



# **A96 Multi-modal Study STAG Based Appraisal**

## **Case for Change & Preliminary Options Appraisal Report Executive Summary**

On behalf of **Aberdeen City Council**

Project Ref: 330610105 | Rev: Final | Date: April 2022

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## Document Control Sheet

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# Executive Summary

## Background

Stantec was appointed in December 2019 to undertake a Scottish Transport Appraisal Guidance (STAG) based appraisal of the A96 corridor between Inverurie and Aberdeen City Centre. The aim of the study is to build on previously identified and appraised options for improving transport connections to effectively function for all road users, paying particular attention to active travel and public transport connections, between Inverurie and Aberdeen City Centre along the A96 and related routes.

The publication of the Scottish Government's updated **Climate Change Plan** in 2020 set out revised climate change related targets including: reducing car kilometres by 20% and phasing out the need for petrol and diesel vehicles by 2030; and supporting transformational active travel projects. Furthermore, the **Reducing Car Use for a Healthier, Fairer and Greener Scotland** (2022) publication outlines the route map to achieving the 20% reduction in car kilometres by 2030, and describes the key sustainable travel behaviours which make up the framework, including investing in the public transport network.

Scotland's **National Transport Strategy 2** (NTS2), published in 2020 presents the '*Sustainable Travel Hierarchy*' and '*Sustainable Investment Hierarchy*', which together guide decision making by promoting walking, wheeling, cycling, public transport and shared transport options in preference to single occupancy private cars.

This strong underpinning policy context offers strengthened opportunities for successfully developing and implementing sustainable transport schemes and from the outset, the study aim has been to provide **transformational and more sustainable travel options** which can encourage modal shift towards walking, cycling and public transport.

This study, along with the similar multi-modal corridor studies for Aberdeen's other main arterial routes, is also feeding into the development of Aberdeen Rapid Transit (ART), where the ambition is to develop a **high quality, high frequency mass transit network across the city on key corridors and linking key destinations, anchored by P&R facilities** on each corridor. ART has national recognition within Transport Scotland's draft **Strategic Transport Projects Review 2** (STPR2) and in the Scottish Government's Draft **National Planning Framework 4** (NPF4). The work undertaken as part of this A96 Multi-modal study has recognised throughout, the need to develop options which could facilitate the successful delivery of ART on the corridor.

## Case for Change

The first stage of the STAG process is to complete an initial *Case for Change* which primarily focuses on identifying the transport problems and any potential opportunities in the corridor. Several existing studies provided a wealth of relevant data analysis in relation to the corridor, and it was recognised that, from this there is already an established evidence base which provides a foundation for the identification of problems and opportunities. The collation of the previously identified problems and opportunities, further data analysis where appropriate, a three-day site visit, a stakeholder engagement exercise (to validate previously identified problems and identify new problems) and environmental constraints mapping therefore fed into the Case for Change.

### Problems

A range of problems was identified and are set out in this report alongside their supply side root cause and the travel and societal consequences they cause. From this a set of Transport Planning Objectives (TPOs) has been derived which clearly link back to the problems identified.

The problems identified for the corridor and the resultant TPOs are presented in the table below.

No.	Transport problem (from a user's perspective)	Study sub-objective	TPO
1	The environment provides low amenity or unsatisfactory conditions for local <b>walking and wheeling</b>	Improve and maintain the quality of the pedestrian environment and address the barriers which affect some groups moving around when walking or wheeling	<b>TPO1:</b> Improve the quality of the pedestrian experience, and address the barriers which affect people moving around as pedestrians along the A96 corridor between Inverurie and Mounthooly roundabout / Aberdeen city centre
2	<b>Walking and wheeling</b> routes can be indirect compared to crow-fly and can be disjointed / severed	Improve the coherence and directness of walking routes in the corridor	
3	<b>Cycling</b> journeys on designated routes are fragmented and inconvenient	Improve journey quality, times and safety for cyclists along the transport corridors	<b>TPO2:</b> Improve the quality of the cycling experience, and address the barriers which prevent many people cycling along the A96 corridor between Inverurie and Mounthooly roundabout / Aberdeen city centre
4	There are safety concerns around cycling in the corridor which prevent people from <b>cycling</b>	Address safety concerns to increase cycling participation in corridor	
5	<b>Bus services</b> in the corridor are perceived to be of poor quality / poor value for money	Improve the quality (real and perceived) of bus services in the corridor	
6	Many <b>bus stops</b> do not provide a high quality, comfortable and informed waiting environment	Improve the quality of bus stops and the facilities provided there	
7	The <b>bus network</b> in the corridor is focussed on Aberdeen city centre	Reduce the need for interchange when travelling from the corridor across the city	<b>TPO3:</b> Improve the quality of bus travel in the corridor for all users, enhancing the network and the travel experience both for current bus users and to attract new users
8	Access to <b>bus services</b> can be restrictive	Improve access to public transport for those with impaired mobility / health	
9	<b>P&amp;R</b> options are in practice limited to Inverurie and Kintore	Increase the use of P&R in the corridor as a substitute for car travel	
10	<b>Bus journey times</b> are long, particularly compared with private car and rail	Reduce journey times by bus, and narrow the gap between bus and car journey times	<b>TPO4:</b> Reduce bus journey times and improve punctuality in the corridor, and narrow the gap between bus and car-based journey times
11	<b>Bus journey times</b> can be unreliable or are perceived to be unreliable	Improve bus punctuality on services in the corridor	
12	Long <b>bus journey times</b> between Dyce Station and Aberdeen Airport	Improve connectivity between Dyce Station and Aberdeen Airport	
13	High <b>cost</b> (or perceived cost) of <b>bus</b> (relative to income)	Reduce the cost of public transport where this is a demonstrable deterrent to people travelling	<i>While recognising that addressing the cost of bus travel (or the perception) is an issue, especially in terms of ensuring equality of access, bus fares are set by commercial operators and Aberdeen City Council and Aberdeenshire Council do not have control over this.</i>
14	High <b>cost</b> (or perceived cost) of <b>bus</b> (relative to car ownership and usage)	Address the cost of public transport where this is a demonstrable deterrent to its use	
15	<b>Station car parks</b> at Dyce and Inverurie are often full	Station car parking should be used efficiently, and 'genuine' park and ride travel is provided for	<b>TPO5:</b> Improve active travel and bus travel integration with, and access to, rail services in the corridor
16	It is not always possible to get a seat on <b>peak hour rail</b> services	Seating capacity should not act as a constraint on rail travel in the corridor	
17	It is not always possible to access the <b>rail network</b> by bus around Aberdeenshire	Improve bus / rail interchange in the corridor	

No.	Transport problem (from a user's perspective)	Study sub-objective	TPO
18	<b>Car and commercial vehicle-based</b> journey times are extended and unreliable during peak periods due to congestion	Manage journey time for general traffic to prevent traffic re-routing in the corridor	<b>TPO6:</b> Manage general traffic to minimise traffic re-routeing onto secondary and local routes as defined by the North East Roads Hierarchy

### Opportunities

Recent changes across the policy landscape, most notably around climate change, present decision makers with a clear rationale and justification to implement the changes and behavioural change catalysts required in the transport system. As noted above, the publication of the Scottish Government’s updated *Climate Change Plan (2020)*, the *Reducing car use for a healthier, fairer and greener Scotland (2022)* publication, Transport Scotland’s draft STPR2 and Scotland’s NTS2 all provide clear opportunity for developing and implementing transformational sustainable transport schemes.

The completion of the Aberdeen Western Peripheral Route (AWPR) has enabled traffic to route around Aberdeen city. This has provided the opportunity to reassess the roads hierarchy within the city, prioritise sustainable transport infrastructure and facilities on routes into the centre and bring forward the City Centre Masterplan schemes. Furthermore, the **Transport (Scotland) Act 2019** provides local authorities with the powers to implement a workplace parking license scheme and Low Emission Zone (LEZ). Such complementary ‘demand management’ measures are likely to encourage the use of more sustainable modes and support the success of sustainable transport schemes.

The underutilised Park & Ride site at Craibstone offers a ready-made opportunity, if the appropriate level of services, competitiveness and journey quality could be achieved (as envisaged under the ART scheme). Bus operators are investing in new vehicles and fuelling infrastructure, utilising both electric and hydrogen-based technologies. Such vehicles offer environmental benefits and will help to improve perceptions of bus travel, and there is the opportunity to capitalise on these investments through complementary bus priority infrastructure.

## Preliminary Options Appraisal

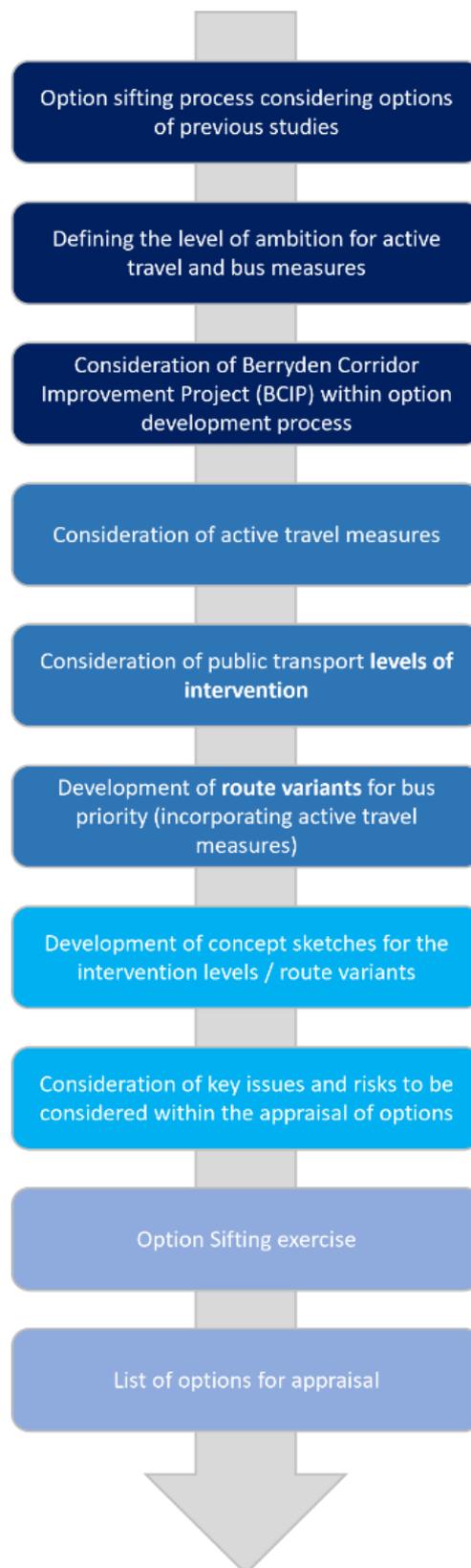
### Option Development

The development of active travel and public transport options has been based on developing **transformational schemes** that can deliver the TPOs for the study, and by doing so, address the issues identified along the corridor related to walking, cycling and bus use.

To develop truly transformational schemes and meet the ambitions of the study, and also recognising the needs of ART, an **end-to-end corridor-based approach** to option development has been adopted, considering potential corridor length schemes between Inverurie and Mounthooly roundabout, and with each scheme incorporating both bus and active travel elements. A separate technical report, *A96 Multi-modal Transport Study - Option Development Report*, Stantec, April 2022, provides extensive detail on the option development process.

A set of guiding design principles was developed to describe the key attributes that make a particular mode of transport attractive to use. From this, the level of ambition was set but, to give flexibility to the option generation and development process, and in recognition that all the design risks have yet to be established, a scalable ambition was developed.

The option development process can be seen the figure opposite.

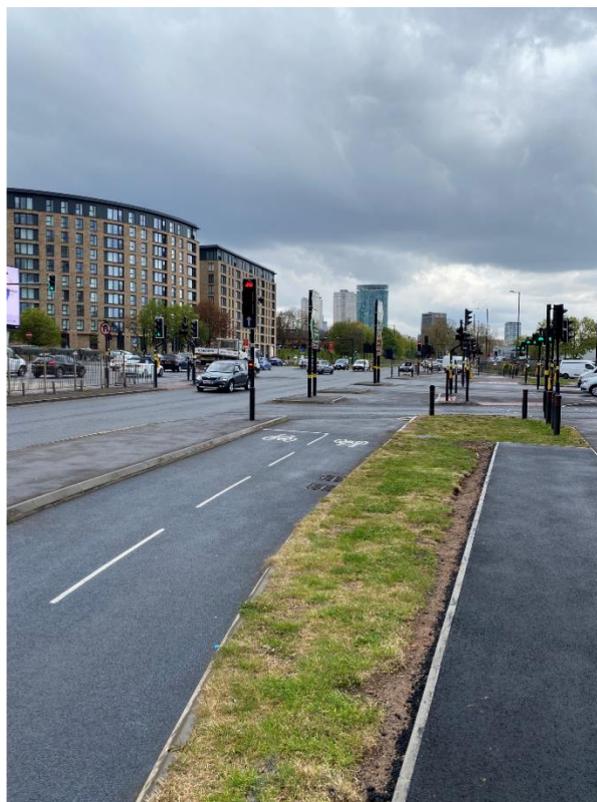


### Active Travel

In line with Transport Scotland's Sustainable Travel Hierarchy, active travel provision along the corridor was considered first, over and above other modes of transport. In the rural area of the corridor between **Inverurie and Craibstone roundabout**, a part new and part upgraded shared-use path, running parallel to the A96 is proposed.

In the more urban area of the corridor between **Craibstone roundabout and Mounthooly** roundabout / city centre, two forms of **continuous dedicated cycling provision** have been considered (with the images below highlighting similar infrastructure elsewhere):

- A **two-way segregated cycle track** (provided on one side of the carriageway)
- A **one-way (with traffic flow) segregated cycle track** provided on each side of the carriageway.



For consistency in provision, and to aid user understanding and follow best practice, these two types of provision have been considered as separate options i.e., either the two-way segregated cycle track is provided along the corridor (between Craibstone and Mounthooly / city centre), or the one-way (with traffic flow) segregated cycle tracks on each side of the carriageway is provided i.e., 'mixing and matching' the two types along the corridor has not been considered. Under both proposed active travel options there would be complete segregation for cyclists from traffic (in line with Scottish Cycling By Design guidance for a road of this nature).

Furthermore, it is assumed that in addition to the cycle track, **footway improvements** between Craibstone and Mounthooly / city centre would include tightening junction geometries to reduce pedestrian crossing time and to slow traffic speeds as they enter and exit side arm roads. Note that general improvements in terms of footway quality, maintenance, removal of street clutter etc. were agreed as 'Do Minimum' measures and as such do not explicitly form part of the options but are assumed to be in place to improve the pedestrian environment.

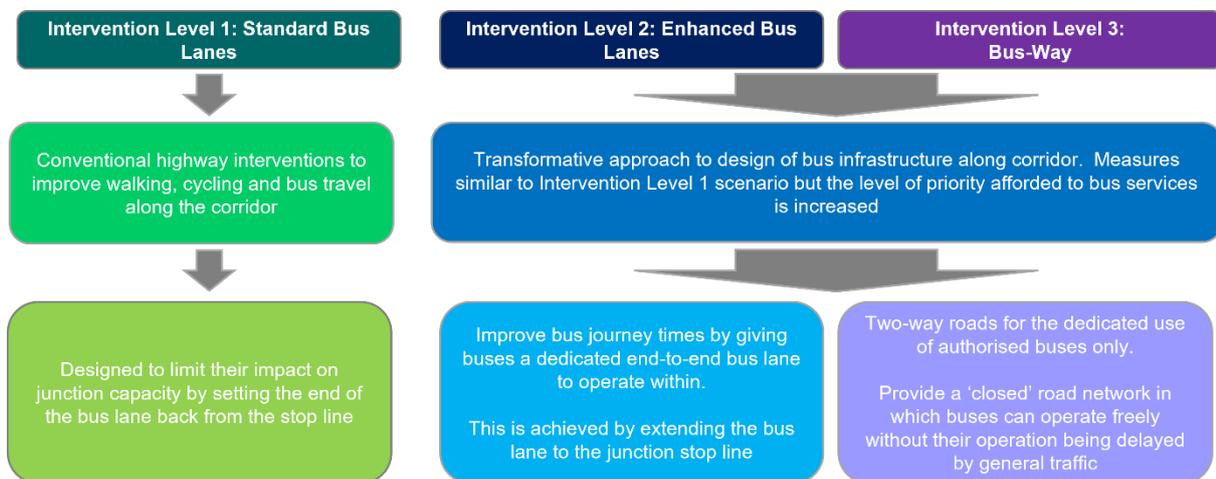
Greater detail on the active travel infrastructure proposed can be found in the main body of this report, and in the *A96 Multi-modal Transport Study - Option Development Report, Stantec, April 2022*.

Bus

After consideration of active travel provision along the corridor, three bus ‘intervention levels’ were then developed, ranging in ambition as shown below. It is assumed that continuous bus priority would be provided in the form of intervention level 1, 2 or 3 between Craibstone roundabout and Mounthooly roundabout / city centre. Between Inverurie and Craibstone roundabout, on the trunk road network, bus priority does not form part of the proposals as there is not sufficient delay to justify this. However, a standalone improvement is considered at Port Elphinstone as discussed below.

**All three intervention levels require the reallocation, in both directions, of a lane of the existing carriageway from general traffic to bus only between Craibstone roundabout and Mounthooly roundabout / city centre.**

The active travel options as noted above (two-way cycle track or one-way (with traffic flow) segregated cycle tracks) are assumed to be implemented alongside all levels of intervention for bus.



An example of intervention level 3, the busway, is shown below (photos are of a scheme in Swansea).

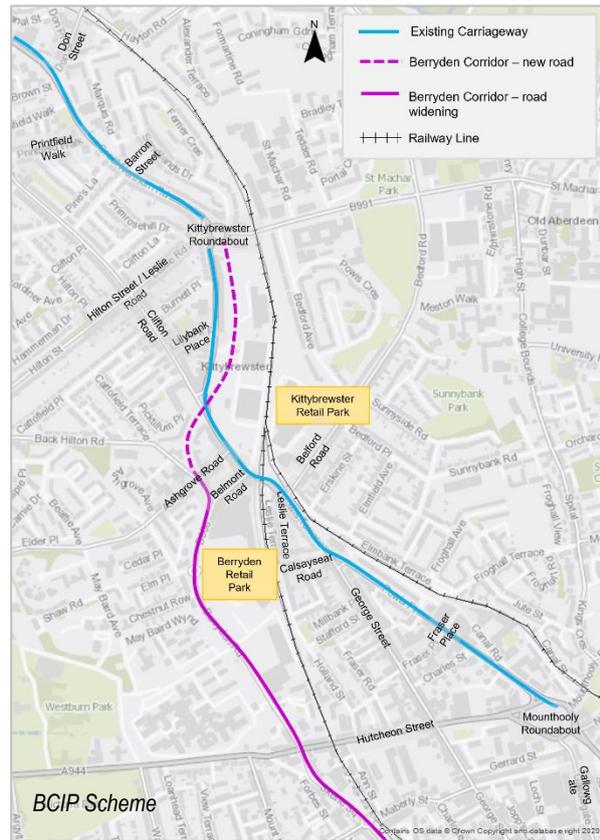


### Route Options

A range of potential ‘route’ options (combining both active travel and bus infrastructure) were developed by applying good practice design guidance to bus priority and cycling and walking infrastructure, whilst taking account of the physical constraints along the corridor.

These route variants take cognisance of the committed Berryden Corridor Improvement Project (BCIP) being progressed by Aberdeen City Council. This scheme (as shown in the figure opposite) will deliver a new / upgraded dual carriageway linking Skene Square to the A96 at Kittybrewster Roundabout and represents a substantial change to the road network.

The BCIP presents several significant challenges and opportunities for this study which have been considered during option development and the subsequent appraisal. For the purposes of option generation, and reflecting the policy environment, it was assumed that the BCIP (and the additional road capacity it creates) should be considered as an opportunity for the study. Route options which utilise the BCIP (i.e., reallocate road space in the Berryden corridor), in part or wholly, have therefore been considered.

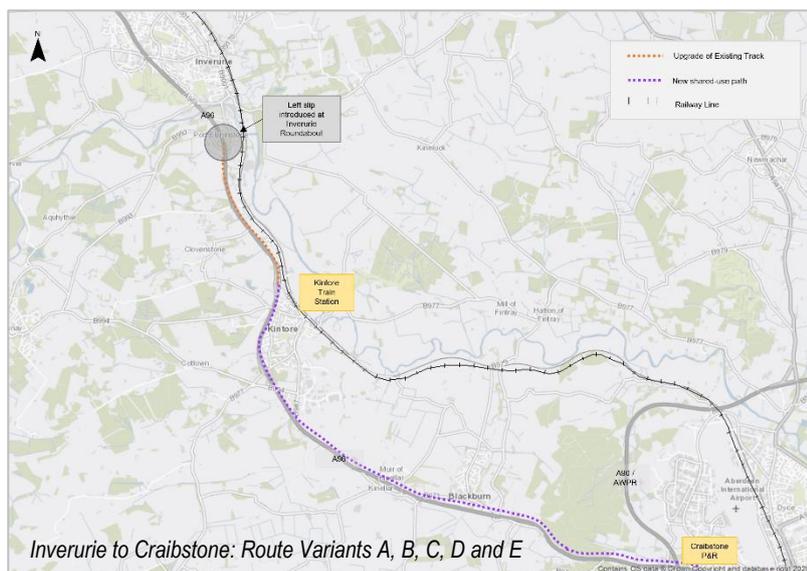


Five different end-to-end ‘route’ variants were proposed (A, B, C, D and E) under each of the three bus priority Intervention Levels, giving a total of 15 options. **All options accommodate the continuous one-way (with flow) segregated cycle tracks or the two-way segregated tracks as discussed above.**

Variant A assumes the BCIP is not in place. Between Inverurie and Kittybrewster roundabout, the five route variants (A, B, C, D and E) are the same, following the A96, and are shown below. Thereafter, the five route variant proposals between Kittybrewster roundabout and Mounthooly roundabout / the city centre are set out.

### Inverurie to Craibstone

**Active Travel:** There is an existing shared-use path between Inverurie and Kintore which would be upgraded to ensure consistency with the corridor active travel proposals. Aberdeenshire Council is progressing an active travel route option between Kintore and Blackburn. However, the route is on an off-line alignment and as such, the proposals here include a new shared use path aligned with the A96. All route options include a new active travel route between

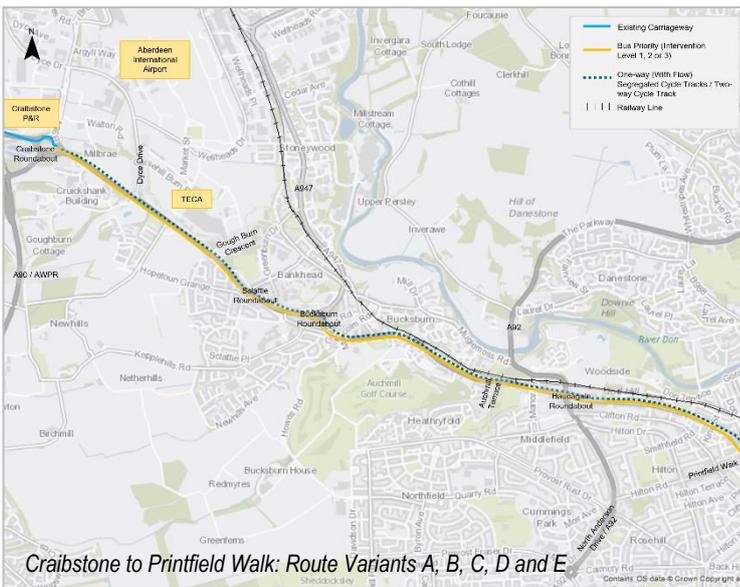


Blackburn and Craibstone, adjacent to the A96 (this proposed shared-use path would link the existing and planned provision between Inverurie and Blackburn). This would provide a continuous shared-use active travel route between Inverurie and Craibstone Roundabout (a shared-use route is considered appropriate along this section of the corridor given the anticipated walking and cycling volumes in this less urban environment).

**Bus:** There are minimal delays to bus services between Inverurie and Craibstone except for some delay experienced exiting Inverurie onto the A96 trunk road. As such, no interventions are planned along the A96, except for a stand-alone junction improvement (slip lane) at Port Elphinstone to enable all traffic to more easily exit Elphinstone Road onto the A96 eastbound.

There is a potential third-party land requirement along the full length of this section to accommodate the shared-use Inverurie to Craibstone active travel route.

### Craibstone to Printfield Walk



Craibstone to Printfield Walk: Route Variants A, B, C, D and E

**Active Travel:** A two-way segregated cycle track (located on the northern side of the carriageway) or one-way (with traffic flow) segregated cycle tracks. Footway improvements to tighten junction geometries and reduce pedestrian crossing time and to slow traffic speeds as they enter and exit side roads.

**Bus:** Standard bus lanes, enhanced bus lanes or the busway are proposed for the full length of this section with the capacity for general traffic reduced to a single lane between junctions or also at junctions in the case of the latter two.

Potential third-party land requirement

along the full length of the section

### Printfield Walk / Kittybrewster to city centre route variants

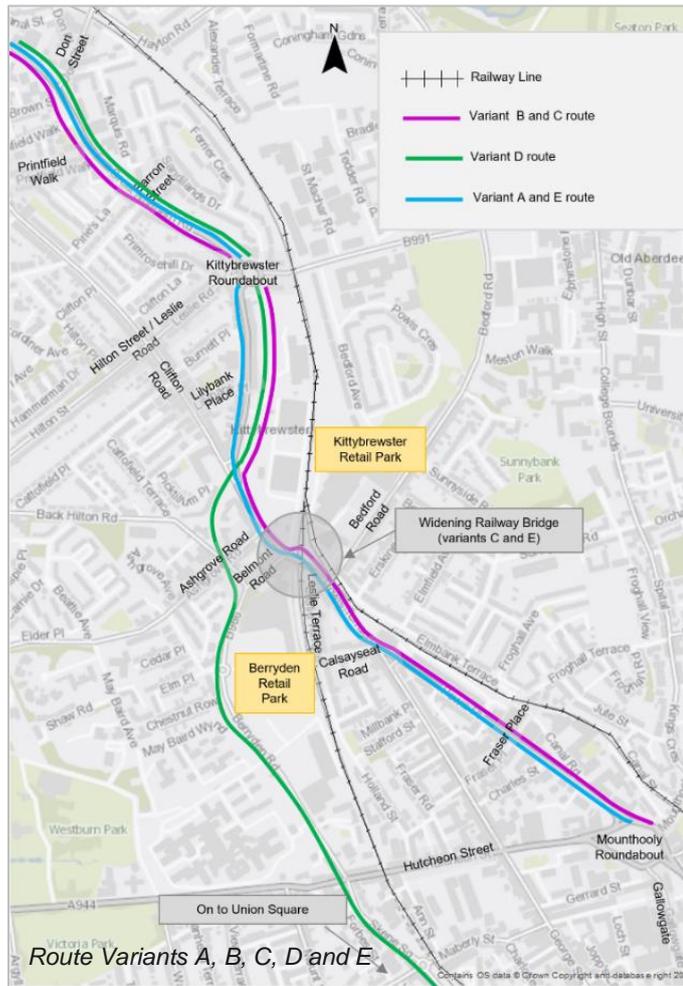
As noted above, five route variants are considered for routing into the city centre south of Kittybrewster roundabout.

In terms of **bus** priority, intervention level 1, 2 or 3 would be applied across these route variants. The five **variants** (as shown in the figure below) can be defined by (heading into Aberdeen):

- The end point, either Mounthooly or Union Square - and by implication its route from the A96 / Clifton Road junction either along the new BCIP or via the A96 Powis Terrace / Powis Place
- Its route between Kittybrewster roundabout and the A96 / Clifton Road junction, either via the BCIP or Great Northern Road
- Whether the Belmont Road railway bridge is widened or not

As noted above, in terms of the

intervention levels, the route variants B, C and D require the reallocation, in both directions, of a lane of the existing carriageway from general traffic to bus only along the BCIP between Kittybrewster roundabout and Clifton Road (variant A has been developed assuming the BCIP is not in place, and variant E routes via the current Great Northern Road). Similar road space reallocation is also required either on the A96 Powis Terrace / Powis Place (variants A, B, C and E), or on the southern section of the BCIP scheme and Skene Square, Woolmanhill and Denburn (variant D).



Summary of bus priority route variants

Route Variants	End point	BCIP South (Kittybrewster-Union Square)	BCIP North (Kittybrewster-Clifton Road)	Gt Northern Road (Kittybrewster-Clifton Road)	Belmont Road Bridge widening (Kittybrewster to Mounthooly)
A	Mounthooly	NA	NA	✓	✗
B	Mounthooly	✗	✓	✗	✗
C	Mounthooly	✗	✓	✗	✓
D	Union Square	✓	✓	✗	✗
E	Mounthooly	✗	✗	✓	✓

Variant A is not discussed further as it was sifted out before the options appraisal was undertaken (details of the variant can be found in the main body of this report).

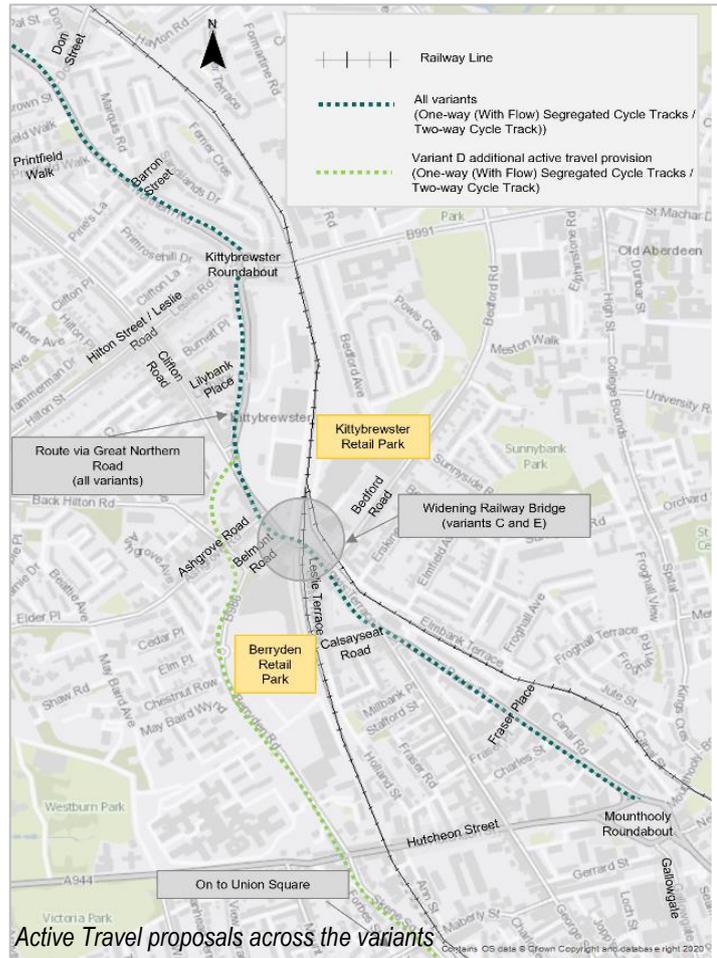
Furthermore, all variants assume road widening between Kittybrewster Roundabout and Printfield Walk with a loss of parking and a potential third-party land requirement. If this were not possible, traffic ‘gating’ would be implemented to provide bus priority (this would reduce traffic queuing in this narrower section of the corridor, allowing buses to receive a level of priority over general traffic).

**Active Travel:** Alongside the bus priority route variants as set out above, cycling provision (as shown in the route variant image opposite) is provided by either:

- the segregated two-way cycle track (on the northern side of Great Northern Road until Kittybrewster Roundabout, where it crosses the road to continue on the eastern side of Great Northern Road, before reaching the new junction at Great Northern Road / Clifton Road), or
- one-way (with traffic flow) segregated cycle tracks on both sides of the carriageway.

The route then continues down Powis Terrace and Powis Place to Mounthooly Roundabout (as either the segregated two-way cycle track or one-way with traffic flow segregated tracks).

Under variant D, additional active travel provision is proposed along the BCIP south of Clifton Road and onwards to Union Square. It is recognised that active travel provision has been included in the BCIP design, but this may need upgrading / altering to provide a consistent level of provision across the full A96 corridor.



Individual images (concept sketches) showing greater detail for each option can be found both within the main body of this report with more detailed concept drawings contained within the studies associated technical report, *A96 Multi-modal Transport Study - Option Development Report, Stantec, April 2022*.

### Options Appraisal

In line with STAG, the Preliminary Options Appraisal has appraised each option against: the study TPOs, STAG Criteria (Environment, Safety, Economy, Integration and Accessibility and Social Inclusion), Established Policy Directives, Feasibility, Affordability, and Public Acceptability. Use of the ASAM<sup>1</sup> model provided quantitative outputs to inform the appraisal.

The tables below summarise the main advantages and disadvantages in relation to the active travel proposals, the three bus intervention levels and the four route options.

<sup>1</sup> Aberdeen Sub-Area Model

Appraisal Summary – Key Advantages and Disadvantages – Active Travel Options and Bus Priority Intervention Levels

	Advantages	Disadvantages
Pedestrian Improvements	<ul style="list-style-type: none"> <li>Safety benefits through reduced conflicts between pedestrians and cyclists due to segregated cycle tracks (between Craibstone and Mounthooly / city centre)</li> <li>Improved signalised junctions integrated to enable effective pedestrian crossings</li> <li>Improvements to the pedestrian environment were welcomed by respondents to the public survey (undertaken to support the options appraisal)</li> </ul>	
One-way (With Flow) Segregated Cycle Tracks	<ul style="list-style-type: none"> <li>Step change improvement to walking, cycling and wheeling provision – with improved safety and security</li> <li>Reduced pedestrian conflict (on currently signed shared footway areas)</li> <li>Generally easier to accommodate at large complex signalised junctions</li> <li>Generally better connectivity to other cycle routes</li> <li>Response to the public survey, undertaken to support the options appraisal, welcomed segregated cycling infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Less space efficient and flexible</li> <li>Less coherent for users when the cycle track is detached from the road</li> <li>Cyclists may incorrectly use the track in the wrong direction if it is easier than crossing a major road</li> <li>Not easily compatible with intervention level 3 (busway)</li> </ul>
Two-way Segregated Cycle Track	<ul style="list-style-type: none"> <li>Step change improvement to walking, cycling and wheeling provision - with significantly improved safety and security</li> <li>Reduced pedestrian conflict (on currently signed shared footway areas)</li> <li>More space efficient (requires less additional land take)</li> <li>More coherent when the cycle track is detached from the road (e.g., along high-speed roads / dual carriageways)</li> <li>Quicker to grit / de-ice and remove snow, with likely lower maintenance costs than one way with-flow tracks</li> <li>41% of respondents to the public engagement survey, undertaken to support the options appraisal, noted that they would prefer a two-way segregated cycle track (as opposed to one-way (with flow) segregated cycle tracks)</li> </ul>	<ul style="list-style-type: none"> <li>Connectivity for some cyclists to and from the track can be more difficult to manage</li> <li>Cycle traffic at risk from both left and right turning traffic entering side roads</li> <li>Moving between the cycle track and road is more difficult for cyclist travelling against the flow of traffic.</li> <li>Cyclists may be dazzled by the headlights of oncoming vehicles especially in rural locations where there is no street lighting</li> <li>Potential for accidents if cyclists are travelling towards each other on steep sections</li> </ul>
Intervention Level 1 (Standard bus lanes)	<ul style="list-style-type: none"> <li>Adaptable bus scheme - hours of operation or use by other vehicles (e.g., commercial vehicles) could be accommodated if necessary</li> <li>Introduces fully accessible bus stops</li> <li>Minimal general traffic journey time or re-routing impacts</li> <li>Measures partly align with climate change policy</li> <li>60% of respondents to the public survey noted a preference for some level of bus priority on the corridor (with 19% stating intervention level 1 as their preference)</li> </ul>	<ul style="list-style-type: none"> <li>Less transformational and scores the lowest against many of the study TPOs and STAG criteria</li> <li>Lower public journey time and reliability benefits</li> <li>Unlikely to result in a significant increase in bus use due to minimal journey time benefits</li> <li>Relocation of on-street parking required</li> </ul>
Intervention Level 2	<ul style="list-style-type: none"> <li>Adaptable bus scheme – hours of operation or use by other vehicles (e.g.,</li> </ul>	<ul style="list-style-type: none"> <li>Significant general traffic re-routeing to be managed</li> </ul>

	Advantages	Disadvantages
(Enhanced bus lanes)	<p>commercial vehicles) could be accommodated if necessary</p> <ul style="list-style-type: none"> <li>• Significant improvement to bus journey times and service reliability</li> <li>• Likely to increase bus use with environmental and safety benefits and improve opportunities to access jobs and education</li> <li>• Measures align more closely to climate change policy and action</li> <li>• 60% of respondents to the public survey noted a preference for some level of bus priority on the corridor (with 20% stating intervention level 2 as their preference)</li> </ul>	<ul style="list-style-type: none"> <li>• Generates increases to general traffic journey times along the corridor</li> <li>• Relocation of on-street parking required</li> </ul>
Intervention Level 3 (Busway)	<ul style="list-style-type: none"> <li>• Transformative change to bus services along the corridor with faster journey times and reliable services</li> <li>• Provides fully accessible bus stops with high quality waiting environments</li> <li>• Likely to increase bus use with greater air quality and safety and benefits</li> <li>• Improves opportunities to access jobs and education</li> <li>• Measure aligns more closely to climate change policy and action</li> <li>• Opportunity to convert the busway to a tramway in the future</li> <li>• 60% of respondents to the public survey noted a preference for some level of bus priority on the corridor (with 21% stating intervention level 3 as their preference)</li> </ul>	<ul style="list-style-type: none"> <li>• Significantly higher cost than intervention level 2 without significantly greater journey time benefits</li> <li>• Bespoke vehicles may be required to operate within the busway which may require investment in new vehicles and associated maintenance / depot requirements</li> <li>• Significant traffic re-routing impacts to be managed</li> <li>• Generates increases to general traffic journey times along the corridor</li> <li>• Scheme generally less adaptable once built</li> <li>• Relocation of on-street parking required</li> </ul>

Appraisal Summary – Key Features – Option Variants

Route Variant	Route Description (Between Kittybrewster Roundabout and Mounthooly Roundabout / City Centre)	Key Features
B	Routes along the committed BCIP scheme between Kittybrewster roundabout and Powis Terrace, and Powis Terrace / Powis Place to Mounthooly	<ul style="list-style-type: none"> <li>• Does not provide continuous bus priority and therefore generates the smallest reductions in bus journey times across all route variants</li> <li>• Lowest cost variant (capital cost of active travel and bus measures estimated at £21m - £71m (at 2021 prices) dependent on the intervention level)</li> <li>• Only 5% of respondents to the public survey noted a preference for this route variant</li> </ul>
C	Routes along the committed BCIP scheme between Kittybrewster Roundabout and Powis Terrace, and Powis Terrace / Powis Place to Mounthooly, with road widening at Belmont Road Railway Bridge	<ul style="list-style-type: none"> <li>• Offers significant bus journey time improvements over variant B due to the provision of continuous bus priority along the corridor between Craibstone and Mounthooly roundabout</li> <li>• Requires costly bridge widening / replacement</li> <li>• High cost variant (capital cost of active travel and bus measures estimated at £33m - £95m (at 2021 prices) dependent on the intervention level)</li> <li>• 10% of respondents to the public survey noted a preference for this route variant</li> </ul>

Route Variant	Route Description (Between Kittybrewster Roundabout and Mounthooly Roundabout / City Centre)	Key Features
D	Routes along the committed BCIP scheme between Kittybrewster Roundabout and Skene Square, and onwards to Union Square	<ul style="list-style-type: none"> <li>• Offers the greatest bus journey time improvements for re-routed services to bus / railway station at Union Square but would not benefit (and may produce disbenefits) for passengers going to Powis Terrace / Powis Place etc</li> <li>• Provides continuous bus priority to Aberdeen bus and rail station</li> <li>• Would need sufficient bus services to re-route down Berryden Corridor to justify scheme</li> <li>• Significant increases in general traffic journey times and traffic re-routing, and as such, has the greatest negative impacts on fuel use and greenhouse gas emissions</li> <li>• Likely to significantly negatively impact on the BCIP objectives and outcomes</li> <li>• Variant cost higher than variant B but lower than variants C and E (capital cost of active travel and bus measures estimated at £23m - £80m (at 2021 prices) dependent on the intervention level)</li> <li>• 17% of respondents to the public survey noted a preference for this route variant</li> </ul>
E	Routes along Great Northern Road between Kittybrewster Roundabout and Powis Terrace / Powis Place (does not use BCIP scheme)	<ul style="list-style-type: none"> <li>• Offers significant bus journey time improvements over variant B</li> <li>• Provides continuous bus priority due to the provision of continuous bus priority along the corridor between Craibstone and Mounthooly roundabout</li> <li>• Requires costly bridge widening / replacement</li> <li>• Requires complex junction redesign at Berryden Corridor / Powis Terrace junction to accommodate the new access to Great Northern Road</li> <li>• High cost variant (capital cost of both active travel and bus measures estimated at £36m - £95m (at 2021 prices) dependent on the intervention level)</li> <li>• Only 8% of respondents to the public survey noted a preference for this route variant</li> </ul>

This study has been undertaken as the country transitions out of the COVID-19 pandemic. Consideration has been given within the appraisal to both the potential positive and negative impacts of the pandemic on the viability of the options and their ability to support a 'green recovery' from the pandemic, and to 'lock-in' positive pandemic behaviours e.g., increased active travel. As the region transitions out of the pandemic, close monitoring of travel behaviour and trends will provide an understanding of the structural impacts of the pandemic and enable a robust business case to be developed to allow for appropriate decision making.

### Option Selection or Rejection

The table below presents the key rationale for selection or rejection of options at this stage in the appraisal process. Note that all options below are assumed to incorporate active travel provision – using either one-way with flow cycle tracks or a two-way cycle track, as well as improvements to the pedestrian environment.

#### Option Selection or Rejection

Intervention Level	Variant	Select	Rationale for selection or rejection
Intervention Level 1 (Standard bus lanes)	B	✓	Provides bus journey time improvements with less significant impacts to general traffic (than intervention levels 2 or 3) and lower overall costs given no bridge widening (as required under variants C and E).
	C	✓	Provides bus journey time improvements with less significant impacts to general traffic (than intervention levels 2 or 3).
	D	✗	While variant D offers the greatest public transport benefits in terms of access to the railway and bus station in Aberdeen, there are likely to be disbenefits to those users whose services are re-routed but who have a destination on Powis Terrace / Powis Place and to the north of the city centre. Stagecoach and FirstBus indicated the key passenger market is on Powis Terrace / Powis Place and may be disinclined to reroute services. Variant D also generates the most significant disbenefits to general traffic in terms of traffic re-routing and subsequent fuel use and associated greenhouse gases. The variant is likely to negatively impact on the BCIP objectives and outcomes and require a redesign of the BCIP scheme to accommodate the proposals. As such, it may be hard to justify any change to the already committed BCIP scheme and explain the changes to the general public.
	E	✓	Provides bus journey time improvements with less significant impacts to general traffic (than intervention levels 2 or 3). Variant E also has less of an impact on the committed BCIP scheme compared to variants B and C.
Intervention Level 2 (Enhanced bus lanes)	B	✓	Provides bus journey time improvements and a transformative scheme that aligns well with national policy and is likely to generate modal shift.
	C	✓	Provides significant bus journey time improvements and a transformative scheme that aligns well with national policy and is likely to generate modal shift.
	D	✗	As above for 1D.
	E	✓	Provides significant bus journey time improvements and a transformative scheme that aligns well with national policy and is likely to generate modal shift. Variant E also has less of an impact on the committed BCIP scheme compared to variants B and C.
Intervention Level 3 (Busway)	B	✗	The additional costs of the busway level of intervention do not generate a commensurate reduction in bus journey times. This makes the additional cost of the busway difficult to justify over intervention level 2 (the enhanced bus lanes). The busway would also be less adaptable than the bus lane intervention levels 1 and 2 and may also require investment in bespoke vehicles / may only be usable by specific vehicles, lowering its overall benefit. Also note comments above for 1D in relation to 3D.
	C	✗	
	D	✗	
	E	✗	

## Conclusions and Next Steps

Based on the rationale for selection or rejection of the options as presented in the table above, the study's conclusions and potential next steps are presented here.

### Active Travel

In terms of **active travel** provision, either continuous segregated one-way (with flow) or two-way cycle tracks could be provided along the corridor between Craibstone roundabout and Mounthooly, with further shared use footway between Craibstone roundabout and Kintore.

While the design principles adopted for this study sought to consider consistency of provision (i.e., the same track type provision throughout), there is the potential at the next stage to consider where it may be more appropriate to implement a mix of both types along the corridor as appropriate (noting that one-way (with flow) tracks can be favoured in more dense urban areas). Improvements to the pedestrian environment are also proposed to increase pedestrian safety and create a more attractive pedestrian setting. The segregation of cyclists and pedestrians, between Craibstone roundabout and Mounthooly roundabout, from the currently provided shared footways is a clear safety benefit.

### Bus

Of the three **bus intervention levels**, the significant additional costs of the busway level of intervention (intervention level 3) do not generate a commensurate reduction in bus journey times. This makes the additional cost of the busway difficult to justify over intervention level 2 (the enhanced bus lanes). The busway would also be less adaptable than the bus lane intervention levels 1 and 2 and may also require investment in bespoke vehicles / may only be usable by specific vehicles, lowering its overall benefit. For this reason, it is not recommended that the busway level of intervention be progressed further.

Route variant D provides bus priority to the city centre along the BCIP / Skene Square / Denburn Road (from Kittybrwester roundabout to Union Square) as opposed to on the A96 (from Clifton Road along Powis Terrace / Powis Place to Mounthooly roundabout). Such a route offers the greatest public transport benefits in terms of access to the railway and bus station in Aberdeen, but there would be disbenefits to those users whose services are re-routed but who have a destination on Powis Terrace / Powis Place and to the north of the city centre. Stagecoach and First indicated that the key passenger market is on Powis Terrace / Powis Place and may be disinclined to reroute services.

Route variant D also generates the most significant disbenefits to general traffic in terms of increased travel times, traffic re-routing and the resulting fuel use and associated greenhouse gases. The variant is likely to negatively impact on the BCIP objectives and outcomes and require a redesign of the BCIP scheme to accommodate the proposals. As such, it may be hard to justify any change to the already committed BCIP scheme and explain the changes to the general public.

For the above reasons, **progression of route variant D, across all intervention levels, is not recommended.**

The **options considered worthy of progression** for more detailed appraisal include:

- **Both active travel options**, one-way segregated (with flow) cycle tracks and a two-way segregated cycle track, as well as footway and junction improvements to improve the pedestrian environment.
- **Intervention level 1** (standard bus lanes) and **intervention level 2** (enhanced bus lanes) across **route variants B, C and E** (shown in the diagram below). All three variants route along Powis Terrace / Powis Place with:
  - Variants B and C routeing along the BCIP between Kittybrwester and Clifton Road and Variant E routeing via the retained Great Northern Road

- Variants C and E including the widening of the railway bridge at Belmont Road to enable continuous bus lanes through this section.

At the next stage of the appraisal, **key issues and risks** requiring more detailed consideration include:

- **Impacts of road space reallocation** between Craibstone roundabout and Mounthooly roundabout, with the reallocation of a lane of the existing carriageway from general traffic to bus only. The potential impacts to all road users needs consideration, especially the potential cumulative impacts of the proposals for the A96 when considered with the proposals for the other corridor studies

- **Loss of on-street parking:** due to the reallocation of road space along the A96, and Great Northern Road (variant E) between Don Street and Clifton Road

- **Highway widening:** need for widening of the highway along the A96 Great Northern Road between Printfield Walk and Kittybrewster roundabout. This requires a widening of the road into front gardens which, depending on land ownership, could require Compulsory Purchase Order powers

- **Impact on the BCIP** and the scheme objectives

- **Clifton Road junction design:** layout and operation of the Clifton Road junction will be complicated by the competing priorities from general traffic, bus, cycle, and pedestrian demands

- **Powis Terrace (variants C & E):** proposed widening of Powis Terrace will require the replacement of the Belmont Road railway bridge and the potential construction of a retaining wall alongside the railway south of the bridge

A range of **design and operations risks** need to be considered at the next stage, including: third party land requirements for road widening (including at junctions); required waiting and loading restriction changes; and importantly, the wider traffic impacts due to traffic reassignment, and especially when combined with the proposals for the other key corridors. A more detailed set of design and operational risks for consideration is provided in the main body of the report.

