benefit from work by the GWRC to increase bus service coverage and frequency. Some indication of this is given in their Passenger Transport Plan and has been reaffirmed in recent discussions with GWRC officers.

NZ Bus are also supportive of the plan and have pledged, as bus operators, to improve passenger comfort by ongoing investment in modern fleet. They are also committed to providing the trained drivers and appropriate fleet numbers to match any initiatives by the GWRC to increase service coverage and frequency.

6. Conclusion

The demand for people to travel in and around Wellington City will continue to grow. This is putting increasing pressure on the roading network which is near or at capacity. Road building will not fully address the shortfall in demand and therefore further capacity needs to be extracted from the existing system. The most effective way to gain further efficiency is to move larger volumes of people in less space. An accepted, short term and cost effective method of achieving this is to move more people by bus.

Current monitoring of existing bus lanes show a sustained reduction in travel times achieving improved reliability and a commitment to improvement for users.

To justify taking this road space and to make the best use of it, where there are currently not enough buses to do so, it is proposed to allow vehicles, including taxis, carrying a specified number of passengers to use it. This will promote ride sharing while supporting priority for buses. This type of use can be tested by allowing taxis in as an early trial so that the effects monitored before being applied to a wider number of users. Bus lanes also provide for cyclists, giving riders a degree of priority.

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Supporting Information

1) Strategic Fit / Strategic Outcome

The Council's own transport strategy, which is based on supporting wider city objectives, has as one of its key five tasks:

- The development of passenger transport systems as the main means for the movement of people along the urban development strategy growth spine.
- This is to be achieved within the overall goal for Wellington's transport network to support the economic, social, cultural and environmental well being of its citizens. The bus priority plans directly supports three relevant outcomes:
 - More liveable – *Wellington will be easy to get around, pedestrian friendly and offer quality transport choices;*
 - More sustainable – *Wellington will minimise the environmental effects of transport and support the environmental strategy;*
 - Better connected – *Wellington will have a highly interconnected public transport, road and street system that supports its urban development and social strategies.*

More specifically the pertinent initiative to achieve these outcomes for public transport is:

- *A seamless passenger transport system along the growth spine including bus priority measures on all main arterial routes to and through the central area.*

This has culminated in one of the transport priorities in the next three years being for public transport to:

- Improve the performance of the city's passenger transport system through bus priority measures.

2) LTCCP/Annual Plan reference and long term financial impact

The project is contained in the Council Plan # CX492. Capital expenditure is expected to be in line with that budgeted in the LTCCP.

3) Treaty of Waitangi considerations

No issues identified

4) Decision-Making

The report seeks endorsement of the benefits and direction to be taken in the development of future bus priority schemes.

5) Consultation

a) General Consultation

Comments have been sought from The Greater Wellington Regional Council and Stagecoach on the proposed plan as they are expected to contribute to the collective implementation of any future schemes. Their feedback is covered in the body of the report. It is proposed that consultation on specific bus priority schemes be carried out with the community as these are developed.

Taxi operators have also been involved in formulation of the criteria on the use of bus lanes proposed as a trial.

b) Consultation with Maori

No consultation carried out to date

6) Legal Implications

None identified at this point.

7) Consistency with existing policy

The report is consistent with existing WCC policy.

APPENDIX 1

APPENDIX 2

Monitoring Data Tables

BUS LANE IMPLEMENTATION	BEFORE	AFTER				
	MAY 2002	JULY 2003	JULY 2004	AUGUST 2005	AUGUST 2006	AUGUST 2007
Peak hour flow rate (vph)	1,370	-	1,190	1,170	1,300	1,180
Duration of Peak	44	45	46	46	45	38
Car free flowing time (secs)	48	48	48	48	48	48
Average car travel time during peak (secs)	242	104	93	101	117	80
Maximum car travel time (secs)	360	215	207	176	242	230
Average car delay (sec)	194	56	45	53	69	32
Maximum Car Delay (sec)	312	167	159	128	194	182
Bus free flowing time (secs)	66	66	66	66	66	66
Average bus travel time during peak (secs)	207	87	91	81	114	78
Maximum bus travel time (secs)	317	181	108	122	216	139
Average bus delay	141	21	25	15	48	12
Maximum bus delay	251	115	42	56	150	73

Table 1 : Surveyed Travel Times of Adelaide Road

BUS LANE IMPLEMENTATION	BEFORE	AFTER				
	MAY 2002	JULY* 2003	JULY 2004	AUGUST 2005	AUGUST 2006	AUGUST 2007
Peak hour flow rate (vph)	910	-	954	820	750	830
Duration of peak	63	65	45	70	70	76
Car free flowing time (secs)	54	54	54	54	54	54
Average car travel time during peak (secs)	136	138	125	147	99	104
Maximum car travel time (secs)	230	269	224	220	137	159
Average car delay	82	84	71	93	45	50
Maximum car delay	176	215	170	166	83	105
Bus free flowing time (secs)	65	65	65	65	65	65
Average bus travel time during peak (secs)	154	142	123	142	70	96
Maximum bus travel time (secs)	224	162	133	189	118	172
Average bus delay	89	77	58	77	5	31
Maximum bus delay	159	97	68	124	53	107

Table 2 : Surveyed Travel Time of Chaytor Street

*Part of Chaytor Street Traffic Lane Closed to all Vehicles

BUS LANE IMPLEMENTATION	BEFORE	AFTER				
	MAY 2002	JULY 2003	JULY 2004	AUGUST 2005	AUGUST 2006	AUGUST 2007
Peak hour flow rate (vph)	1,360	-	1,484	1,470	1,210	1,190
Duration of peak	39	45	45	60	37	58
Car free flowing time (secs)	126	126	126	126	126	126
Average car travel time during peak (secs)	194	191	173	220	161	170
Maximum car travel time (secs)	266	345	240	309	209	240
Average car delay	68	119	47	94	35	44
Maximum car delay	140	219	114	183	83	114
Bus free flowing time (secs)	132	132	132	132	132	132
Average bus travel time during peak (secs)	197	161	155	192	113	168
Maximum bus travel time (secs)	314	213	217	245	217	233
Average bus delay	65	29	23	60	19	36
Maximum bus delay	182	81	85	113	85	101

Table 3 : Surveyed Travel Times of Kaiwharawhara Road

	JULY 2004	AUGUST 2005	AUGUST 2006	AUGUST 2007
Peak hour flow rate	950	1,160	660	650
Duration of peak	62	45	37	56
Car free flowing time (secs)	50	50	50	50
Average car travel time during peak (secs)	91	156	214	87
Maximum car travel time (secs)	146	348	390	236
Average car delay	41	106	164	37
Maximum car delay	96	298	340	186
Bus free flowing time (secs)	57	57	57	57
Average bus travel time during peak (secs)	104	116	130	88
Maximum bus travel time (secs)	151	128	216	145
Average bus delay	47	59	73	31
Maximum bus delay	94	71	159	88

Table 4 : Surveyed Travel Times of Glenmore Street

	JULY 2004	AUGUST 2005	AUGUST 2006	AUGUST 2007
Peak hour flow rate (vph)	426	190	400	380
Duration of peak	50	53	52	48
Bus free flowing time (secs)	45	45	45	45
Average bus travel time during peak (secs)	265	248	267	192
Maximum bus travel time (secs)	347	349	361	482
Average bus delay	220	203	222	147
Maximum bus delay	302	304	316	437

Table 5 : Surveyed Travel Times of Victoria Street