

ABERDEEN CITY COUNCIL

COMMITTEE Enterprise, Planning and Infrastructure
DATE 26 November 2009
DIRECTOR Gordon McIntosh
TITLE OF REPORT Berryden Corridor Transport Infrastructure Improvements
REPORT NUMBER EPI/09/110

1. PURPOSE OF REPORT

To inform members of the process undertaken to assess the Berryden Corridor transport infrastructure options and to request approval to continue the preferred option through towards construction as timetabled within the report.

2. RECOMMENDATION(S)

It is recommended that the Committee:

- a) note the Option Appraisal report and supporting documentation for the Berryden Corridor;
- b) agree the preferred option for progression to detailed design;
- c) instruct officers to progress detailed design; and
- d) instruct officers to report back to this Committee on detailed design, detailed costs and programme.

3. FINANCIAL IMPLICATIONS

There are no revenue implications as a result of this scheme.

The former Resources Management Committee in June 2009 agreed expenditure to take the Berryden Corridor transport infrastructure improvements study forward.

A budget of £25M is anticipated for the works, however there is a risk of increased construction costs resulting from delays to the programme as construction materials and labour costs are subject to variation over time.

It is anticipated that a phased construction of the scheme over consecutive years would reduce the risk of delays to the overall schedule due to land purchase and Planning Inquiry timescales.

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'.

Within the Single Outcome Agreement 2009 (SOA 09) 14 of the 15 national indicators are directly or indirectly linked to the Local and Regional Transport Strategies (LTS & RTS) both of which recognise strategic road improvements as key elements of their strategies. Specifically within the SOA 09 local indicators refer to encouraging healthy lifestyles for children and young people, including walking and cycling to school, engaging local participation in neighbourhoods and minimisation of the environmental impact of transport on our community and the wider world.

The project will contribute to delivery of the transport aims of Vibrant, Dynamic and Forward Looking by delivering improvements to Aberdeen's transport infrastructure, assisting in the delivery of the 3rd Don crossing, addressing a significant pinch point in the city's roads network, working to improve public transport, and encourage cycling and walking.

The LTS, for which this scheme is an integral part, has been subject to an Equalities & Human Rights Impact Assessment. This scheme does not conflict with the aims of the LTS or its Equalities assessment therefore no further assessment has been carried out.

5. OTHER IMPLICATIONS

The environmental impacts of this scheme are summarised below and are detailed within the Berryden Transport Improvements Environmental Option Appraisal.

6. REPORT

1.0 Introduction

- 1.1 Following approval from the Policy and Strategy Committee of 4 September 2007 a study of the Berryden Corridor has been carried out to address this pinch point on the Aberdeen City network. Proposed future upgrades to the city network, including the Haudagain Junction Improvement, Access from the North Proposals (including 3rd Don Crossing) and the Air Quality Management Area within the city centre, reroute traffic through the network, reducing delays at significant pinch points, however this results in increased traffic impacts for the Berryden Corridor which this study aims to address.
- 1.2 Transport Scotland's Scottish Transport Appraisal Guidance (STAG) was used as a best practice approach to the assessment of the corridor.
- 1.3 The corridor study commenced with 4 stakeholder workshops attended by representatives from local and wider community groups, specialist representative groups, the business community and by health care and emergency service providers. From these workshops the problems, issues and opportunities for the area were collated. The objectives were derived from this process and these have been included in Appendix A. STAG's 5 categories of objectives were used – Environment, Safety, Economy, Integration and Accessibility.
- 1.4 A specialist traffic modelling advisor was then appointed through the Framework Agreement to work with the Council's Roads Design team to develop feasible options for the route to best meet these objectives.
- 1.5 The options have now been assessed against the objectives. This assessment has been carried out using supporting documentation and study results from external consultants and internal service providers. These reports, along with the Option Appraisal document, are available for viewing on the Aberdeen City Council Website. A copy is also available to view in the Member's Lounge.

2.0 Scheme Assessment

2.1 Traffic Modelling

- 2.1.1 The road network was assessed within the micro-simulation traffic base model created for Aberdeen City Centre in 2005. This base model was updated to reflect the City's future road network in 2012. This includes the predicted impact of all proposed road improvement schemes such as Haudagain, 3rd Don Crossing and Aberdeen Western Peripheral Route (AWPR) as well as all committed future development along the corridor. It should be noted that this updated model, now called the 'Do Minimum' model, includes the Berryden Road/ Hutcheon Street junction proposal previously agreed by the Environment and Infrastructure Committee in 2006. The full list of schemes is included within Appendix B.

- 2.1.2 One option present from the start of the assessment was the potential for a bus gate to operate mid way along Bedford Road. This option was developed as part of the Access from the North - 3rd Don Crossing study, although no decision was made at that time between bus gate or road open to all traffic. It was therefore agreed that this option should remain throughout the Berryden Corridor Study in order to take full account of the possible implications of the bus gate on adjacent routes.
- 2.1.3 The 'Do Minimum' model, either with Bedford Road open to all traffic or with a bus gate, was completed and was run. Due to considerable congestion on the network creating issues for all users, it was established that these 'Do Minimum' options would not meet a number of the objectives. Whilst the traffic model showed this gridlock on up to 50% of tests, it would be expected that some traffic using this area under those conditions would find alternative routes creating congestion issues further out on the road network.
- 2.1.4 The model was then built up incrementally with a series of small scale options, in order to establish the minimum level of intervention necessary to reach a point where the network is predicted to be able to support the transport objectives and more broadly, the objectives and aims of the Local Transport Strategy. The full assessment schedule is included within Appendix C, however the process is summarised below.
- 2.1.5 The assessment considered the option of an additional lane in both directions along Berryden Road to accommodate a bus / cycle lane. Testing showed that this did not provide a sufficient improvement to the network for all traffic as required by the objectives. Significant congestion was predicted at major junctions along the route.
- 2.1.6 Movements to the south of the route were then studied. The first area for consideration was the junction at Berryden Road/ Hutcheon Street as the closure of the right turn movements here had created issues for Maberly Street and George Street within the 'Do Minimum' model. It was therefore agreed to test the junction with all turning movements reinstated and to determine whether a revised arrangement would improve traffic flows around the south of the corridor. The layout improved the situation through Maberly Street and the south, however the Berryden Road/ Hutcheon Street junction was noted to be over capacity at peak periods. It was agreed to continue the modelling for the remainder of the route and to revisit this junction with the other changes in place. Through the detailed modeling phase a working layout was found.
- 2.1.7 The model was then developed further to include route realignment through the congested central sections of the network around Ashgrove Road/ Back Hilton Road junction and Berryden Road/ Belmont Road junction along with the adjacent junctions on Powis Terrace. This remained insufficient to produce an effective transport network. Even the realignment of Great Northern Road behind the existing flatted properties opposite Kittybrewster

School was insufficient to address the objectives of the scheme by installation of bus lanes along the length of the scheme.

- 2.1.8 Only when 2 lanes for all traffic were incorporated in both directions on the realigned route did the network cope adequately with the traffic volumes in such a way as to benefit the surrounding network and all modes of transport. Improvements such as new traffic signals, reviewed roundabout layouts, increased pedestrian crossing facilities, shared pedestrian/ cycle paths and crossings, and improved pedestrian footway widths were incorporated.
- 2.1.9 This option also freed up sufficient capacity on Powis Terrace to accommodate bus lanes, increasing reliability and journey times of the services along a significantly congested route.
- 2.1.10 This revised layout for the corridor is called the 'Do Something' option.
- 2.1.11 The impact of both options for Bedford Road could be accommodated within the 'Do Something' layout, though this has differing implications for Powis Terrace in terms of revised layout and to a degree, journey times.
- 2.1.12 On completion of the model testing there were 4 options
'Do Minimum' with Bedford Road open to all traffic
'Do Minimum' with Bedford Road bus gate
'Do Something' with Bedford Road open to all traffic
'Do Something' with Bedford Road bus gate
- 2.1.13 Plans of the 'Do Something' options are included in Appendix D.

2.2 Public Consultation

- 2.2.1 On completion of the model testing a public consultation was carried out by Council officers to inform the public of the options under consideration and to gather their views. Stakeholder groups were invited to view the options at this time and several responses were received. The consultation was undertaken in spring/ summer 2009 and was held jointly with the Access from the North consultation due to the significant interaction of the schemes.
- 2.2.2 Generally, whilst in all cases positive and negative views were received, the road, public transport and pedestrian aspects were favoured by the respondents to the questionnaire whilst the cycle facilities received mixed responses.
- 2.2.3 Staff recorded a range of positive comments at the roadshow events in particular relating to the Berryden Road/ Hutcheon Street junction proposals. However concerns were raised through written correspondence regarding the scheme's impact on Skene Square Primary School grounds and pupils; loss of/ impact on properties, curtilage and parking; adverse effect on communities including severance, reduced accessibility and rat running; loss of greenspace and amenity areas; scheme deemed too car friendly; concerns about shared foot/ cycle ways; lack of appropriate cycle

facilities; concerns about noise and air quality levels; impact of construction process; lack of bus priority; concern about drainage pond and; safety of pedestrians including school children. A full list of comments is included within the Public Consultation Report.

2.2.4 In terms of the Bedford Road options, though the number of responses wasn't high, Bedford Road open to all traffic, for both public transport users and all road traffic, was the favoured response, with the Bedford Road bus gate receiving a slightly negative response for both groups.

2.2.5 A possible bridge was included within the consultation plans to the rear of the Berryden Retail Park leading onto Leslie Terrace. This provided a cycle/pedestrian link for local users over the railway line. This proposal received positive local support and is considered a benefit to cyclists wishing to pass across Berryden Road rather than follow it.

3.0 Economic Assessment

3.1 The economic assessment evaluates the changes to the travel time and vehicle running costs of the 'Do Something' options against the 'Do Minimum' options. This was based on the traffic model information, interpolated to account for 24 hour operation of the route and on the estimated scheme costs based on the feasibility design layout.

3.2 The assessment concluded that both schemes were of positive economic benefit to the city, with the Bedford Road bus gate providing significantly higher benefits. The option including the bus gate has a benefit cost ratio (BCR) of 2.88 to the funding authority and a Net Present Value (NPV) of £24.52M. With Bedford Road open to all traffic, the Benefit to Cost Ratio is 1.93 and the NPV £12.11M.

4.0 Environmental Assessment

4.1 The Environmental Assessment compared the 'Do Minimum' options with the 'Do Something' options. In most circumstances there is little to distinguish between the Bedford Road open or Bedford Road bus gate options as the land impacts are similar. Whilst all subjects are covered fully within the Environmental Assessment and summarised within the STAG report, this report covers only the areas highlighted as significant to consultees.

4.2 Air quality was of concern to some of the respondees and the assessment has concluded that whether or not the proposals go ahead there is little impact overall on air quality within the area. As expected, where the route is diverted past premises not previously on the roadside there is deterioration in air quality levels. Similarly where the route is located further from premises there is an improvement. All levels are predicted to remain below the Air Quality Strategy health based annual mean objectives in 2012 for CO₂ (carbon dioxide) and PM₁₀ (particulate matter equal or less than 10µm diameter), standard air quality measures. The corridor was judged to be of negligible significance to regional air quality and greenhouse gases.

- 4.3 Noise and vibration impacts were modelled for both 'Do Something' options. Bedford Road open to all traffic, received a more preferable result in terms of the number of premises impacted by increased traffic noise. No mitigation was included within these tests and therefore actual impacts could be reduced through the design or construction process.
- 4.4 The visual impact of the options was viewed to have a moderately adverse impact on cultural heritage. The City's Archeologist would be involved with ground investigations prior to construction and mitigation would be provided where feasible. Similarly the impact of the carriageway on landscape effects within the area was judged to range from neutral to substantial adverse effects after 15 years of opening and visually the impact ranges from moderate to major adverse impact. This result could be anticipated as there is an impact on buildings, walls and landscaping resulting from the 'Do Something' options. Some of these impacts can be mitigated by landscaping and replacement of walls in keeping with the area, however some impacts will remain.
- 4.5 Whilst land take along the corridor has been minimised it has proved unavoidable through the development of the options. The overall impact of land use ranges from minor adverse to major adverse impacts where private properties or land is required for construction of the proposed route. It should also be noted that some amenity areas currently present along the route were previously set aside for a road improvement scheme. The loss of these areas has been anticipated and in many places has shaped the form of the built environment.
- 4.6 Overall the 'Do Something' options were judged to have a slightly adverse effect on road drainage and water environment. However, it is proposed to include a sustainable urban drainage system (SUDS) at least at one location along the corridor. Whilst this was not fully considered within the Environmental Assessment as it was not included within the initial drawings, it would be expected to have positive environmental benefit to the water quality of the adjacent Gilcomston and Den Burns. SUDS provide storage and filtering of surface water runoff, benefitting waterways at times of high rainfall and minimising the impact of spillages.
- 5.0 Conclusion for Berryden Corridor
 - 5.1 The assessment of the Berryden Corridor improvement options has covered the wide ranging consequences of the scheme, from local concerns to issues of regional significance. The objectives have been compiled within stakeholder groups and may now appear to have slightly conflicting aims.
 - 5.2 Locally the 'Do Something' options provide improved pedestrian facilities with more signalised crossing points and footpaths of design standard widths. Off-road cycle facilities are provided along the route, though space restricts their full separation from pedestrians, shared signalised crossing points provide safe crossing at side roads. On-road cyclists are provided with advanced stop lines at all junctions. Some access and egress to local

roads is restricted and this has positive and negative impacts. It makes some routes less attractive to inappropriate traffic and reduces delays along the main carriageway, however it also reduces accessibility for residents though turning points and alternatives are available within short driving distance. Visually the road will have an impact but, with a scheme of this magnitude, this is unavoidable. Changes are required to the built environment, ad hoc amenity areas will be removed and an increased area of carriageway is required. Mitigation and landscaping would limit this impact, however it cannot be fully removed. Air quality however will remain within acceptable national standards with both positive and negative effects being realised along the route.

5.3 Regionally this strategic route is anticipated to deliver significant economic benefit. At a time when the North East is looking to attract investment and increase population numbers the options help meet the target of providing a sustainable transport network for all users. Both local and regional bus services will benefit from the public transport improvements. Links from the north of the city, including Aberdeen Airport to the City Centre, with Aberdeen's harbour and, rail and bus hubs, are enhanced. Links into and out of the area's retail centres and sites with development potential are improved. Driver stress was also judged to be reduced by the reduction in congestion and conflicts.

6.0 Conclusion for Bedford Road/ Powis Terrace

6.1 Little separates the options for Bedford Road open to all traffic or with a bus gate installed. In environmental terms, the land take required on Powis Terrace with no bus gate in place is slightly increased however there is a marginally increased noise and vibration impact on Berryden Road from closing Bedford Road to through traffic. In traffic flow terms there is a delay incurred along Powis Terrace if Bedford Road remains open as the signalised junction requires a greater green time for right turning vehicles, this in turn impacts on Powis Terrace/ George Street junction and on the surrounding network. The most significant factor relating to the Bedford Road bus gate appears to stem from this delay.

6.2 The economic benefit of the scheme with the bus gate included is substantially greater than without. When considered with the improved conditions for pedestrians, cyclists and public transport on Bedford Road, this provides justification for progressing the bus gate option.

7.0 Possible Foot/ Cycle Bridge at Rear of Berryden Retail Park

7.1 The bridge was suggested by stakeholders through the workshops and proved popular with the public during the consultation process. Whilst the scheme does not have strategic importance in terms of the corridor, it does relate to some of the scheme's objectives for supporting sustainable transport modes. Since the completion of the consultation a cost estimate has been prepared based on similar structures currently being installed. It is estimated that the bridge would cost £500,000.

8.0 Proposed Future Actions

- 8.1 Officers are currently preparing ground investigation and detailed topographical survey tenders to gain accurate details of the existing area.
- 8.2 On completion of the site assessment the preliminary layout of the scheme can be designed in greater detail which will more accurately show the impacts for premises and land along the route. This will enable land plans to be produced to aid future property discussions and negotiations.
- 8.3 When the further detailed design, cost and land implications are established then a detailed programme for phased delivery can be developed.

9.0 Option Summary Table

- 9.1 The table below is a simplistic version of the Option Summary Table found within the Option Appraisal, showing how the two 'Do-Something' options compare to the 'Do-minimum' options, with a colour coded key.

Key

Greater Positive Impact on Objective compared to Do minimum	++
Positive Impact on Objective compared to Do minimum	+
Negative Impact on Objective compared to Do Minimum	-
Large Negative Impact on Objective compared to do minimum	--
Neutral Impact on Objective compared to Do Minimum	0

Objectives	Do Something Bedford Road open	Do Something Bedford Road with Bus gate
To reduce Greenhouse Gas emissions from road transport.	0	
To 'lock in' the environmental benefits of the AWPR and other improvement schemes.	+	
To maintain or improve the aesthetics of the area, where possible developing the potential for green space.	-	
To develop links to off road pedestrian and cycle networks.	+	++
To further reduce the number & severity of casualties from road traffic accidents.	+	
To provide a practical, healthy, safe and attractive transport system.	+	++
To provide greater safety and perceptions of safety for all transport users and the wider community.	+	
To minimise delays and improve reliability of journey times for goods and people throughout Aberdeen	+	++
To enhance the efficiency of the transport network.	+	++
To reduce congestion thereby reducing the cost to individuals and industry	+	++
The scheme will be achievable, both practically and financially, and will demonstrate best value.	+	++
To improve the attractiveness of Aberdeen as a regional centre of commerce and high added value business services, thus making the City Centre a more competitive business location.	++	
To increase the share of travel by the most sustainable modes to promote economic growth without associated traffic growth.	+	
To facilitate and support land use development adjacent to sustainable transport corridors and nodes (hubs)	+	
To promote healthy living by encouraging safe walking and cycling.	+	++
To promote walking and cycling to school.	+	++
To improve connections to rail, sea, bus and air transport modes	+	
To provide communities with a choice of means of travel.	++	
To improve accessibility (network and cost) to jobs and services to support social inclusion.	+	
To improve links through the area for cyclists.	+	++
To maintain community movement and cohesion.	0	
To reduce the relative cost and improve the ease of use of the City's public transport system.	+	++

7. REPORT AUTHOR DETAILS

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8. BACKGROUND PAPERS

Berryden Corridor Transport Infrastructure Improvements – Option Appraisal, October 2009

Berryden Transport Improvements Environmental Option Appraisal – Final, 11 September 2009

Berryden Transport Improvements Traffic and Economic Assessment, 6 August 2009

Berryden Corridor Study - Traffic Modelling Final Draft, July 2009

Public Consultation, Spring 2009 - Access from the North and Berryden Corridor Transport Infrastructure Improvements, July 2009

Appendix A – Objectives

Environment

1. To reduce Greenhouse Gas emissions from road transport.
2. To 'lock in' the environmental benefits of the AWPR and other improvement schemes.
3. To maintain or improve the aesthetics of the area, where possible developing the potential for green space.
4. To develop links to off road pedestrian and cycle networks.

Safety

1. To further reduce the number & severity of casualties from road traffic accidents.
2. To provide a practical, healthy, safe and attractive transport system.
3. To provide greater safety and perceptions of safety for all transport users and the wider community.

Economy

1. To minimise delays and improve reliability of journey times for goods and people throughout Aberdeen
2. To enhance the efficiency of the transport network.
3. To reduce congestion thereby reducing the cost to individuals and industry
4. The scheme will be achievable, both practically and financially, and demonstrate best value.
5. To improve the attractiveness of Aberdeen as a regional centre of commerce and high added value business services, thus making the City Centre a more competitive business location.
6. To increase the share of travel by the most sustainable modes to promote economic growth without associated traffic growth.

Integration

1. To facilitate and support land use development adjacent to sustainable transport corridors and nodes (hubs)
2. To promote healthy living by encouraging safe walking and cycling.
3. To promote walking and cycling to school.
4. To improve connections to rail, sea, bus and air transport modes
5. To provide communities with a choice of means of travel.

Accessibility

1. To improve accessibility (network and cost) to jobs and services to support social inclusion.
2. To improve links through the area for cyclists.
3. To maintain community movement and cohesion.
4. To reduce the relative cost and improve the ease of use of the City's public transport system.

Appendix B – Full List of Schemes included within the ‘Do Minimum’ Traffic Model

Infrastructure / Development Measure	Additional Detail	Within Traffic Model	Influence Within Model (from ASAM)
1. Influence of Aberdeen Western Peripheral Route and MTS			✓
including:	- A90 (N) relocation of Bridge of Don Park & Ride		✓
	- A96 Park & Ride and associated bus priority measures		✓
2. Union Street Pedestrianisation & Associated Infrastructure	- Including measures on Guild Square, Schoolhill, Union Terrace etc.	✓	
3. Influence of Haudagain junction improvements			✓
4. Influence of Third Don Crossing			✓
including:	- Signalisation of Tillydrone Ave/St. Machar Drive	✓	
	- Bedford Road Open to all Traffic	✓	
	- Bedford Road Routing for Buses Only	✓	
5. South College Street / North Esplanade West junction improvement proposals		✓	
including:	- College Street Dualling	✓	
6. Market Street Corridor Improvements		✓	
including:	- Signalisation of Market Street / Victoria Bridge	✓	
7. Berryden Road / Hutcheon Street junction proposals		✓	
8. Influence of VMS on City Centre trips		✓	
9. Committed developments (2005-2012)		✓	
	- Guild Square Development	✓	
	- Scotoil Development	✓	
	- Justice Mill Lane Retail Development	✓	
	- Office Development, Union Row	✓	
	- Marischal College Re-development	✓	
	- South College Street (Flats)	✓	
	- Crown Street (Flats)	✓	
	- Berryden Road - Development of Business Centre	✓	
	- Broadford Works Re-development	✓	

Appendix C – Full Traffic Model Assessment Schedule

– Taken from Appendix to SIAS’s report on the Berryden Corridor Study showing all the tests carried out.

Test Scenario	Sensitivity Test	Bedford Road	Test Location	Detail	Peak Testing
Test Stage 1 : Current Berryden Road with Local Traffic Management Improvements					
1	1-1 (o)	Open	Berryden Rd / Hutcheon St	Allow all movements at the junction	AM, PM
2	1-2(o)	Open	Berryden Rd / Hutcheon St	Revised lane allocation allowing r/t NB, 4 lanes through Skene Square	AM, PM
3	1-1(c)	Closed	Berryden Rd / Hutcheon St	Allow all movements at the junction	AM, PM
4	1-2(c)	Closed	Berryden Rd / Hutcheon St	Revised lane allocation allowing r/t NB, 4 lanes through Skene Square	AM, PM
5	1-3(o)	Open	Skene Square / Maberly St	Ban Right turn from Skene Square to Maberly Street	AM, PM
6	1-3(c)	Closed	Skene Square / Maberly St	Ban Right turn from Skene Square to Maberly Street	AM, PM
7	1-4(o)	Open	George Street / Hutcheon St	Allow Right turn to George Street North	PM
8	1-5(o)	Open	Skene Square / Maberly St	Allow ahead movement from Maberly St to Rosemount Place	AM, PM
9	1-6(o)	Open	Kittybrewster Square	Improvements to junction capacity	AM, PM
10	1-6(c)	Closed	Kittybrewster Square	Improvements to junction capacity	AM, PM
Test Stage 2 : Local Traffic Management Improvements plus re-route through Kittybrewster Square					
11	2-1(o)	Open	Kittybrewster Square	New Link Road and Signalised Junctions	AM, PM, Sat
12	2-1(c)	Closed	Kittybrewster Square	New Link Road and Signalised Junctions	AM, PM, Sat
13	2-2(c)	Closed	Kittybrewster Square	Extended lane flares and walk-with signals at GNR	AM, PM, Sat
			Berryden Rd / Hutcheon St	Left-turn lane SB and walk-with Peds	
			Ashgrove / Back Hilton Rd	No link Road between Ashgrove/Back Hilton Rd, access/egress at roundabout	
14	2-3(c)	Closed	Corridor	Signalisation of Rosemount Terrace / Skene Square, and Berryden Rd / Retail Park	AM, PM, Sat
Test Stage 2b : Local Traffic Management Improvements plus re-route through Kittybrewster Square (Revised Matrices)					
15	2b-1(c)	Closed	North Area of Model	Review and amend All signalised junctions	AM, PM, Sat
16	2b-1(c)	Closed	Tillydrone Avenue	Amended Configuration of Tillydrone Ave / St. Machar Drive,	AM, PM, Sat
17	2b-1(o)	Open	North Area of Model	Review and amend All signalised junctions	AM, PM, Sat

18	2b-1(o)	Open	Tillydrone Avenue	Amended Configuration of Tillydrone Ave / St. Machar Drive	AM, PM, Sat
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Test Scenario	Sensitivity Test	Bedford Road	Test Location	Detail	Peak Testing
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Test Stage 3 : Addition of New dual link road on Great Northern Road - between Berryden Road and St. Machar Roundabout

19	3-1(c)	Closed	Great Northern Road	New Link Road - Berryden Road and St.Machar roundabout, lane amendments at Berryden Rd / G.N.R. junction	AM, PM, Sat
20	3-2(c)	Closed	Berryden Road	Dual section NB and SB north of Elm Place roundabout	AM, PM, Sat
21	3-1(o)	Open	Great Northern Road	New Link Road - Berryden Road and St.Machar roundabout, Lane amendments at Berryden Rd / G.N.R. junction	AM, PM, Sat
22	3-2(o)	Open	Berryden Road	Dual section NB and SB north of Elm Place roundabout	AM, PM, Sat

Test Stage 4 : Full Dual through Berryden Road

23	4-1(c)	Closed		Full Dualling of Berryden Road, review and amend traffic signals	AM, PM, Sat
24	4-1(o)	Open	Berryden Road	Full Dualling of Berryden Road, review and amend traffic signals	AM, PM, Sat
25	4-1(c)-Sens A	Closed	Skene Square	Alternative Traffic Signals on Berryden Rd / Hutcheon Street	AM, PM, Sat
26	4-1(c)-Sens B	Closed	Skene Square	Includes Pedestrian Crossing on Rosemount Terrace	AM, PM, Sat
27	4-2(c)	Closed	St.Machar Drive	Allow 2 lanes to route from Great Northern Road SB to new Great Northern Road Dual	AM, PM, Sat
28	4-3(c)	Closed	St.Machar Drive	Extend 2 lane SB approach on Great Northern Road to St.Machar Drive	AM, PM, Sat

Test Stage 5 : Berryden Road Dual - Dual Width Restriction Testing

29	5-1(c)	Closed	Berryden Rd Dual at Kittybrewster Square	4 Lane section only between Ashgrove Road and Great Northern Road	AM, PM, Sat
30	5-2(c)	Closed	Berryden Rd Dual at Kittybrewster Square	4 Lane section only between Ashgrove Road and Great Northern Road - Revised lanes and signal phasing	AM, PM, Sat
31	5-3(c)	Closed	Berryden Rd Dual at Kittybrewster Square	as per ACC drawing of 9th Feb 09 - but only 4 lane section	
32	5-3(o)	Open	Berryden Rd Dual at Kittybrewster Square	as per ACC drawing of 9th Feb 09 - but only 4 lane section	
33	5-4(c)	Closed	Berryden Rd Dual at Kittybrewster Square	Standard Signal Phasing with Short right-turn flare on Berryden Rd NB (including Belmont Rd configuration)	AM, PM, Sat
34	5-4(o)	Open	Berryden Rd Dual at Kittybrewster Square	Standard Signal Phasing with Short right-turn flare on Berryden Rd NB (including Belmont Rd configuration)	AM, PM, Sat

35	5-5(c)	Closed	Berryden Rd Dual at Kittybrewster Square	Staggered Signal Phasing with two lane exit at Junction (including Belmont Rd configuration)	AM, PM, Sat
36	5-5(o)	Open	Berryden Rd Dual at Kittybrewster Square	Staggered Signal Phasing with two lane exit at Junction (including Belmont Rd configuration)	AM, PM, Sat

Test Scenario	Sensitivity Test	Bedford Road	Test Location	Detail	Peak Testing
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Test Stage 6 : Configuration of Belmont Road and Ashgrove Road

37	6-1(c)	Closed	Belmont Road & Ashgrove Road	Belmont Rd and Ashgrove Rd as per ACC drawing of 9th Feb 09 - R/t allowed from Belmont Rd EB	AM, PM, Sat
38	6-2(c)	Closed	Belmont Road & Ashgrove Road	Belmont Rd and Ashgrove Rd as per ACC drawing of 9th Feb 09 - R/t barred from Belmont Rd EB	AM, PM, Sat
39	6-1(o)	Open	Belmont Road & Ashgrove Road	Belmont Rd and Ashgrove Rd as per ACC drawing of 9th Feb 09 - R/t allowed from Belmont Rd EB	AM, PM, Sat

Test Stage 7 : Powis Terrace Corridor Configuration

40	7-1(c)	Closed	Powis Terrace Corridor - Option 1	Bus Priority Through Powis Terrace, Bus priority into George Street	AM, PM, Sat
41	7-1(o)	Open	Powis Terrace Corridor - Option 1	Bus Priority Through Powis Terrace, Bus priority into George Street	AM, PM, Sat
42	7-2(c)	Closed	Powis Terrace Corridor - Option 2	Bus Priority Through Powis Terrace, Bus only access into George Street	AM, PM, Sat
43	7-2(o)	Open	Powis Terrace Corridor - Option 2	Bus Priority Through Powis Terrace, Bus only access into George Street	AM, PM, Sat
44	7-3(c)	Closed	Powis Terrace Corridor - Option 1b	As Per 7-1(c) , extended bus lane on Powis (ACC Design Drawings)	AM, PM, Sat
45	7-3(o)	Open	Powis Terrace Corridor - Option 1b	As Per 7-1(c) , extended bus lane on Powis (ACC Design Drawings)	AM, PM, Sat
46	7-4(c)	Closed	Powis Terrace Corridor - Option 1b	Revised matrices - March 2009	AM, PM, Sat
47	7-4(o)	Open	Powis Terrace Corridor - Option 1b	Revised matrices - March 2009	AM, PM, Sat

Test Stage 8a : Further Assessment Of Berryden Rd / Hutcheon Street Junction

48	8 (c)	Closed	Berryden Rd / Hutcheon Street	Review of junction configuration with right-turn manoeuvres allowed - 5 Options Developed and Considered	AM, PM, Sat
49	8 (o)	Open	Berryden Rd / Hutcheon Street	Review of junction configuration with right-turn manoeuvres allowed - 5 Options Developed and Considered	AM, PM, Sat

Test Stage 9 : Further Design Considerations

50	9-1(c)	Closed	Berryden Rd / Retail Park	Revise Berryden Rd / Retail Park Signalised Junction for All Ped Phase	AM, PM, Sat
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51	10-2(o)	Open	Berryden Rd / Retail Park	Revise Berryden Rd / Retail Park Signalised Junction for All Ped Phase	AM, PM, Sat
52	9-1(c)	Closed	Berryden Corridor	3 Additional Remote Pedestrian Crossings	AM, PM, Sat
53	9-1(o)	Open	Berryden Corridor	3 Additional Remote Pedestrian Crossings	AM, PM, Sat

Test Scenario	Sensitivity Test	Bedford Road	Test Location	Detail	Peak Testing
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Test Stage 8b : Further Assessment Of Berryden Rd / Hutcheon Street Junction

54	8-1(c)	Closed	Berryden Rd / Hutcheon Street	Walk-With Pedestrian Crossing, Left turn from Berryden Road requiring separate signal heads	AM, PM, Sat
55	8-1(o)	Open	Berryden Rd / Hutcheon Street	Walk-With Pedestrian Crossing, Left turn from Berryden Road requiring separate signal heads	AM, PM, Sat
56	8-5(c)	Closed	Berryden Rd / Hutcheon Street	Lane configuration of 8-1, except ped phase included at junction, no additional signal heads required	AM, PM, Sat
57	8-5(o)	Open	Berryden Rd / Hutcheon Street	Lane configuration of 8-1, except ped phase included at junction, no additional signal heads required	AM, PM, Sat

Network Review : Connections to West Side of Berryden Road

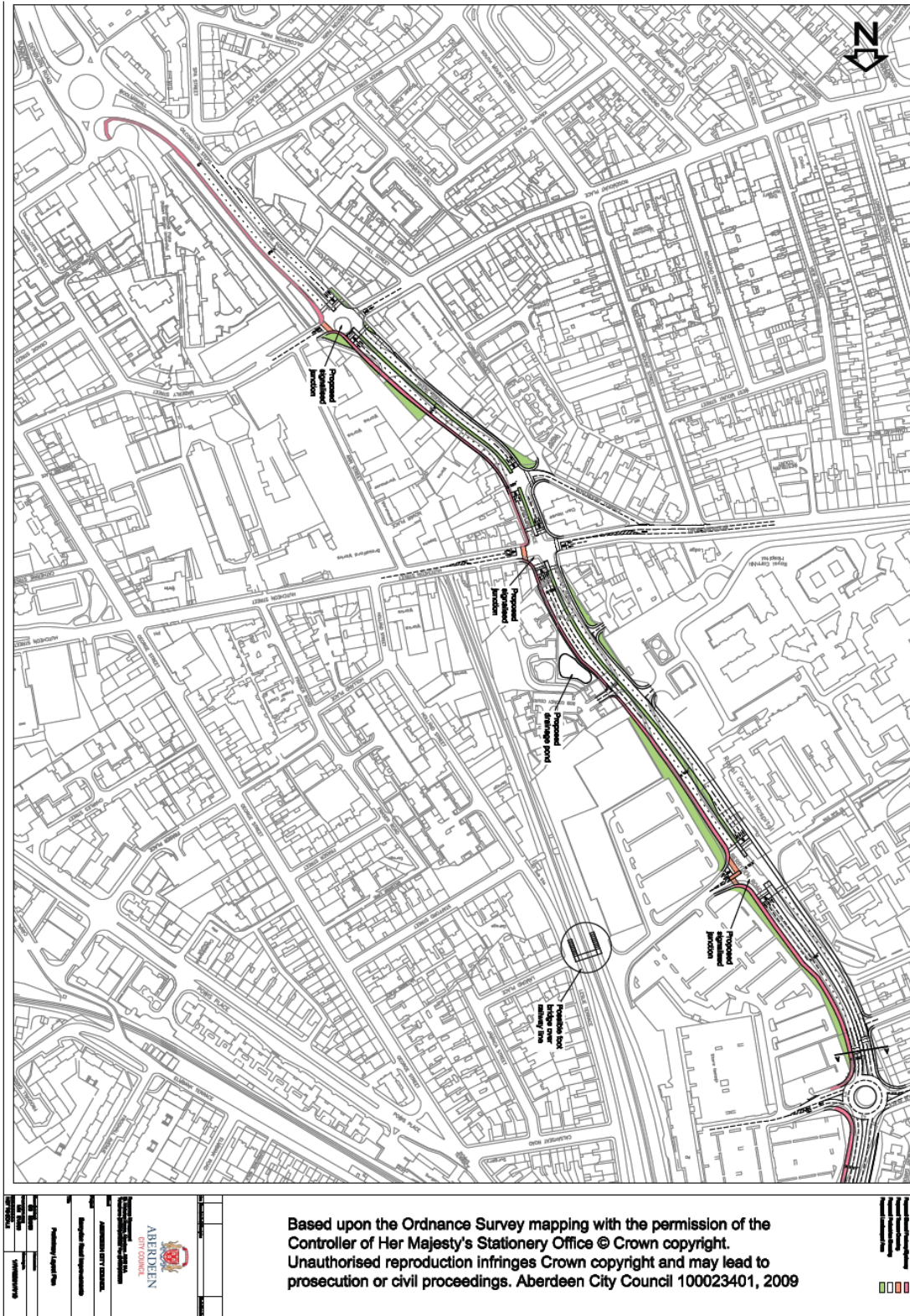
58	8-1(c)	Closed	Ashgrove Road / Westburn Drive	Possible improvements required at Ashgrove Road/Westburn Drive	AM, PM, Sat
59	8-1(o)	Open	Ashgrove Road / Westburn Drive	Possible improvements required at Ashgrove Road/Westburn Drive	AM, PM, Sat
60	8-2(c)	Closed	Ashgrove Road / Westburn Drive	Possible improvements required at Kittybrewster Roundabout	AM, PM, Sat
61	8-2(o)	Open	Ashgrove Road / Westburn Drive	Possible improvements required at Kittybrewster Roundabout	AM, PM, Sat

Test Stage 10 : Confirmation of Final Network Models

-	Option 1	Closed	Berryden Corridor	Network Option 1 - 8-1c or 8-5c ?	AM, PM, Sat
-	Option 2	Open	Berryden Corridor	Network Option 1 - 8-1o or 8-5o ?	AM, PM, Sat

Appendix D – Plans of ‘Do Something’ options

Plan 1. Woolmanhill Roundabout to Retail Park Roundabout



Plan 4. Configuration of Powis Terrace / George St for the different Bedford Road options

