ABERDEEN CITY COUNCIL

COMMITTEE	Enterprise Planning and Infrastructure
DATE	7 September 2010
DIRECTOR	Gordon McIntosh
TITLE OF REPORT	Strategic Public Transport
REPORT NUMBER:	EPI/10/201

1. PURPOSE OF REPORT

To advise Members of recent progress in undertaking evidence based assessments to identify areas on the City's road network where adjustments may contribute to the reliability and punctuality of buses, thereby encouraging greater use of this more sustainable mode of transport. In addition, this report identifies the need to progress the identification of a new location for the Bridge of Don Park and Ride facility.

2. RECOMMENDATION(S)

It is recommended that Members:

a) Acknowledge the assessments undertaken to date on bus Routes 1 and 2 and instruct officers to report back to this Committee as soon as the remainder of this work is concluded;

b) Agree in principle that there are journey time, punctuality and reliability benefits to be achieved by the installation of a new peak hour bus lane on the King Street/Castle Street/Union Street corridor (as indicated on the appended plan) and reduce the length of bus lane on Union Street as recommended in Section 2.10;

c) Instruct the appropriate officials to commence the necessary legislation for the required Traffic Regulation Order to implement the proposals referenced in b) above. If no objections are received at the Initial Statutory stage then instruct officers to continue with the public advert;

d) Acknowledge the lack of progress to date of possible development opportunities to deliver a new location for the Bridge of Don Park and Ride facility and the need to accelerate this; and

e) Instruct the appropriate officers to commence the necessary work to identify a preferred location for a new Bridge of Don Park and Ride site, subject to the successful allocation of future Non-Housing Capital funding through the budget process.

3. FINANCIAL IMPLICATIONS

The assessments of bus Routes 1 and 2 is currently being funded by NESTRANS. The implementation and future revenue implications of any options arising from this work will be reported back to the next meeting of this Committee.

The King Street/Castle Street/Union Street bus priority proposals are part of a wider Bus Punctuality Improvement Partnership Corridor study being funded by NESTRANS and supported and delivered by staff of each of the LABOF (Local Authority and Bus Operator Forum) partners. NESTRANS will consider a financial bid for 2011/12 for implementation, subject to other priorities and their overall funding for next financial year as this becomes known, depending on the decision of this Committee and the successful conclusion of the necessary legislation.

The likely future revenue demands of a marginal carriageway widening and additional white lining and road signs to facilitate the proposed bus lane will not be significant and can be absorbed into future revenue maintenance requirements.

There will be revenue costs associated with the Non Housing Capital borrowing necessary to develop and deliver a preferred relocation for the Bridge of Don Park and Ride facility. There are currently annual operational costs of £110K associated with the running of the present site. This includes an element for rental which would be a revenue saving for any future site owned by Aberdeen City Council. These costs would likely transfer to any new site and details of capital and revenue costs will be included in the bid documents necessary for consideration in the future Non Housing Capital Programme.

4. SERVICE & COMMUNITY IMPACT

The contents of this report link to the Community Plan vision of creating a ‘sustainable City with an integrated transport system that is accessible to all'.

Public Transport improvements will contribute to delivery of the transport aims of Vibrant, Dynamic and Forward Looking – ‘**Improve Aberdeen’s transport infrastructure …….. addressing other pinch points** …. **Work to improve public transport** …. **encourage cycling and walking**’.

The projects identified in this report will also assist in the delivery of actions identified in the Single Outcome Agreement (SOA), in particular the delivery of both Local and Regional Transport Strategies which will contribute directly and indirectly to 14 out of the 15 National Outcomes described in Aberdeen City Council’s 2009/10 SOA.

The Local Transport Strategy and the Regional Transport Strategy (LTS and RTS respectively) from which the public transport projects within this report are an integral part have been subject to an Equalities & Human Rights Impact Assessment.

5. OTHER IMPLICATIONS

There are no other implications at this time, other than if appropriately evidenced based measures are not progressed to enhance the attractiveness and therefore the use of public transport, then the successful achievement of objectives contained within the LTS and RTS, as well as related objectives associated with Air Quality, Carbon Reduction and the local and regional economy, may be undermined.

6. REPORT

1. City Bus Routes 1 and 2

1.1 Aberdeen City Council was successful in securing NESTRANS funding for 2010/11 to investigate reports of delays to buses on the routes 1 and 2, particularly at the north and south ends of this route at Bridge of Don and Holburn Street, respectively. The problems were identified by First Aberdeen as significant in reducing their ability to achieve appropriate reliability and punctuality as required by the Traffic Commissioner for all scheduled bus services.

1.2 It was agreed that independent observations of journey times, congestion and delays at agreed locations would be undertaken by Council officers to verify the extent of the reported problems. The locations and nature of the most concerning problems to the bus operators are as follows:

1. Balgownie Road / The Parkway (Northbound)
2. Scotstown Road / The Parkway (Northbound)
3. North Donside Road / Ellon Road (Eastbound)
4. Holburn Street (Northbound)
5. Broomhill Road / Holburn Street (Eastbound)
6. Holburn Street / Bridge of Dee roundabout (Southbound)

The King Street/Castle Street/Union Street section of the route had previously been identified as an area for potential bus priority measures and has been the subject of a separate study detailed in Section 2.

1.3 It became apparent that, as a result of the current road geometry, carriageway width, residents' parking and the proximity to buildings, there was little that could be done in terms of implementing meaningful bus priority at the Broomhill Road/Holburn Street junction. It was also the view that there would be significant difficulties in extending the existing bus lane on North Donside Road and that initial consideration should be given to improvements at the other four locations where it was considered that there was greater scope for implementing improvements. These are listed below, along with a summary of the key survey findings.

- Balgownie Road / The Parkway (Northbound)
  - No delays in the AM Peak
  - No off-peak delays
  - Delays of up to 6 minutes in the PM peak

- Scotstown Road / The Parkway (Northbound)
  - No significant delays in the AM peak, with the longest recorded delay 1 minute
  - No off-peak delays
  - Delays of up to 15 minutes in the PM peak

- Holburn Street between Nellfield Place and Great Western Road (Northbound)
  - Delays of up to 2 minutes and 15 seconds in the AM peak
  - No significant off-peak delays, the longest recorded being 1 minute
  - No significant PM peak delays, the longest recorded being 39 seconds

- Holburn Street / Bridge of Dee roundabout (Southbound)
  - Delays of up to 3 minutes and 35 seconds in the AM peak
  - No off-peak delays
  - Delays of up to 2 minutes in the PM peak

It should be noted, however, that, although some significant delays were experienced at the above locations, buses were also observed, even at peak times, to suffer no delay whatsoever at almost all of the same junctions, depending on day-to-day and even minute-to-minute fluctuations in traffic levels, thus reflecting the inherent unpredictability of traffic movements and flows in the City even at peak times.

1.4 **The Balgownie Road / Parkway junction (Northbound)**

1.4.1 This was highlighted as a significant problem area in the PM peak. Observations have indicated that buses are delayed for as much as 6 minutes between exiting the Braehead Way / Balgownie Road junction and the Parkway. The queues were observed to extend from the Balgownie Road / Parkway junction for a distance of around 300 metres. There is currently no bus priority on this stretch of road.

1.4.2 The observations of PM peak traffic heading towards the Balgownie Road / Parkway junction revealed the following points:

- Significant queuing seems to be restricted to the period 1705-1725.
- The longest recorded delay to a bus was 6 minutes, even within this ‘peak peak’ period.
- Queuing outwith these times is not severe, rarely stretching as far as the Hillhead Cottages entrance and did not cause any significant delays to buses.

1.4.3 The addition of a bus lane on the approach to this junction would certainly benefit buses, however, the benefits achieved would unlikely be significant enough to justify the high cost of implementing such a scheme. The impact on this junction of the Third Don Crossing and of potential future housing development has indicated a possible need for traffic signals at the location at some point in the future. It is therefore likely that an early introduction of signals at the junction could achieve benefits for all traffic, including buses and would be a more cost effective means of providing journey time improvements for buses. Work is therefore ongoing to investigate the potential for introducing traffic signals at this location and will be reported back to the next meeting of this Committee. It should be noted that as the Parkway is part of the Trunk Road network any options being proposed will have to be discussed and agreed with Transport Scotland.

1.5 **Scotstown Road (Northbound on the approach to The Parkway)**

1.5.1 This was highlighted as a significant problem area in the PM peak. Observations have indicated that buses are delayed for as much as 15 minutes on the approach to the Scotstown Road / Parkway junction. There is currently no northbound bus priority on this stretch of road.

1.5.2 The addition of a bus lane on the approach to this junction would certainly benefit buses and there is sufficient width within the existing verge to construct the scheme without land purchase. Because of the potential time savings for buses at this location it is considered that this scheme could have significant benefits and should be considered further. Work is therefore ongoing to develop a preliminary cost estimate for a bus lane at this location and will be reported back to the next meeting of this Committee.

1.6 **Holburn Street between Nellfield Place and Great Western Road (Northbound)**

1.6.1 This route was observed to cause delays to buses in the AM peak of around 2 minutes, although anecdotal evidence from bus operators suggests delays here are often in excess of this. There is currently a bus lane on this section of road but this operates from 08:30 to 09:30, whereas the majority of bus lanes in the City operate from 07:30 to 09:30. The bus lanes on Holburn Street have later start times to accommodate the loading needs of the adjacent businesses when they were first implemented. Queue length surveys and on-site observations were undertaken to see if it would be to the benefit of buses to have this bus lane operate from 07:30.

1.6.2 There are loading and waiting restrictions in place on this stretch of road and adequate signings and markings are in place to highlight these.

- Great Western Road – 196 Holburn Street – No loading Monday to Saturday 0800-0930 and 1630-1800.
- 196 Holburn Street – Nellfield Place – No loading Monday to Saturday 0800-0930 and 1630-1800 and No Waiting Monday to Saturday 0900-1800

1.6.3 The observations of AM peak traffic on this section of Holburn Street revealed the following points:

- No residents seem to use this stretch of road for parking between 0730 and 0830.
- Loading restrictions are being adhered to – the only business observed to be engaged in loading was the Sainsbury's furniture store, and this was before the ban came into force (pre-0800).
- The bakery attracts a lot of parking, and there is much illegal parking going on outside the bakery when the bus lane is in operation.
- Despite this, parked vehicles were not observed to cause any significant delays to buses, even when the bus lane was being

violated. Delays were very occasional and normally restricted to a few seconds.

- Queuing in the right hand lane was rarely so excessive that it prevented buses bypassing vehicles parked in the left lane.
- There were a few instances of parked vehicles preventing buses accessing the bus stop at the southern end of this stretch.

1.6.4 The results seem to indicate that there is no significant issue that causes delays to buses on this section of the route. However, as noted previously the observed delays are not as great as the reported problems and could be subject to seasonal fluctuations. It is therefore considered appropriate to repeat the surveys in September as a means of comparing and verifying the level of delay. Further, there is clearly an inconsistency between the restriction times at this location on Holburn Street compared with other locations throughout the city. There is also a significant amount of illegal parking both prior to and after 8am outside the bakery. Subject to the outcomes of the further surveys, a review of the operating times of the bus lanes is being carried out to consider bringing them in line with other areas of the city. Businesses in the area are at present being consulted on this proposal to extend the operation time for bus lane in the AM peak period to 7:30 to 9:30. The results of all of this will be reported back to the next meeting of this Committee.

1.7 **Holburn Street towards the Bridge of Dee roundabout (Southbound)**

1.7.1 The Bridge of Dee roundabout has been highlighted as a congestion hotspot in both the AM and PM peak. There is an existing bus lane stretching from the Holburn Street / Riverside Drive junction to just prior to the Bridge of Dee roundabout, which is operational in the AM from 08:30 to 09:30 and in the PM from 16:30 to 18:00. This is similar to other sections of bus lanes on Holburn Street and differs from the majority of bus lanes in the City which are in operation between 07:30-09:30 and 16:00-18;00. As stated in paragraph 1.6.1 the bus lanes on Holburn Street have later start times to accommodate the loading needs of the adjacent businesses when they were first implemented. Queue length surveys and on-the-ground observations were therefore undertaken to investigate whether there would be any benefit to buses if the bus lane was extended in the AM peak to operate from 07:30 to 09:30 and in the PM peak from 16:00 to 18:00, or whether it would be beneficial to extend the bus lane further north.

1.7.2 The observations of AM peak traffic on this section of Holburn Street revealed the following points:

- Very little queuing was observed in the AM peak, therefore buses were not seen to be delayed by traffic, even before the bus lane came into operation. In fact, on two occasions on June 15th, buses were seen to idle at the bus stop, presumably as a result of running early, at 08:35 for 3 minutes and at 09:00 for 1 minute.
- The bus lane is largely adhered to in the AM peak and seems of an adequate length and operating time.
- Loading and waiting restrictions are largely adhered to.

1.7.3 The situation here is similar to the previously discussed section of Holburn Street, where the results seem to indicate that there is no significant issue that causes delays to buses on this section of the route. However, as noted previously the observed delays are not as great as the reported problems and could be subject to seasonal fluctuations. As previously discussed the surveys will be repeated in September at this section as a means of comparing and verifying the level of delay. Further, there is a similar inconsistency between the restriction times at this location on Holburn Street compared with other locations throughout the city. Therefore, subject to the outcomes of the September surveys, a review of the operating times of the bus lanes is being carried out to consider bringing them in line with other areas of the city. Businesses in the area are also being consulted on this proposal to extend the operation time for bus lane in the AM peak period to 7.30 to 9.30. It was also noted that queuing on the approach to this junction in the PM peak extended beyond 18:00 and consideration is therefore also being given to extending the operation time for bus lane in the PM peak period to 18.30. The results of all of this will be reported back to the next meeting of this Committee.

2 King Street/Castle Street/Union Street Bus Punctuality Improvements

2.1 A recent study commissioned by Aberdeen City Council prior to the start of the Bus Punctuality Improvement Partnership (BPIP) corridor study identified opportunities for public transport improvements through the East North Street / King Street junction and it was agreed by the Local Authority and Bus Operator Forum (LABOF) to explore this further, with a view to understanding the benefits and impacts of bus priority at this location.

2.2 A traffic model was created for this part of the road network to test and evaluate a range of options. Up to date traffic counts, bus stop dwell time surveys and information extracted from the City's traffic signal system were used to create a model of the road network with traffic volumes, junction turning movements, bus timetabled journeys, and behaviour such as queuing, all simulating, as far as is possible, how this part of the road network operates currently in both the AM and PM peak periods.

2.3 Current Situation

2.3.1 The traffic model identified the following characteristics of traffic behaviour over this area:

AM Peak:

- Westbound queue on Union Street approach to Market Street junction queues back through Broad Street junction.
- The above queue varies in length to the south end of King Street and all the way up King Street to north of the East North Street junction.

- Queuing on Broad Street extending at times as far back as the Schoolhill junction and beyond.
- Bus journey time variability over the model network ranges from 5 minutes to over 8 minutes.

PM Peak:

- Westbound queue on Union Street approach to Market Street junction queues back through the Broad Street junction.
- The above queue varied in length to the south end of King Street and all the way up King Street to the East North Street junction (slightly shorter than in the AM).
- Queuing on Broad Street, although shorter than in the AM.
- Bus journey time variability over the model network ranges from 6 minutes to almost 9 minutes.

2.3.2 In an efficient, effective and uncongested road network, the timing of bus journeys should be fairly uniform, or at the very least bus operators should be able to reasonably accurately estimate the variability of the bus journey time, taking into account busy bus stops etc. This would enable the preparation of a timetable for the service, building in known variabilities in service times, which would support a punctual and reliable bus service for the passenger. It is clear however, that there is significant queuing and congestion over the model area, as well as significant variability of bus journey times.

2.4 Main Options

2.4.1 A range of possible options were identified and tested and evaluated on the model, with the following two options providing significant benefit for public transport, and no adverse impact on all other traffic:

1. **Creation of a peak time bus lane – King Street/Castle Street**

   This proposal seeks to introduce a peak time south bound bus lane from south of the King Street/East North Street junction, within the existing kerb line to Castle Street, then localised widening as the bus lane turns into Castle Street, terminating on Union Street prior to the lane splits in advance of the junction with Broad Street.

2. **Union Street/Market Street Bus Lane Reduction**

   In this proposal, the west bound bus lane on Union Street would be curtailed before Adelphi Lane rather than close to the junction with Market Street. This is to provide more capacity for lane interchange which is perceived to cause inefficiencies at the junction for all traffic, including buses, trying to get into the appropriate lane.

2.4.2 A provisional design for Option 1 has been drawn up and is provided in Appendix A. It should be noted that this is provisional at this stage and, if approved, will be subject to more detailed work, particularly once further information on the impact on utilities is known.

2.5 Modelling Results

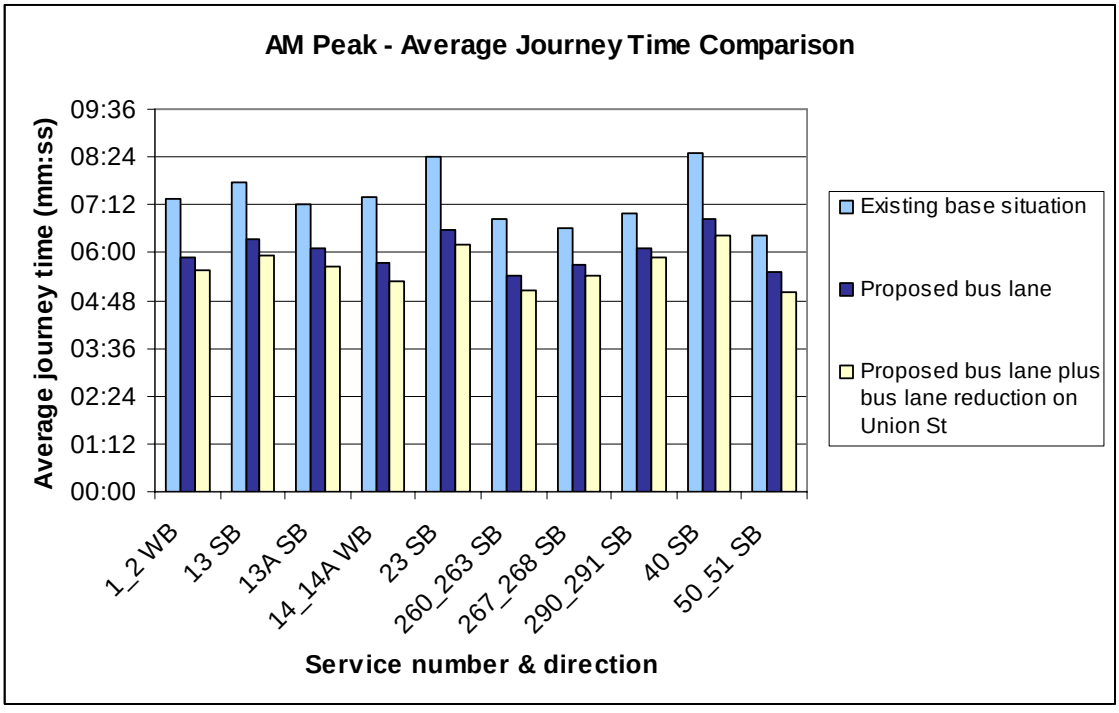
2.5.1 The peak time bus lane on King Street was run first and the results indicated improvements in public transport journey time and reliability, and a very minor but positive impact on all other traffic, as follows:

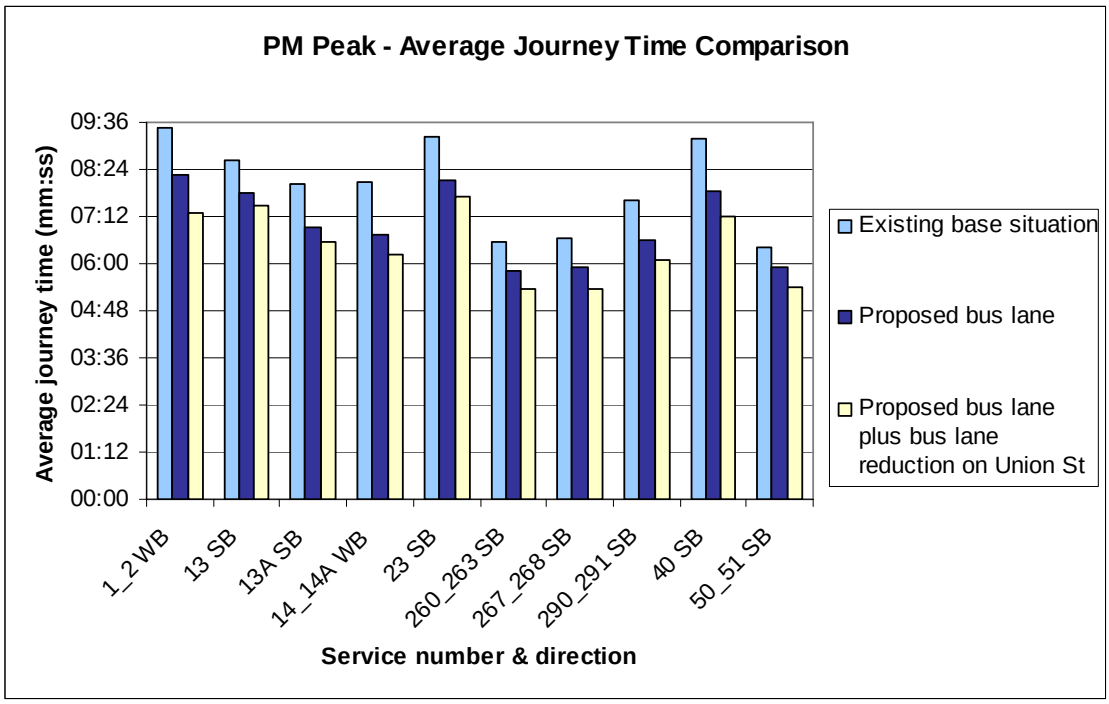
- AM peak average bus journey time reductions of 1 to 2 minutes per bus
- PM peak average bus journey time reductions of 1 to 1.5 minutes per bus
- AM and PM bus reliability improved by up to 5 minutes (i.e. there is a reduction in the worst journey times)
- Average journey times for all other traffic slightly improved.

The Union Street bus lane reduction (option 2 detailed above) was then included with the bus lane option, and the result of this additional option has a more marked improvement on all traffic at this location, reducing the westbound queues on Union Street which are observed in the model as no longer tailing through the Broad Street junction. The results of the bus lane test and the bus lane plus a shortening of the bus lane on Union Street are shown below and compared with the current day base case.

2.5.2 <u>Average bus journey times – AM and PM Peak</u>

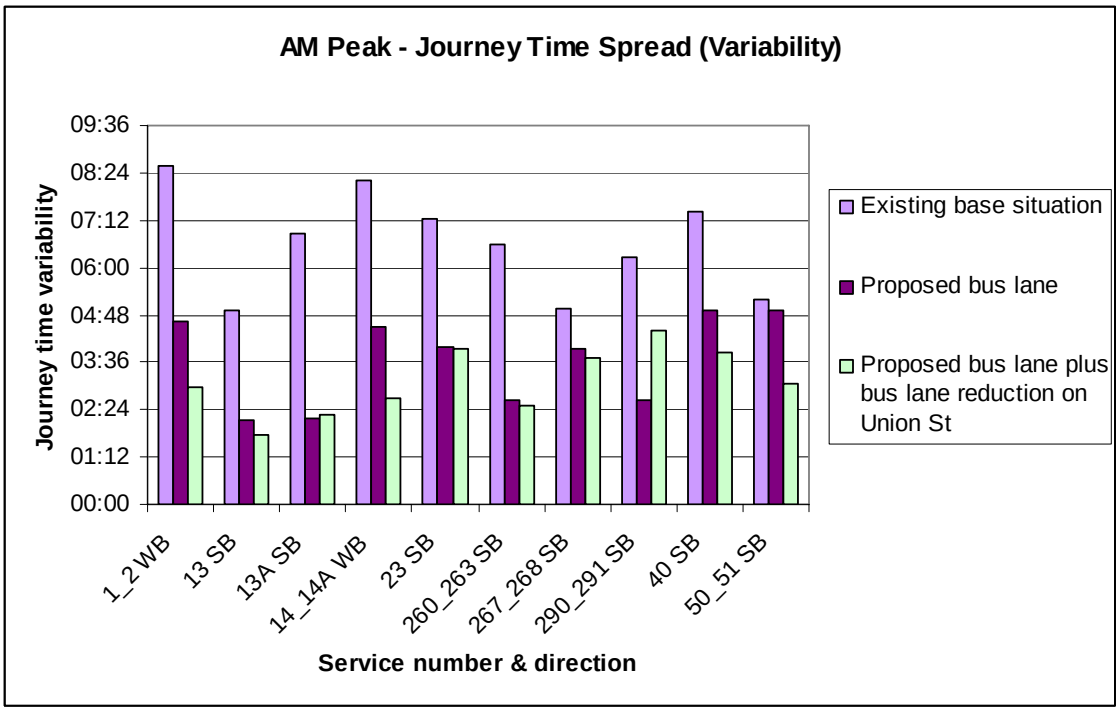
The graphs below compare the average journey time for each service on the corridor - i.e. the average length of time taken for buses to travel through the modelled area in both the AM and PM peak.

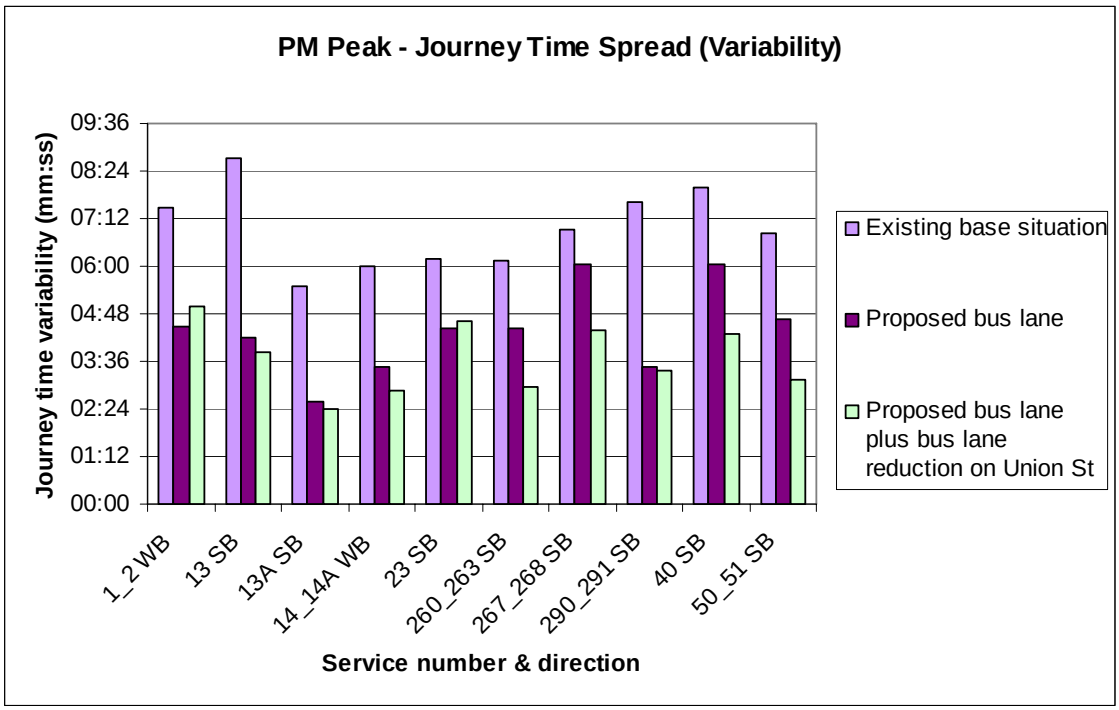




2.5.3 Reliability- Journey time spread – AM and PM peak

The graphs below show a comparison of the journey time variability - i.e. the difference between the shortest and longest journey time in both the AM and PM peak.





Other options were also tested within the model but they did not create journey time improvements to the same extent, or at all, as the two described previously. The full report on all the testing undertaken to date is available on request.

2.6 Conclusions

2.6.1 Both these options provide significant benefit to bus journey times and reliability at what are known key congestion hotspots. All bus companies operating on this corridor would benefit, including park and ride services as well as taxis and bicycles. It is also important to note that the model results show no net detriment to other traffic as a result of these measures, in fact it shows that the average journey times for all traffic routing from King Street to Union Street are slightly improved with the bus lane scheme in place.

2.6.2 Other than a localised widening around the corner at Castlegate, these options could be physically undertaken by simple adjustments to on street lining and signing, with no impact on bus stop locations.

2.6.3 In support of the options identified above, it is also proposed that work include the appropriate signing and road marking improvements required to support the improvements identified and the re-affirmation of the existing banned right turn out of Marischal Street. This is already in place, however road markings and signage here require refreshing.

2.6.4 It is proposed that monitoring of any implemented scheme will take place over the period of a year and if improvements to bus journey times are confirmed then we will expect the bus operators to provide matching improvements to services, such as increased service frequency.

2.7 Cost Estimates

2.7.1 Based on the initial design, the estimated cost of options 1 and 2 detailed above and shown in Appendix A is approximately £200,000.

2.8 Next Steps

2.8.1 Should the benefits of these options be acknowledged and agreed to be taken forward, the following would be the next steps to delivery:

- Start the legal process for the promotion of the Traffic Regulation Orders in relation to the improvements identified above.
- Draw up more detailed designs and costs in parallel to this process.
- Should all approvals and funding be granted, seek to construct in summer 2011.
- Monitoring of the impact, particularly in relation to the objectives and targets of the BPIP corridor as a whole.

2.9 Additional issues being explored

2.9.1 The modelling work that has been carried out highlighted that particular problems on this section of the network were likely being caused by obstructions on Market Street, potentially by vehicles parking and loading during the restricted peak hours. Problems that originate on Market Street subsequently impact on traffic on Union Street, Broad Street and King Street. Further work was commissioned to establish the nature and impact of queuing on Market Street itself, particularly around the bus station access.

2.9.2 Video surveys at points on Market Street, Guild Street and Union Street were carried out to identify the volume of incidents and extent of the queues in this area, as it was not covered by the original model. These surveys were carried out in June and the data is now being analysed. The results will be discussed by the BPIP task group and used to identify any improvements within the context of the BPIP action plan.

2.10 Recommendations

2.10.1 Following the outcomes of the study it is recommended that the following options (as set out above) are approved along with the promotion of Traffic Regulation Orders to enable implementation:

a. creation of a bus lane on King Street / Castle Street;
b. shortening of the existing bus lane on Union Street on the approach to Market Street, to improve lane interchange;
c. the re-affirmation of the banned right turn from Marischal Street through appropriate refresh of signs and road markings.

2.10.2 If approved Nestrans will allocate funding for the implementation of these options in their budget for the next year 2011/12.

3 Bridge of Don Park and Ride

3.1 A development brief for the Murcar area of the Bridge of Don titled the Murcar Development Framework was approved by the Planning Committee on the 5 June 2008. It acknowledges the potential for a new Park and Ride site at this location and includes the following statement.

'The Finalised Local Plan highlights the possibility of a new Park and Ride site being accommodated at Berryhill should the present one reach capacity. Aberdeen City Council's Policy and Strategy Committee have instructed officers to investigate the relocation of the existing Bridge of Don Park and Ride site to an area north of the Science and Energy Park and that discussions be held with the applicants for the development of the Berryhill site and expansion of the Science and Energy park to explore a mutual need to deliver sustainable transport in the area. A possible site for the park and ride relocation, which is a good fit with best practice, is within the framework area, close to the Murcar roundabout. The possibility of the park and ride being relocated to the framework area is referred to in the Aberdeen Local Plan. The relocation of the park and ride to the framework area would assist in providing public transport to the area as it would bring a frequent bus service into the site with the likelihood that the bus route would run through the site. Where proposals are submitted relating to transport interventions, including the provision of a Park and Ride facility, Transport Scotland have indicated that they will require clear evidence how these will be delivered through the proposed phasing of the development.'

3.2 Members were also advised at the October 2008 meeting of the former Policy and Strategy Committee of the need to consider the relocation of the Bridge of Don Park and Ride facility due to the likelihood of the AECC being the subject of development proposals for the conference centre and its ancillary developments.

3.3 In accordance with the Members' decision, officers initiated dialogue with the applicants for the development of the Berryhill site and expansion of the Science and Energy Park to explore a mutual need to deliver sustainable transport for the area.

3.4 Subsequent to the approval of the development brief and the further discussions, there has been no significant progress in the development of this site. It is further acknowledged that the AECC have planning approval to expand the facility and that this would include land used by the existing Park and Ride site. The possibility of development of the site at short notice significantly increases the pressure to find an alternative site for the Park and Ride facility.

3.5 The Oil Exhibition occurs every two years and it is becoming clear that further space is needed to accommodate this growing event. This will

put pressure on the existing Bridge of Don Park and Ride facility as it may be required in future events.

3.6 Given the lack of progress to date of possible development opportunities to deliver a new location for the Bridge of Don Park and Ride facility, and given the clear need to explore options for delivering a new site, there is a need to accelerate the process. It is therefore recommended that officers commence the necessary work to identify a preferred location for a new Bridge of Don Park and Ride site, subject to the successful allocation of future Non-Housing Capital funding.

3.7 Members will be kept up to date on any development proposals for this area with regard to the implications for relocating the Park and Ride site.

7. REPORT AUTHOR DETAILS

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8. BACKGROUND PAPERS

King Street / Castle Street Bus Lane Proposals – Traffic Modelling Testing Report, SIAS Consultants, 29 April 2010

Bus Routes 1 & 2 – Survey Note, 21 July 2010

Murcar Development Framework – June 2008

(Please contact the report author if you require copies of these papers)

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KEY: –

- PROPOSED KERBLINE
- EXISTING KERBLINE AND FOOTWAY TO BE EXCAVATED
- EXISTING BT APPARATUS
- EXISTING C & W APPARATUS
- EXISTING THUS APPARATUS
- EXISTING ELECTRICITY APPARATUS
- EXISTING SURFACE WATER DRAIN LINE
- EXISTING GAS APPARATUS
- EXISTING WATER MAIN

NOTES: –

1. ALL DIMENSIONS SHOWN ARE IN METRES.
2. THE LOCATION OF STREET FURNITURE AND UTILITIES IS INDICATIVE ONLY.
3. LOCATION OF UTILITIES TO BE ESTABLISHED AND ANY NECESSARY DIVERSION WORKS TO BE CONFIRMED

Rev.	Drawn	Checked	Description	Date

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Client.
ABERDEEN CITY COUNCIL

Project.
CASTLE STREET BUS PRIORITY MEASURES

Title.
PRELIMINARY DESIGN

Drawn (init./date) DM 23.07.10	File Location G:\DESIGN\CIVIL\SHARED\Projects\Castle Street Bus Priority – R2616
Checked (init./date) BM 23.07.10	Drawing No. 1/ A9013/R2616/R/01
Scale & sheet size 1:500/1:200 A1	