

ANNEX E

The A96 Dualling East of Huntly to Aberdeen Improvement Strategy Option Q Appraisal Report – October 2018

Transport Scotland

A96 Dualling East of Huntly to Aberdeen

Improvement Strategy Option Q Appraisal Report

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This report takes into account the particular instructions and requirements of our client.
It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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Executive Summary

Improvement Strategy Option Q is located to the north of the existing A96 between Dyce and Colpy. It follows the existing A920 road corridor between Colpy and Oldmeldrum, and the A947 corridor between Oldmeldrum and Dyce, tying in with the AWPR at Goval Junction. Option Q originated during the DMRB Stage 1 process which identified 16 broadly defined improvement strategies (Options A to Q) as conceptual alternatives for providing a dual carriageway between Inverness and Aberdeen.

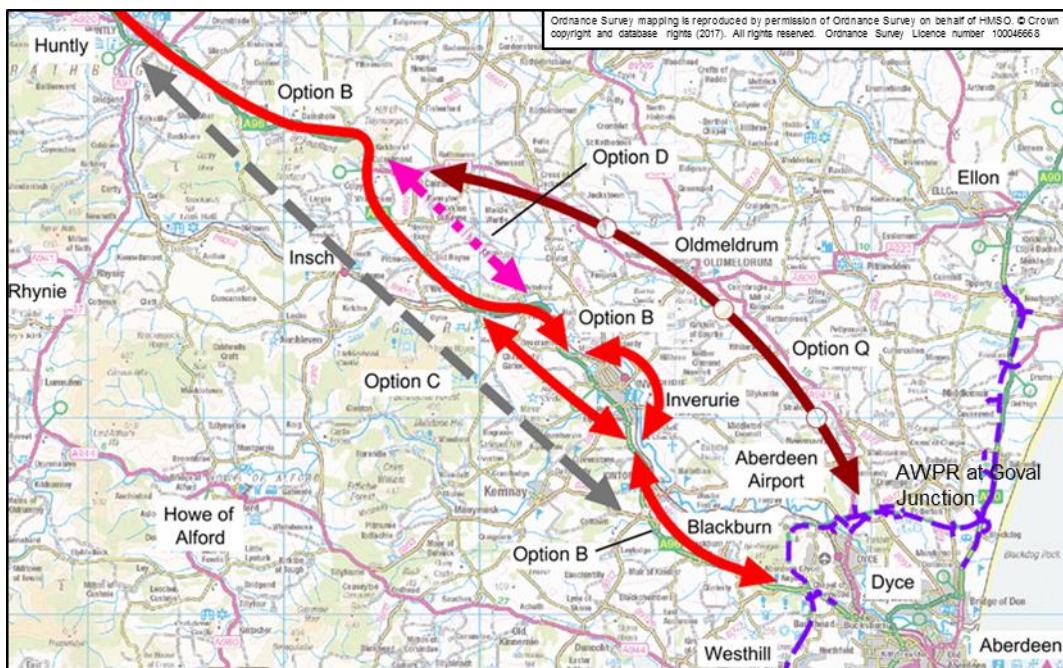


Figure A1: DMRB Stage 1 Improvement Strategy Options B, C, D and Q

DMRB Stage 1 Outcomes

Improvement Strategy Option Q was eliminated at DMRB Stage 1 following an initial sifting process which assessed all Improvement Strategies against the six A96 Dualling Programme Objectives. It concluded that Option Q did not support Programme Objectives 3, 4 and 5 in relation to providing opportunity to grow the regional economies along the corridor, facilitating active travel in the corridor and facilitating integration with public transport.

Following feedback received from the public and stakeholders in relation to the Improvement Strategies presented, there was a desire to reconsider Improvement Strategy Option Q. Transport Scotland therefore asked AmeyArup to undertake a review of the findings of the DMRB Stage 1 Assessment in relation to Option Q.

AmeyArup Initial Review and Assessment

AmeyArup firstly reviewed the DMRB Stage 1 Assessment and sifting process using the information available at that time. This review found that the appraisal of Improvement Strategy Option Q was consistent with the approach adopted across the A96 Inverness to Aberdeen Improvement Strategies. AmeyArup agreed that:

- **Improvement Strategy Option Q does not support the A96 Programme Objectives**

PO1: Improve the operation of the A96 - A new dual carriageway using the Option Q route along the A947 corridor would not significantly reduce traffic volumes on the existing dual carriageway section of the A96 between Port Elphinstone and Craibstone. Therefore, it provides little opportunity to relieve operational issues associated with the existing A96, with the majority of traffic continuing to favour use of this section.

PO2: Improve road user safety - The safety of the existing A96 would remain unchanged since junction upgrades on the existing section between Port Elphinstone and Craibstone would not be undertaken if an Option Q route along the A947 corridor were selected.

PO3: Grow regional economy - The remoteness of the A947 from the existing A96 corridor at the eastern end of the scheme in conjunction with the limited reduction in A96 traffic volumes along the corridor also means that it provides little opportunity to grow the regional economies on the A96 corridor.

PO4 & PO5: Facilitate active travel & integration with public transport facilities - An Option Q route would not offer new opportunities since existing facilities are currently centred around the existing A96 corridor.

PO6: Avoid significant environmental impacts - Option Q is unlikely to offer significant opportunities to reduce the environmental effect of the A96 on communities along the existing dualled section since the traffic volumes will not reduce significantly and would introduce new environmental impacts along the A947 corridor.

- **Improvement Strategy Option Q does not support the Strategic Development Plan for the A96 Strategic Growth Corridor**

The A96 Strategic Growth Corridor allows for 3,300 new homes and 42 hectares of employment land between 2015 and 2026, and a further 4,200 new homes and 28 hectares of employment land between 2027 and 2035, predominantly in the vicinity of Inverurie and Kintore. Whereas the 2014 Aberdeenshire Local Development Plan has around 600 new homes and 7 hectares of employment allocated between 2007 and 2023 at Newmachar and Oldmeldrum.

This underlines the importance of the A96 Corridor area for future development, inward investment and driving the local economy. The Strategic Development Plan, supported by the Regional Transport Strategy, supports significant housing and employment growth in the A96 corridor. A basic tenet of the strategy is that the A96 will provide the necessary improvements in connectivity by maintaining levels of accessibility and reducing congestion.

- **Modelling of Improvement Strategy Option Q indicates low levels of benefit for the majority of A96 road users**

Traffic modelling demonstrated that Improvement Strategy Option Q does not attract many commuter trips away from the most congested part of the A96 between Inverurie and Aberdeen, and thus does little to improve conditions and create opportunities for communities along the existing A96.

The A96 CRAM v1.2 model was used to inform a high level assessment of the impact of Improvement Strategy Option Q on traffic flows. The analysis indicates that an Option Q would have a limited impact overall, on traffic using the existing A96 corridor, with only a 10% average reduction in flow on the busiest sections.

- **Other relevant information to note:**

The population of the towns in the A96 corridor is about four times greater than that of the towns in the A947 corridor. Significantly more journeys are made within the A96 corridor than in the A947 corridor. Provision of a new dual carriageway that achieves the programme objectives and serves these areas well therefore induces greater benefits when located closest to the existing A96 corridor.

Whilst the A96 already provides a bypass of Inverurie, Kintore and Blackburn, the potential for walking and cycling trips is increased because of the proposed mix of land use in the towns as defined in the LDP. There is the opportunity to further remove traffic from these towns by having an alignment that recognises the potential growth in active travel.

A route using the existing A96 corridor between Port Elphinstone and Craibstone is more likely to provide a greater level of integration with bus and rail services at Inverurie and Kintore and the major park and ride site at Craibstone.

AmeyArup Review using Updated Information

Following the review of the DMRB Stage 1 work on Option Q, AmeyArup were asked to review Option Q in more detail based on current baseline information and the revised CRAM v1.3 model.

For clarity and consistency, it was decided to follow the same methodology undertaken for Improvement Strategies B, C and D. Improvement Strategy Option Q splits into two distinct Corridor Areas (See Figure A2):

- Corridor Area D – is essentially the western end of Improvement Strategy Option Q incorporating the A920 road corridor
- Corridor Area Q – is the eastern end containing the A947 road corridor

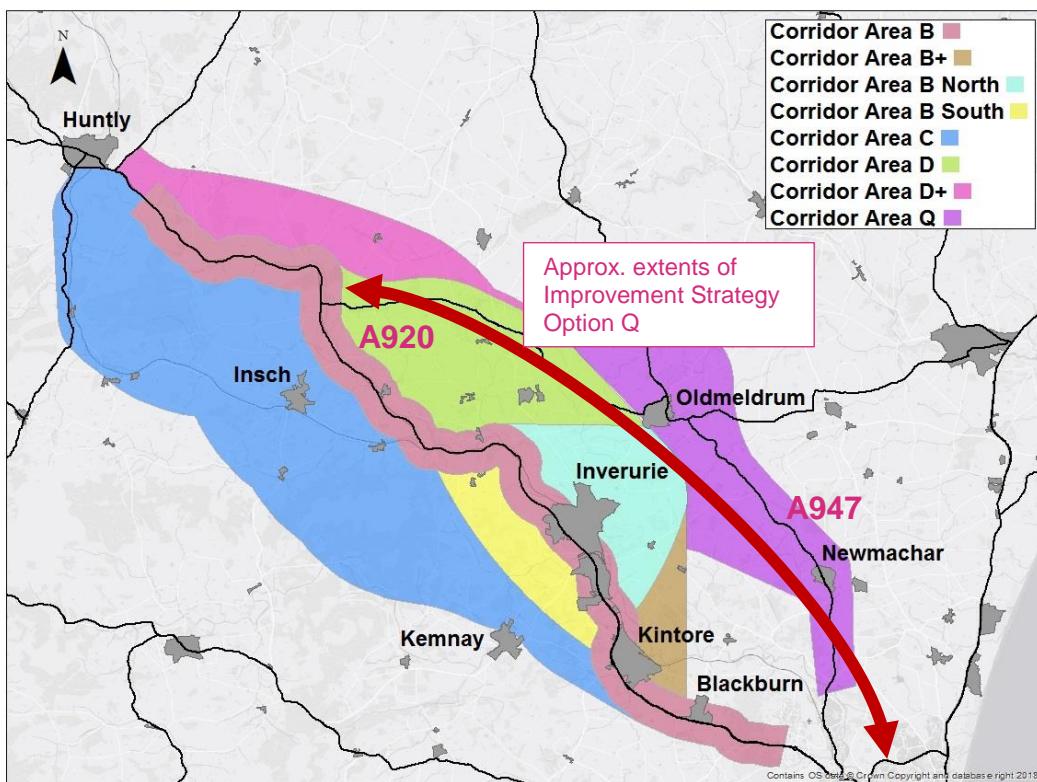


Figure A2: Corridor Areas D & Q (A920 and A947 Corridors)

The western end (Corridor Area D) along the A920 corridor merits further investigation for dualling since it offers more flexibility with the dualling options around Colpy and potentially links with the corridor options to the north of Inverurie. Additionally, this section is less challenging in terms of topography. This part of Improvement Strategy Option Q therefore remains as part of the overall Stage 2 option development process and can be referred to as Corridor Option D03.

Corridor Area Q (A947 road corridor) was then further split into two Corridor Options which avoided the High Impact Areas including the settlements and the Hill of Barra (See Figure A3), as follows:

- Corridor Option Q01 – A947 dualling with a northern bypass of Oldmeldrum and a bypass of Newmachar.
- Corridor Option Q02 – As above but with a southern bypass of Oldmeldrum.

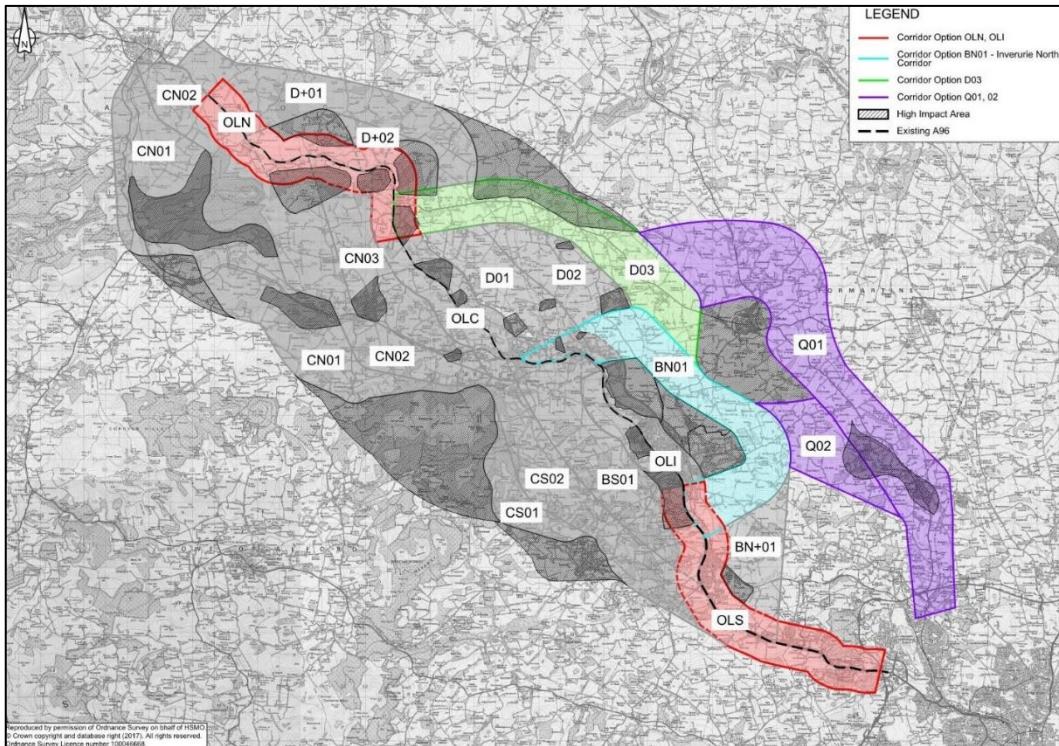


Figure A3: Corridor Options Q01 and Q02

These Corridor Options were appraised against the Scheme Objectives and STAG Criteria on their own merit and these were also compared to the existing A96 Corridor between the AWPR and Kintore since this section of existing dual carriageway would effectively become de-trunked if the A947 corridor was dualled as the new A96 trunk road. It is therefore pertinent to draw some comparisons between the upgrading of the existing A96 dual carriageway over this section and either Q01 and Q02.

Review Outcomes for Corridor Options Q01 and Q02

The key outcomes from AmeyArup's review of Corridor Options Q01 and Q02 are that:

- High level traffic modelling using the updated A96 CRAM v1.3 shows that dualling of the A947 Corridor will reduce the daily volume of traffic on the existing A96 south of Kintore by approximately 6,000 vehicles per day (vpd) (circa 14%), with over 37,000vpd continuing to use the existing route in 2045. Therefore, it can be deduced that the improvement of the operation of the A96 will be relatively low and congestion will continue to occur on the A96 at-grade junctions at Inverurie. (SO1).
- The modelling also shows that between 14% (6,300vpd) and 13% (5,600vpd) of the existing A96 traffic south of Kintore will transfer to Q01 and Q02 respectively. This leaves a significant volume of traffic on the existing road. At its busiest section, between Kintore and Blackburn, 37,700vpd will remain on the existing A96 under Q1, and 38,400vpd will remain under Q02. The accident rate on the existing A96 is therefore unlikely to be reduced by developing an alignment through Option Q. (SO2). Similarly, the safety, operation and journey time reliability of the

existing at-grade junctions on the A96 between Broomhill Roundabout and Craibstone are unlikely to be improved with an Option Q dualling alignment. Delays associated with drivers slowing down to negotiate the roundabouts, turn right at the gaps in the central reserve, or waiting for a gap in the flow of mainline traffic to enter or exit a side road are likely to remain unaffected.

- Q01 removes more strategic traffic from the existing A96 than Q02, and attracts more local traffic from Oldmeldrum. However, Q01 also takes the trunk road further away from Inverurie and Kintore by placing it on the north side of Oldmeldrum. Its remoteness from Inverurie and Kintore make it a less attractive route for these growing communities, thus reducing their travel benefits. Conversely, Q02 links to a northern bypass of Inverurie providing slightly poorer connectivity to Oldmeldrum but better connectivity to the northern side of Inverurie. This could help fulfil the development plan requirement for a northern bypass of Inverurie which is deemed necessary to help provide the infrastructure capacity required to support new homes and employment (SO3). However, both Q01 and Q02 are limited in their effectiveness of attracting traffic away from the existing A96. On the busiest section of the A96 between Kintore and Blackburn only 14% of traffic transfers to the new route, with more than 37,000vpd continuing to use the existing route.
- The potential for walking and cycling within Oldmeldrum and Newmachar is recognised, however, given their lesser populations, lower development allocations and less of a mix of land uses, it is considered that there is more potential for a greater shift in the number of active travel trips within the A96 corridor. (SO4)
- Options within the A96 corridor have greater potential to integrate with improved rail services at Insch and Inverurie as well as the new station at Kintore. They would also link to the existing major bus based park and choose site at Craibstone. (SO5)

There are a number key environmental issues associated with Corridor Options Q01 and Q02 (SO6 and STAG1):

- Given the low traffic numbers transferring to Q01 or Q02, there would be no notable environmental benefit to the existing A96 corridor in terms of a reduction in traffic noise or improvement to air quality. In addition, a new dual carriageway within the A947 corridor with bypasses of Oldmeldrum and/or Newmachar would introduce further environmental impacts associated with dualling (noise and vibration, and air quality) to these communities.
- Straloch Garden and Design Landscape (GDL) is located adjacent to the A947 and to the north-west of Newmachar. The GDL also has within it Straloch House, a Category A listed building. There is the potential for direct impacts, or impacts upon the setting of these receptors.
- The Battle of Barra battlefield is on the inventory of Historic Battlefields, and is located to the south-west of Oldmeldrum. There is the potential to impact its setting.

- The Hill of Barra Site of Special Scientific Interest (geological SSSI) is located about 1km south of Oldmeldrum, and is in the same location as the Hill of Barra fort scheduled monument. There is the potential for the setting of the scheduled monuments to be affected.
- Other constraints include scattered listed buildings (e.g. Meldrum House) and scheduled monuments (St Mary's Chapel, Four Braehead Cottages standing stone), ancient woodland, and the Formartine and Buchan Way to the east of Newmachar, which is also part of the National Cycle Network.
- There are a number of small, active floodplain areas but these are generally contained within burn corridors and could be easily avoided.

Overall Corridor Options Q01 or Q02 would not be significantly worse in environmental terms than the other corridors being considered but would not offer significant benefits over the other corridors either. Environmental impacts would be introduced in areas not currently affected by a dual carriageway, with no compensatory benefit for the existing A96 road corridor since A96 traffic is unlikely to divert to use this new A947 road corridor.

The main engineering issues (STAG 6 Feasibility) are as follows:

- At least an additional 6.5km of offline new dual carriageway required with new grade separated junctions. This duplicates the existing A96 dual carriageway which can be upgraded online to Category 7A to meet the standards required of the new dualled, albeit with some alignment improvements, grade separated junction upgrades and closure of the central gaps. The existing 12km section of dualling would become de-trunked.
- The junction between the AWPR and the proposed Option Q (A947) corridor may not be suitable for the connection of a dual carriageway. Substantial upgrades to the junction with AWPR at Goval and the surrounding local road network may therefore be required, adding further cost.
- Localised areas of compressible peat deposit and moderate areas of compressible alluvial deposit are present. In Corridor Option Q01 moderate areas of near surface rock have been identified. Extensive areas of surface rock are likely in Corridor Option Q02. Localised areas of made or reworked ground in Q01 with a potential for contamination risk but no recorded areas of made or reworked ground in Q02.
- There are no major river crossings and associated flooding and the A947 corridor is remote from the Aberdeen to Inverness Railway Line. Within Corridor Option Q01 it is anticipated that up to three A-class roads, five B-class roads and a large number of local roads or farm access roads will potentially be crossed, all of which would likely need re-connected or rationalised to maintain the necessary access. There are multiple watercourse crossings required but it is anticipated that all but one of these could be culverted. On Corridor Option Q02 there is one B-class road and up to four local roads or farm roads will potentially be crossed. Structures are not likely to be complex or large and could be constructed using conventional construction techniques.

- A total of five National Grid gas pipelines cross Corridor Option Q01, one to the north of Oldmeldrum and four between Oldmeldrum and Newmachar. At the AWPR tie in there is likely to be a conflict with strategic utilities. SSE 275Kv transmission lines also cross this corridor. Corridor Option Q02 is crossed by 4no National Grid gas pipelines and SSE 275Kv transmission lines.
- Elevation is relatively consistent or lower than the existing A96 and therefore snow risk would be similar.

In terms of affordability (STAG 7) the key issue is that significant cost would be incurred to construct at least 6.5km of new dual carriageway that does not alleviate traffic congestion issues known to exist on current A96. The existing corridor is better placed in terms of achieving programme and scheme objectives.

Conclusions for Improvement Strategy Option Q

The overall conclusions from AmeyArup's review of Improvement Strategy Option Q are as follows:

Improvement Strategy Option Q following the A920 road corridor – Colpy to Oldmeldrum (Corridor Option D03)

The A920 corridor is being considered further as part of the DMRB Stage 2 assessment process for the following reasons:

- It follows an existing road corridor (A920) and facilitates a connection to a northern bypass of Inverurie.
- It forms part of a route that performs well against the scheme objectives.

Improvement Strategy Option Q following the A947 road corridor - Oldmeldrum to Dyce (Corridor Options Q01 and Q02)

The A947 corridor does not perform well against several of the scheme objectives and STAG criteria and should not be considered further on the basis that:

- Traffic modelling indicates that the majority of A96 traffic will continue to use the existing route rather than transferring to a new dual carriageway located in the A947 corridor.
- Operational issues on the existing A96 between Inverurie and Craibstone are not addressed.
- The existing A96 dual carriageway would be de-trunked but without improvement, despite it carrying the majority of the traffic.
- Side roads, accesses and existing settlements limit opportunities for online dualling of the A947.
- Dualling in the A947 corridor will induce impacts in an area unspoiled by dual carriageway, with no compensatory benefit generated along the existing A96 dual carriageway.
- Significant junction amendments to the new AWPR Goval junction would be required to facilitate connection to the new dual carriageway.

- The A947 route through Dyce toward Aberdeen is longer and of a poorer standard than the existing A96.

It is therefore recommended that:

- Improvement Strategy Option Q following the A947 corridor, (Q01 and Q02) are sifted out; and
- The western end of Improvement Strategy Option Q along the A920 corridor (D03) continues to be developed as part of the ongoing DMRB Stage 2 process.

1 Introduction

1.1 Background

Transport Scotland is progressing a programme to upgrade the A96 trunk road between Inverness and Aberdeen to dual carriageway standard by 2030. This was included in the Scottish Government's 2011 Infrastructure Development Plan. The route is approximately 160km long, of which 138km is currently single carriageway.

Preliminary engineering and environmental assessment work has been completed as part of the Design Manual for Roads and Bridges (DMRB) Stage 1 assessment of this programme. This was reported on in Transport Scotland's "A96 Dualling Inverness to Aberdeen, DMRB Stage 1 Assessment Report" published in May 2015.

In July 2017 Transport Scotland appointed AmeyArup to progress the "A96 Dualling East of Huntly to Aberdeen" scheme through DMRB Stage 2 and Stage 3 assessment. This is the eastern section of the A96 and terminates at the A96 junction with the new AWPR at Craibstone.

1.2 DMRB Stage 1 Assessment

As part of the DMRB Stage 1 assessment Transport Scotland published their "Sifting of Improvement Strategies Report" in June 2014. This report outlined 16 broadly defined improvement strategies (Options A to Q) as conceptual alternatives for providing a dual carriageway between Inverness and Aberdeen. It is important to note that each broadly defined improvement strategy is considered as a high level concept and does not represent a specific corridor or route alignment.

A sifting process was developed to assess each of the sixteen options on their environmental, engineering, economic, and traffic advantages, disadvantages and constraints. The sifting process reduced the total number of potential Improvement Strategies from sixteen to four (Options B, C, D and N). The four potential Improvement Strategies taken through DMRB Stage 1 Assessment were presented at Public Exhibition in May 2015. Improvement Strategy Options B, C and D are relevant to the East of Huntly to Aberdeen section of the A96.

However, one of the original 16 options, Option Q, has remained popular with the public and stakeholders including Aberdeenshire Council. Options B, C, D and Q are shown in Figure 1.

- **Improvement Strategy Option B:** An upgrade generally located along the corridor of the existing A96 except for bypasses of settlements along the corridor
- **Improvement Strategy Option C:** A more direct route between Huntly and Blackburn passing well to the south of Inverurie
- **Improvement Strategy Option D:** A more direct route from Glens of Foudland to north west of Inverurie
- **Improvement Strategy Option Q:** A strategy connecting the existing A96 at Colpy to the AWPR at Goval utilising the A920 and A947 corridors.

Note that Improvement Strategy Options C, D and Q all require to be combined with other Improvement Strategies, such as Improvement Strategy Option B to provide an end to end alignment for the East of Huntly to Aberdeen scheme.

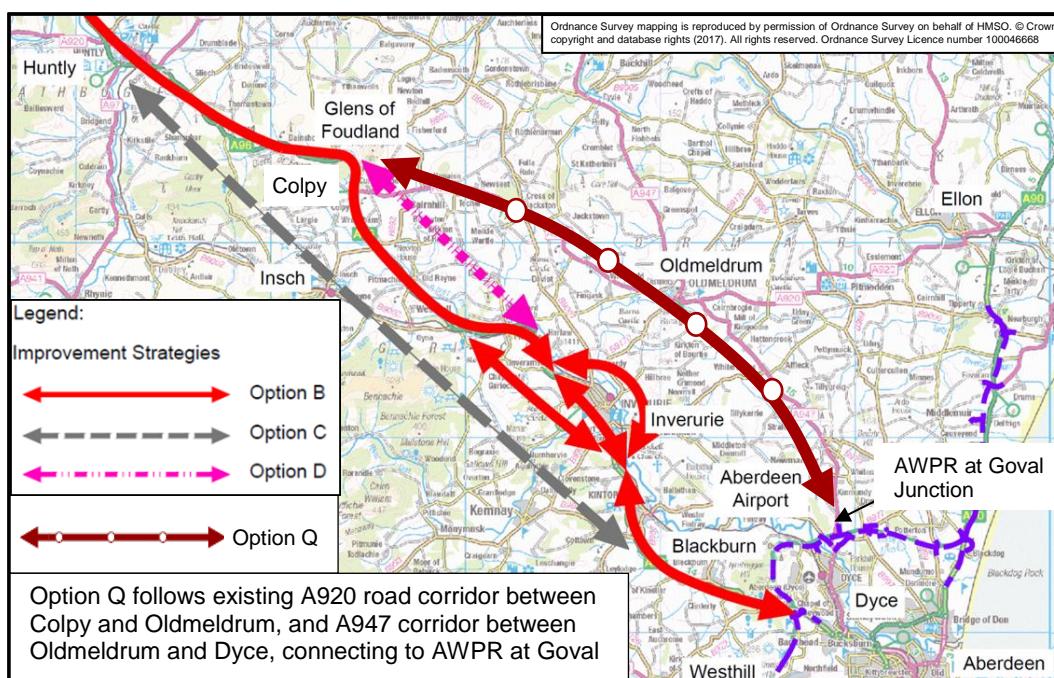


Figure 1: DMRB Stage 1 Improvement Strategy Options B, C, D and Q

1.3 Improvement Strategy Option Q Background

Following feedback received from the public and stakeholders in relation to the DMRB Stage 1 Improvement Strategies presented, there was a desire to reconsider Improvement Strategy Option Q. Therefore, at the start of the DMRB Stage 2 process Transport Scotland requested that AmeyArup carry out a high level review of the DMRB Stage 1 decision to sift out Improvement Strategy Option Q.

At the start of the DMRB Stage 2 process AmeyArup organised a “Meet the Team” event on three days in November 2017 at Inverurie, Huntly and Blackburn. Feedback from these public meetings demonstrated continuing significant support for Improvement Strategy Option Q. In addition, Aberdeenshire Council have made subsequent representations to Transport Scotland requesting that Improvement Strategy Option Q should continue to be considered. As a result of this feedback AmeyArup have carried out a more detailed investigation of Improvement Strategy Option Q in order to reconsider whether it should be sifted out.

One of the limitations of the original DMRB Stage 1 assessment was that it was essentially a high-level qualitative assessment, which is what is required at DMRB Stage 1. Since the start of DMRB Stage 2 Transport Scotland and AECOM have begun developing a scheme-specific transport model of the A96 Inverness to Aberdeen corridor (the A96 CRAM Model). This new transport model has been used as part of AmeyArup’s more detailed assessment of Improvement Strategy Option Q and enabled a quantitative as well as qualitative assessment to be undertaken. The model assesses the impact of the proposed improvement strategy on traffic patterns and journey times. This model was not available for the DMRB Stage 1 assessment.

1.4 Purpose of this Report

The purpose of this report is to present the additional assessment of Improvement Strategy Option Q in more detail than was possible, or appropriate, at DMRB Stage 1. This assessment is based on the A96 Dualling East of Huntly to Aberdeen Scheme Objectives and STAG (Scottish Transport Appraisal Guidance) criteria. This assessment made use of the most recent traffic model of the A96 Inverness to Aberdeen corridor available, the A96 CRAM model, version 1.3.

2 Characteristics of the Area

It is important to appreciate the characteristics of the Aberdeenshire area including its population, commuting habits, the public transport provision and active travel demand. This enables an understanding of the desire lines and travel demand within the area affected by the A96 scheme and any Improvement Strategy Option Q.

2.1 Population Distribution

The area of interest for this study is north west Aberdeenshire and is defined by the corridors of the A96 Aberdeen to Inverness trunk road and the A947 Aberdeen to Banff local authority road. The settlements in this area with a population of more than 500 are shown in Figure 2 and Table 1. This shows that the largest settlement in the area is Inverurie which is almost three times the size of the next largest settlement.

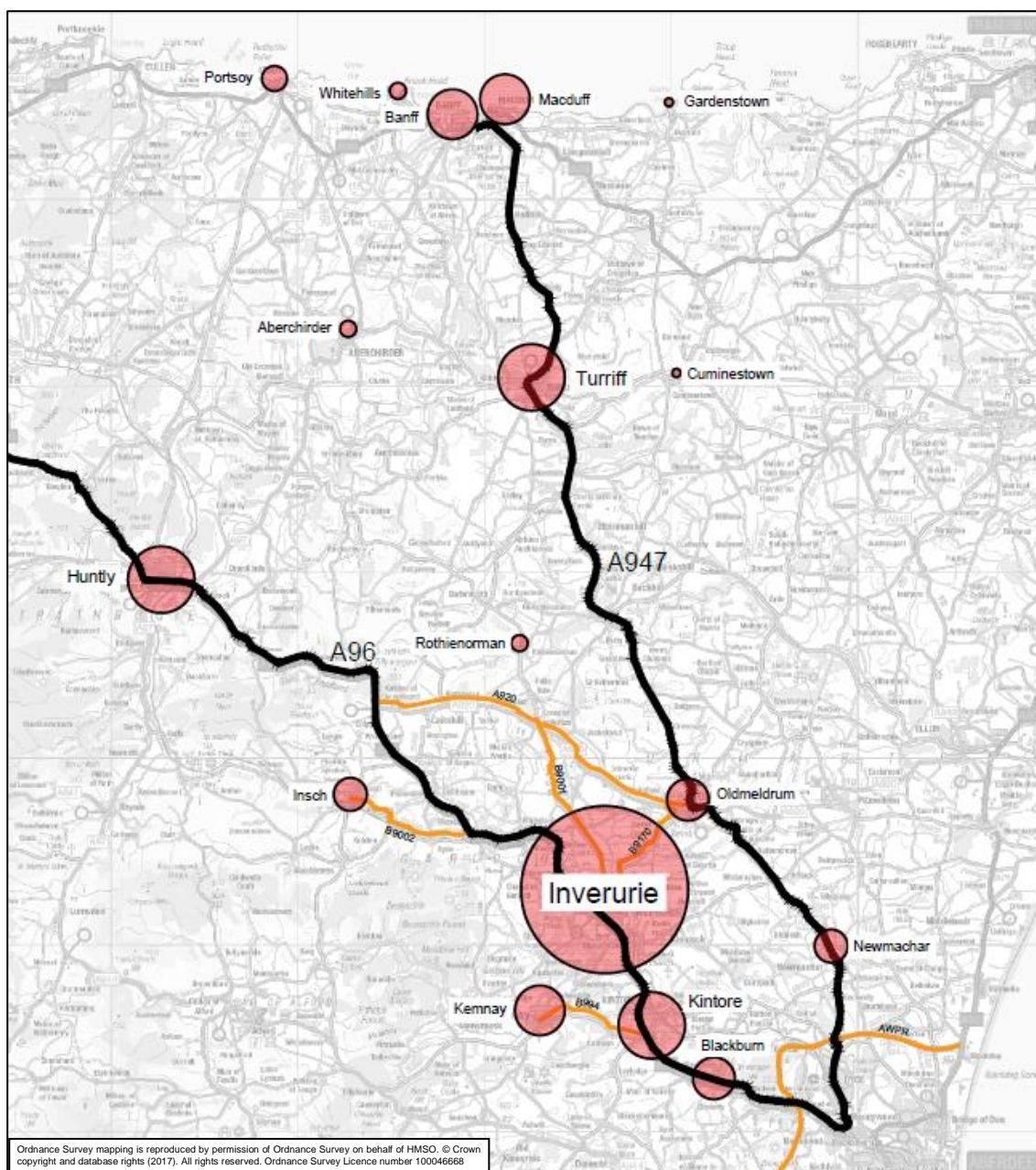


Figure 2: Population centres along the A96 and A947 corridors in North West Aberdeenshire

Table 1: Population of settlements in north west Aberdeenshire (2016)

Rank	Settlement	Population	Rank	Settlement	Population
1.	Inverurie	13,640	10.	Insch	2,690
2.	Turriff	4,960	11.	Newmachar	2,500
3.	Huntly	4,810	12.	Portsoy	1,740
4.	Kintore	4,790	13.	Aberchirder	1,260
5.	Banff	4,100	14.	Rothienorman	1,100
6.	Macduff	3,950	15.	Whitehills	1,050
7.	Kemnay	3,870	16.	Gardenstown	590
8.	Oldmeldrum	3,140	17.	Cuminestown	570
9.	Blackburn	3,050			

Source: National Records of Scotland

Table 2 shows that Inverurie is the second largest town in Aberdeenshire. Inverurie is a major service centre for the surrounding area. At the south eastern end of both the A96 and A947 are the major employment centres of Dyce and Bucksburn, including Kirkhill Industrial Estate. Dyce is also the location of Aberdeen Airport which was used by more than 3 million passengers in 2017 and has its main access on the A96. Aberdeen airport is also the heliport for flights to North Sea oil platforms. Table 1 shows that the Aberdeen-Kintore-Inverurie corridor has approximately four times the population of the Aberdeen-Oldmeldrum corridor.

Table 2: Population of the largest Aberdeenshire towns (2016)

Rank	Settlement	Population
1.	Peterhead	19,270
2.	Inverurie	13,640
3.	Fraserburgh	13,180
4.	Stonehaven	11,170
5.	Westhill	12,290
6.	Ellon	10,200

Source: National Records of Scotland

2.2 Travel to Work

A review of Scotland's Census 2011 Travel-to-Work data, Table 34 in Appendix C, shows that for those commuting to Aberdeen to work the most common origin is Inverurie with almost twice the number of trips of any other origin. It is followed by Newmachar to the northeast of the A96, and then Kintore and Blackburn both of which are on the A96 corridor. This Travel-to-Work data is based on Census Intermediate Zones and the way that they have been aggregated is described in Appendix B.

The top eleven commuting destinations for the eleven regions within the scheme study area are shown in Table 35 in Appendix C. This shows, for example, that for workers living in Inverurie: 10% work from home and a further 29% work locally within the Inverurie area; whilst 11% travel to Aberdeen City Centre and 11% travel to Dyce. A further 9% travel south to Aberdeen West, Aberdeen South of the Dee, and Westhill. 2% travel to Bridge of Don.

Banff & Macduff, Table 36 in Appendix C, has a large number of workers with most working at home, locally, or in the Turriff or Ellon/Peterhead/Fraserburgh areas. 8% commute to Aberdeen to work.

For workers who live in Oldmeldrum the most popular work location is Inverurie 14%, followed by Aberdeen City Centre 13% and Dyce 12%. Approximately 11% travel south to Aberdeen West, Aberdeen South of the Dee and Westhill. Only 3% work in Bridge of Don.

The most popular Travel-to-Work destinations in Aberdeen are the City Centre and Dyce (including Bucksburn) with approximately 34% of trips each. Aberdeen West (west of Anderson Drive) attracts 10% and Aberdeen South of the Dee attracts 9%. Bridge of Don attracts 7% and, the mainly residential Aberdeen North attracts 5%.

2.3 Public Transport Provision

The Aberdeen to Inverness rail line passes through the scheme study area. There are stations on this line at Dyce, Inverurie, Insch and Huntly. There are approximately eleven trains per day in each direction between Inverness and Aberdeen (Monday to Saturday) in addition to eleven local trains per day in each direction between Inverurie and Aberdeen. The Aberdeen to Inverness trains all call at Huntly, Insch, Inverurie and Dyce. The frequency on Sundays is approximately half of the weekday frequency. Station usage figures, journey times, and parking provision at these stations is shown in Table 3. The car park at Inverurie station has recently been extended which may encourage further trips to be made by train.

Table 3: Railway station statistics on the Aberdeen to Huntly corridor

Station	Number of entries and exits at the station in 2016/2017	Percentage of these trips that use Season Tickets	Journey time to Aberdeen	Number of parking spaces
Aberdeen	3,058,268	15%	-	-
Dyce	517,586	18%	10 minutes	100
Kintore	<i>Due to open in 2019</i>	-	20 minutes	170
Inverurie	511,708	29%	25 minutes	140
Insch	98,140	24%	37 minutes	44
Huntly	94,904	20%	56 minutes	27

The rail line between Aberdeen and Inverurie is currently in the process of being upgraded to double track. This will allow an increased frequency of service to operate from 2019 onwards. This will include an hourly local service between Inverurie, Aberdeen, and Montrose, an hourly Inverness to Aberdeen service, and additional peak hour local services between Inverurie and Aberdeen. This will substantially improve services on this corridor.

At the end of 2019 a new station is due to be opened in Kintore. This will have approximately 170 parking spaces to allow the station to be used for park-and-ride journeys. This major investment in stations, station parking, and rail infrastructure is expected to significantly increase the volume of rail travel in the Aberdeen-Kintore-Inverurie-Insch corridor.

Census Travel-to-Work data, Table 4, shows that for commuting trips where a rail service is available a significant number of commuters travel by rail. These are mainly trips from towns that have a railway station, Inverurie, Insch and Huntly, to Aberdeen City Centre. However, 9% of commuters between Oldmeldrum and Aberdeen City Centre travel by train even though Oldmeldrum does not have a station. They are likely to be travelling via Inverurie Station.

Table 4: Travel to Place of Work by rail to Aberdeen City Centre (Scotland's Census 2011)

Route	Total trips	Rail	%
Inverurie to Aberdeen City Centre	1,018	156	15%
Insch to Aberdeen City Centre	284	77	27%
Huntly to Aberdeen City Centre	246	46	19%
Oldmeldrum to Aberdeen City Centre	362	32	9%

On the A947 corridor there are aspirations to re-open the rail line from Dyce to Ellon via Newmachar, with a park-and-ride site at Ellon. This would reduce traffic on the A947 but there is no commitment to this at present. This line runs to the east of the A947 between Dyce and Newmachar and is currently well-used as a walking and cycle route known as "The Formartine and Buchan Way".

The main bus operator in the area is Stagecoach and the A96 is the most significant bus corridor. The main Stagecoach services along or across the A96 corridor are:

- **Number 10:** Inverurie to Aberdeen bus calling at Huntly and Inverurie. Hourly service Monday to Saturday. Also hourly on Sunday but with more limited hours of operation. Inverurie to Aberdeen 50 minutes, Huntly to Aberdeen 88 minutes.
- **Number 37:** Kintore to Aberdeen bus calling at Blackburn. Half-hourly service. Monday to Saturday, hourly on Sundays. Inverurie to Aberdeen 69 minutes. Kintore to Aberdeen 55 minutes, Blackburn to Aberdeen 47 minutes. One of these buses per hour starts at Inverurie with a journey time to Aberdeen of 69 minutes.
- **Number X37:** Inverurie to Aberdeen express bus. Hourly service Monday to Saturday, with no Sunday service. Inverurie to Aberdeen 52 minutes.
- **Number X20:** Kemnay to Aberdeen bus calling at Kintore and Blackburn. Hourly service Monday to Saturday only. Kemnay to Aberdeen 66 minutes. Kintore to Aberdeen 56 minutes. Blackburn to Aberdeen 42 minutes.
- **Number 41:** Insch to Inverurie bus calling at Oyne. Hourly service Monday to Saturday, with no Sunday service. Insch to Inverurie 33 minutes.

The main Stagecoach services along or across the A947 corridor are:

- **Number 35:** Banff to Aberdeen bus calling at Macduff, Turriff, Fyvie, Oldmeldrum and Newmachar. Half-hourly service Monday to Saturday, hourly on Sundays. Newmachar to Aberdeen 41 minutes, Oldmeldrum to Aberdeen 53 minutes, Fyvie to Aberdeen 68 minutes, Turriff to Aberdeen 83 minutes, Banff to Aberdeen 118 minutes.
- **Number 49:** Ellon to Inverurie bus calling at Oldmeldrum. Five buses per day in each direction Monday to Friday and four on Saturday. Oldmeldrum to Inverurie 15 minutes.

2.4 Bus Park-and-Ride facilities

There are a number of bus Park & Ride sites in Aberdeen City and Aberdeenshire and these are listed in Table 5. These sites all have frequent bus services into the centre of Aberdeen. They generally also have bicycle storage, a waiting room and toilets.

Table 5: Bus Park and Ride sites in Aberdeen City and Aberdeenshire

Name	Location	Number of Parking Spaces
Dyce/Craibstone	AWPR/A96	1,000
Kingswells	A944	900
Bridge of Don	AWPR/A90	650
Ellon	A90	300

Aberdeenshire Council have plans to implement mini Park and Ride hubs on the A947 at Oldmeldrum (40 to 60 parking spaces), Newmachar (21 parking spaces) and Fyvie (17 parking spaces).

2.5 Active Travel

Scotland's Census 2011 Travel-to-Work data, Table 6, shows that Inverurie generates the most walking and cycling commuter trips in the study area with more than seven times as many trips as Oldmeldrum. Banff, Huntly and Turriff generate the next highest numbers of walking and cycling trips. This does not capture active travel for leisure purposes.

Table 6: Active Travel within Aberdeenshire for the purpose of commuting (Census 2011)

Travel to Work Origin	On Foot or Bicycle	Specific Active Travel Mode	
		On Foot	Bicycle
Inverurie	1,097	983	114
Banff & Macduff	929	895	34
Huntly & District	759	683	76
Turriff & District	603	582	21
Kemnay	182	173	9
Oldmeldrum	152	149	3
Insch	126	110	16
Kintore	95	83	12
Newmachar	85	64	21
Fyvie	80	74	6
Blackburn	76	61	15

2.6 Development Plans

The 2017 Aberdeenshire Local Development Plan identifies the housing and employment land allocations for the 2017 to 2026 period as shown in Table 7. The Aberdeen-Inverurie corridor has land allocations for 1,307 houses and 47.5 Hectares of employment land. The Aberdeen-Oldmeldrum corridor has a significantly smaller land allocation for 380 houses and 11.3 Hectares of employment land. Aberdeen City and Shire Strategic Development Plan 2014 identifies three Strategic Growth Areas, one of which is the Aberdeen-Blackburn-Inverurie-Huntly corridor. The others being Aberdeen-Ellon-Peterhead, and Aberdeen-Stonehaven-Laurencekirk.

Table 7: Housing and Employment Land allocations in the Aberdeenshire Local Development Plan (2017)

Location	Housing Allocation 2017 to 2026	Employment Land Allocation 2017 to 2026
Kintore	600 houses	11 Hectares
Inverurie	572 houses	36.5 Hectares
Huntly	485 houses	4.5 Hectares
Banff, Whitehills, Cornhill, Portsoy	348 houses	-
Turriff	320 houses	17.2 Hectares
Newmachar	275 houses	5 Hectares
Oldmeldrum	105 houses	6.3 Hectares
Aberchirder	105 houses	-
Kemnay	85 houses	-
Blackburn	50 houses	-
Insch, Oyne and Old Rayne	40 houses	5 Hectares

3 Characteristics of the A96, A920 and A947

3.1 Road Characteristics

The A96 is the Aberdeen to Inverness trunk road. It passes close to the settlements of Blackburn, Kintore, Inverurie, Insch and Huntly. It also serves the settlement of Kemnay via a junction at Kintore. The A96 is dual-carriageway for 15km from Inverurie Roundabout at Port Elphinstone to Craibstone Roundabout at the AWPR. There are numerous at grade junctions with gaps in the central reserve which allow right turning vehicles to cross the carriageways to enter and exit side roads. There are also roundabouts on this section at Clinterty, Kinellar, Broomhill, and Thainstone. There are grade-separated junctions at Tavelty and Gauchhill on the Kintore bypass. The remainder of the A96 is single-carriageway, including the Inverurie bypass. However, there are eastbound and westbound climbing lanes at Newtongarry east of Huntly. There are numerous priority junctions along the single carriageway section and there is a roundabout at Blackhall (Inverurie).

Between Inverurie and Craibstone the A96 experiences slow and unreliable journey times during the morning peak period for journeys towards Aberdeen, and during the evening peak period for journeys coming from Aberdeen. As most of this section is already dual-carriageway the problems are caused by the numerous at-grade junctions. For example, vehicles have to slow down to negotiate the roundabouts. There is also the impact of slower moving vehicles such as HGVs having to pull out into lane two to turn right at the gaps in the central reserve. This slows down following traffic and limits the effectiveness of lane two as a lane for overtaking slower moving vehicles. Cyclists on the dual-carriageway also slow down traffic.

The A920 is an Aberdeenshire Council road that links Oldmeldrum to the A96 at Colpy. This 18km section of the A920 is a single carriageway road throughout its length with numerous at-grade priority junctions. The main intermediate junction is with the B9001 at Wartle. The national speed limit applies throughout. The A920 is lightly trafficked with Interpeak traffic of approximately 90 vehicles per hour in each direction. The AM peak hour traffic is approximately 180 vehicles eastbound and 70 vehicles westbound. The PM peak hour traffic is approximately 100 vehicles eastbound and 190 vehicles westbound.

The A947 is the principal road link between Aberdeen and the settlements of Newmachar, Oldmeldrum, Turriff and Banff. The route is single carriageway throughout its length and passes through the settlements of Newmachar, Oldmeldrum and Turriff where 30mph speed limits apply. It is characterised by frequent bends of tight radii and poor visibility. There are numerous priority junctions along the route and a roundabout to the north of Oldmeldrum. The A947 is used by a high proportion of slow moving agricultural vehicles and HGVs and the road geometry limits overtaking opportunities for faster moving traffic. This results in high levels of driver frustration and journey time variability. Between Newmachar and Aberdeen journey time variability is particularly apparent during the morning and evening peaks.

3.2 Traffic Volumes

A summary of 2017 traffic volumes on the A96 are shown in Table 8 while a summary of 2017 traffic volumes on the A947 are shown in Table 9. The morning peak hour is 0700 to 0800 but the hour 0800 to 0900 is also shown so that it can be compared with data from the A96 CRAM.

AADT is Average Annual Daily Traffic, the traffic volume on the road over the 24 hours of an average day (including weekdays and weekends). AAWT is Average Annual Weekday Traffic, the traffic volume on the road over the 24 hours of an average weekday. The AADT and AAWT volumes are also shown in Figure 3.

In general, the A96 data was taken from permanent Transport Scotland traffic counters on the A96. However, for locations marked (a) the data was taken from 06:00 to 19:00 turning count

surveys that took place in Spring 2018. The AADT and AAWT values were estimated by applying scaling factors calculated from the data from the permanent counter sites.

The A920 and A947 data was mainly taken from permanent Aberdeenshire Council traffic counters on the routes. The data for the individual peak hours was taken from the turning count surveys that took place in Spring 2018. There were no turning count surveys north of Fyvie.

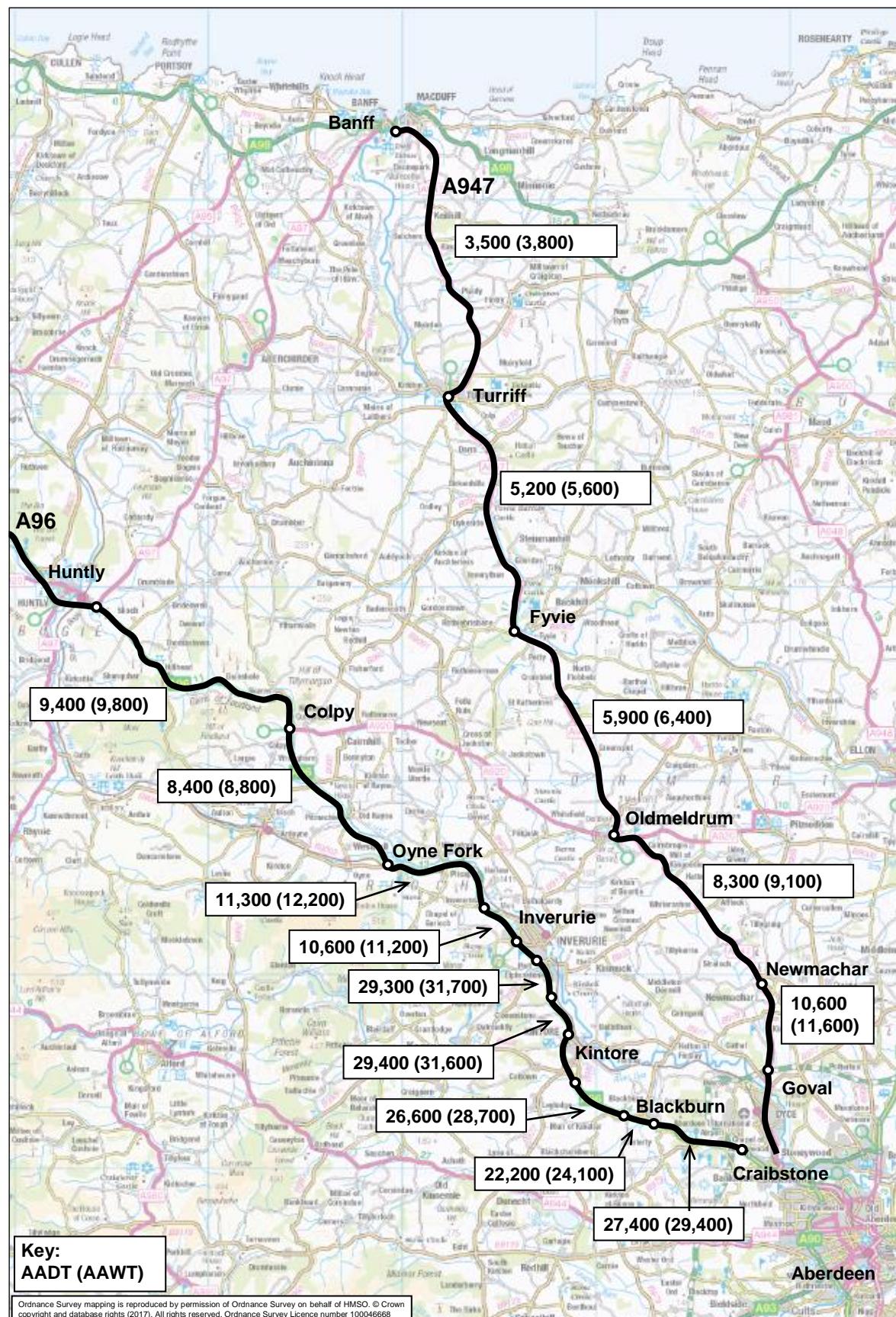
Table 8: 2017 traffic volumes on the A96

A96 Location	2-Way AADT	2-Way AAWT	Individual Hours		
			07 to 08 towards Aberdeen	08 to 09 towards Aberdeen	17 to 18 from Aberdeen
A96 East of Huntly	9,400	9,800	420	350	550
A96 East of Colpy	8,400	8,800	390	340	450
A96 East of Oyne Fork (a)	11,300	12,200	630	590	740
A96 Inverurie Bypass North (Drimmies to Blackhall)	10,600	11,200	670	540	670
A96 East of Port Elphinstone	29,300	31,700	1,620	1,600	1,840
A96 West of Kintore	29,400	31,600	1,600	1,450	1,710
A96 West of Blackburn	26,600	28,700	1,820	1,470	1,590
A96 Blackburn Bypass	22,200	24,100	1,660	1,230	1,330
A96 Kirkhill Forest (a)	27,400	29,400	2,000	1,540	1,760

Table 9: 2017 traffic volumes on the A947

A947 Location	2-Way AADT	2-Way AAWT	Individual Hours		
			07 to 08 towards Aberdeen	08 to 09 towards Aberdeen	17 to 18 from Aberdeen
A947 North of Turriff	3,500	3,800	NO DATA	NO DATA	NO DATA
A947 North of Fyvie	5,200	5,600	NO DATA	NO DATA	NO DATA
A947 North of Oldmeldrum	5,900	6,400	480	370	460
A947 North of Newmachar	8,300	9,100	690	600	630
A947 South of Newmachar	10,600	11,600	1,020	670	860

The data presented in Table 8 and Table 9 shows that the A96 between Aberdeen and Inverurie has more than two and a half times the volume of traffic recorded on the busiest section of the A947. The high levels of traffic on the A96 are present over the whole 15km section between Craibstone and Port Elphinstone while the busiest section of the A947, from Goval to Newmachar, is only 4km long.



**Figure 3: 2017 Average Annual Daily Traffic (AADT) on the A96 and the A947
(The Average Annual Weekday Traffic (AAWT) is shown in brackets.)**

3.3 Automatic Number Plate Recognition Data

On Tuesday 27 March 2018, Automatic Number Plate Recognition (ANPR) cameras were positioned at sixty sites in the area. The ANPR cameras collected data from 0600 to 1900. This data provided information on the routes taken by vehicles as they were detected by different cameras along their journey. Although the cameras do not accurately recognise and match every number plate this survey technique gives a very large sample size and thus provides useful information on vehicle routeing.

For traffic detected on the A96 east of Blackburn, Table 10 shows that the majority of traffic originated in Inverurie, Kintore, Kemnay or Insch. Approximately 13% was strategic A96 traffic from west of Colpy. Thainstone Business park was a popular destination during the AM peak and a popular origin during the PM peak. Approximately 5% of the traffic originated on the B9001 Rothienorman road and routed through Inverurie. Approximately 2% of traffic originated on the B9170 road from Oldmeldrum.

A more detailed analysis of traffic originating on the B9001 north west of Inverurie is presented in Table 11. This shows that 65% of the B9001 traffic terminates in Inverurie. However, a significant proportion of the peak hour trips (47% AM, 27% PM) is destined for Aberdeen, Kintore and Blackburn (or locations accessed via the junctions at Kintore or Blackburn) in the morning and returning in the evening.

Table 10: ANPR data for traffic on the A96 East of Blackburn

Traffic Routeing to the A96 East of Blackburn	Full Survey Period 0600-1900	AM Peak 0700-0800	PM Peak 1700-1800
From Inverurie	28% (30%)	27% (25%)	29% (32%)
From Kintore	20% (13%)	20% (17%)	23% (14%)
From the A96 west of Colpy (e.g. Huntly and Inverness)	13% (15%)	11% (17%)	13% (10%)
From Insch and Oyne (B9002)	12% (7%)	12% (5%)	8% (8%)
From Kemnay (B994)	9% (9%)	13% (7%)	7% (14%)
From Blackburn roundabouts	7% (9%)	9% (10%)	6% (8%)
From the B9001 NE of Inverurie (through Inverurie)	5% (5%)	5% (3%)	3% (9%)
From the B9170 Oldmeldrum Road (then through Inverurie)	2% (1%)	1% (2%)	1% (2%)
From Thainstone Business Parks	3% (4%)	1% (8%)	8% (1%)
From the Westhill area via the B977 at Gauchill Jn	1% (3%)	1% (2%)	2% (1%)

Figures for the reverse direction are shown in brackets-

Table 11: ANPR data for traffic on the B9001 NE of Inverurie

Traffic Routeing from the B9001 NE of Inverurie	Full Survey Period 0600-1900	AM Peak 0700-0800	PM Peak 1700-1800
To Inverurie	65% (64%)	47% (61%)	71% (62%)
To Aberdeen	9% (6%)	19% (11%)	2% (7%)
To Kintore or the Kintore junctions	10% (11%)	16% (17%)	5% (7%)
To Blackburn Roundabouts	5% (6%)	12% (0%)	4% (13%)

Figures for the reverse direction are shown in brackets

Oldmeldrum is 8km north east of Inverurie along the B9170. A more detailed analysis of traffic originating on the B9170 Oldmeldrum Road is presented in Table 12. This shows that 71% of the B9170 traffic terminates in Inverurie. Only a small percentage, 4%, passes through Inverurie to Aberdeen. However, during peak periods, a large proportion of this traffic routes through Inverurie to Kintore, Blackburn, Thainstone Business Parks or locations accessed via the junctions at Kintore or Blackburn, (40% AM, 27% PM).

Table 12: ANPR data for traffic on the B9170 Oldmeldrum Road

Traffic Routeing from the B9170 Oldmeldrum Road	Full Survey Period 0600-1900	AM Peak 0700-0800	PM Peak 1700-1800
To Inverurie	71% (71%)	56% (71%)	76% (67%)
To Kintore or the Kintore junctions	11% (13%)	17% (14%)	12% (15%)
To Blackburn roundabouts	7% (7%)	13% (6%)	5% (7%)
To Thainstone Business Parks	5% (3%)	10% (3%)	3% (5%)
To Aberdeen	4% (3%)	4% (3%)	1% (3%)

Figures for the reverse direction are shown in brackets

Only one trip was detected in the ANPR survey which began on the A96 at Huntly or the A920 at Colpy and proceeded to the A947 at Newmachar. Similarly, only one trip was recorded which was first detected on the A947 at Newmachar and proceeded to Huntly and/or Colpy. A total of 6,884 vehicles were recorded passing the ANPR camera on the A947 at Newmachar, of which only 12% (799) were matched to other cameras within the ANPR survey network. The matched trips at Newmachar mostly begin and end in the local roads between Whiterashes, Oldmeldrum and Inverurie. The unmatched trips must therefore be originating from the settlements along the A920/A947 corridor, such as Oldmeldrum, Newmachar, Ellon, Turriff, Fyvie etc. Table 13 shows the matched trips which pass the A947 at Newmachar.

Table 13: ANPR data for traffic on the A947 at Newmachar

Traffic Routeing to the A947 at Newmachar	Full Survey Period 0600-1900	AM Peak 0700-0800	PM Peak 1700-1800
From B993 Whiterashes	16% (22%)	30% (26%)	14% (26%)
From Inverurie	43% (40%)	47% (54%)	62% (32%)
From the Inverurie hinterland (B9001 & B9170)	23% (20%)	17% (9%)	10% (21%)
From Huntly or Colpy	0% (0%)	0% (0%)	0% (0%)

Figures for the reverse direction are shown in brackets

The ANPR results indicate that nearly 50% of the trips heading for the A96 on the outskirts of Aberdeen, originate from Inverurie and Kintore. 21% originate from settlements to the south of the A96. 7% originate from areas to the north of Inverurie town centre, whilst 13% can be classed as strategic trips from Huntly and further west. Inverurie generates the biggest proportion of the trips, being the largest settlement in this area.

By comparison, there are no strategic trips routing via the A920/A947 between Huntly and Aberdeen. The majority of trips on the A920/A947 originate from settlements along the corridor, with only 12% originating from Inverurie and surrounding areas.

3.4 Accident Data

Accident data for the A96 for five year period from 2012 to 2016 was recorded by Transport Scotland and is shown in Table 14. The Craibstone to Kintore section contains two significant accident cluster sites:

- Chapel of Stoneywood Junction: 8 accidents (5 slight and 3 serious)
- Tyrebagger Junction at Kirkhill Forest: 9 accidents (6 slight, 2 serious, 1 fatal)

The Inverurie bypass section contains two significant accident cluster sites:

- Blackhall Roundabout: 5 accidents (4 slight and 1 serious)
- Drimmies Junction: 5 accidents (5 slight)

The East of Huntly to Colpy section has one significant accident cluster site:

- The bends at Bainshole: 8 accidents (4 slight, 3 serious, 1 fatal)

Table 14: Number of accidents on the A96, East of Huntly to Aberdeen, from 2012 to 2016

Section	Length	Total	Slight	Serious	Fatal
A96 Craibstone to Kintore	8.9km	31	23	7	1
A96 Kintore Bypass	3.4km	7	5	1	1
A96 Kintore to Inverurie	2.7km	2	2	0	0
A96 Inverurie Bypass	5.2km	16	14	2	0
A96 Inverurie to Oyne Fork	6.8km	12	8	4	0

Section	Length	Total	Slight	Serious	Fatal
A96 Oyne Fork to Colpy	9.2km	13	10	2	1
A96 Colpy to East of Huntly (A97 Jn)	13.9km	21	13	7	1

Accident data for the A947 for the five-year period from 2012 to 2016 was recorded by Aberdeenshire Council and is shown in Table 15. This shows a total of thirty accidents between Goval Junction and Meldrum roundabout, on the north side of Oldmeldrum. This highlights the existence of accident problems on both the A96 and the A947.

Table 15: Number of accidents on the A947, Oldmeldrum to Aberdeen, from 2012 to 2016

Section	Length	Total	Slight	Serious	Fatal
Goval Junction to South of Newmachar	4.0km	9	7	1	1
Newmachar (Hillbrae Way to Kingseat Road)	1.3km	4	2	2	0
North of Newmachar to South of Oldmeldrum	10.0km	14	8	5	1
South of Oldmeldrum to Meldrum Roundabout	2.0km	3	1	1	1

3.5 Other Baseline Data

Other baseline data including existing environmental and engineering constraints within the Improvement Strategy Option Q Corridor is outlined in Section 4.

4 Improvement Strategy Option Q Corridor Proposals

4.1 Corridor Areas and Corridor Options

Following the review of the DMRB Stage 1 work on Option Q, AmeyArup were asked to review Improvement Strategy Option Q in more detail based on current baseline information. For consistency, it was decided to follow the same initial Stage 2 methodology undertaken for Improvement Strategies B, C and D. Improvement Strategy Option Q logically splits into two distinct Corridor Areas:

- Corridor Area D – covers the western end of Improvement Strategy Option Q along the A920 road corridor
- Corridor Area Q – covers the eastern end along the A947 road corridor

The western end (Corridor Area D) merits further investigation for dualling since it is less challenging in terms of topography, offering more flexibility with the dualling options around Colpy and the link with the BN Corridor Options (north of Inverurie). This part of Improvement Strategy Option Q remains as part of the overall Stage 2 option development process and is not considered further.

The corridor areas covering the scheme wide study area are shown in Figure 4. As well as Corridor Area Q there are Corridor Areas B Online, B Inverurie South, B Inverurie North, B+ (around the north of Kintore), C, D and D+.

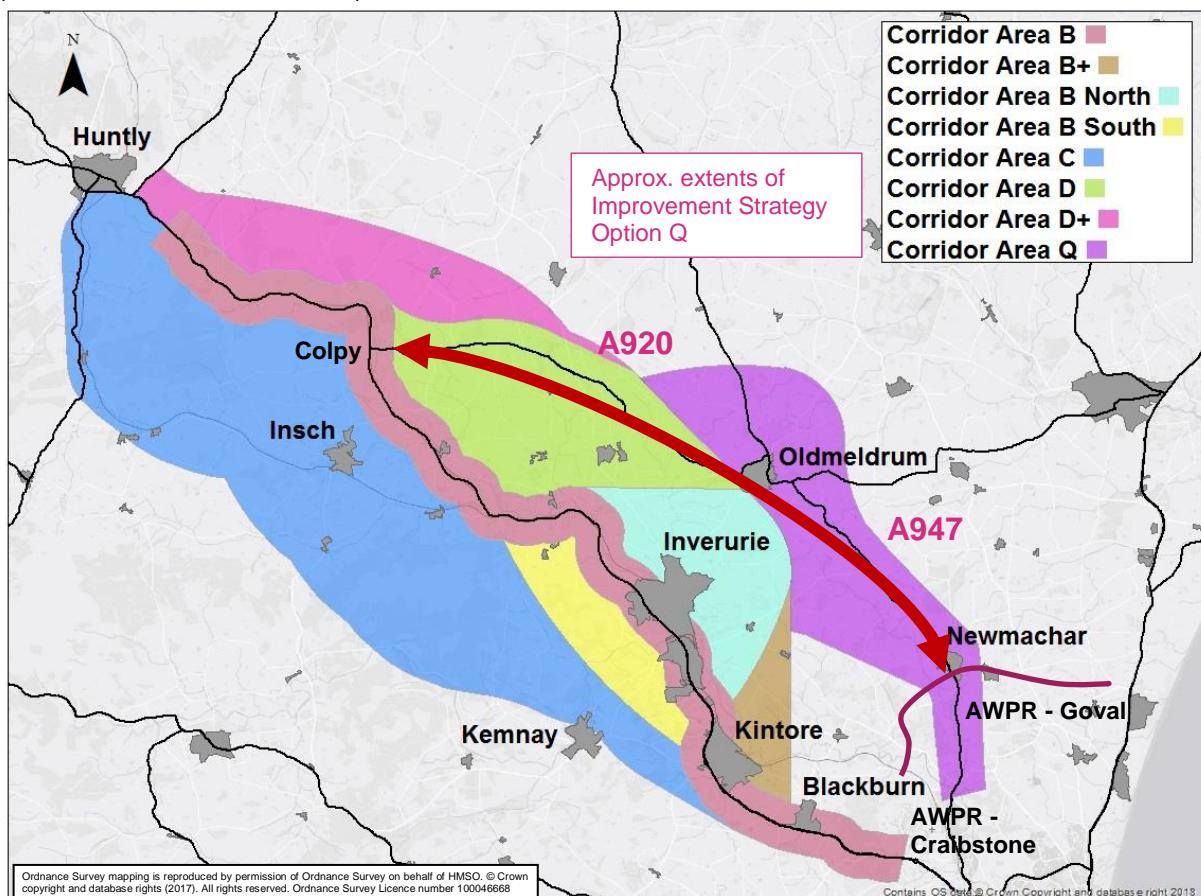


Figure 4: Corridor Areas for Improvement Strategy Options B, C, D & Q

In line with the AmeyArup methodology these corridor areas were subdivided into more precise corridor options. For example, Corridor Area D was split into D01, D02 and D03 where D01 is a corridor that is close to the existing A96 and D03 is further from the existing A96 and closer to the A920.

The subdividing of Corridor Area Q was therefore undertaken considering the map of High Impact Areas shown in Figure 5. This was produced using constraint data collected during both DMRB Stage 1 and DMRB Stage 2 and shows areas where a new dual carriageway could potentially have 'High Impact'.

To the south and west of Oldmeldrum there are a number of environmental and engineering constraints including an ancient battlefield, the site of the 1308 Battle of Barra. To the north west of Newmachar the constraints include the extensive, and popular, Straloch gardens which are designated as a Garden and Designed Landscape (GDL). Further details on these constraints are contained in Section 5.3.

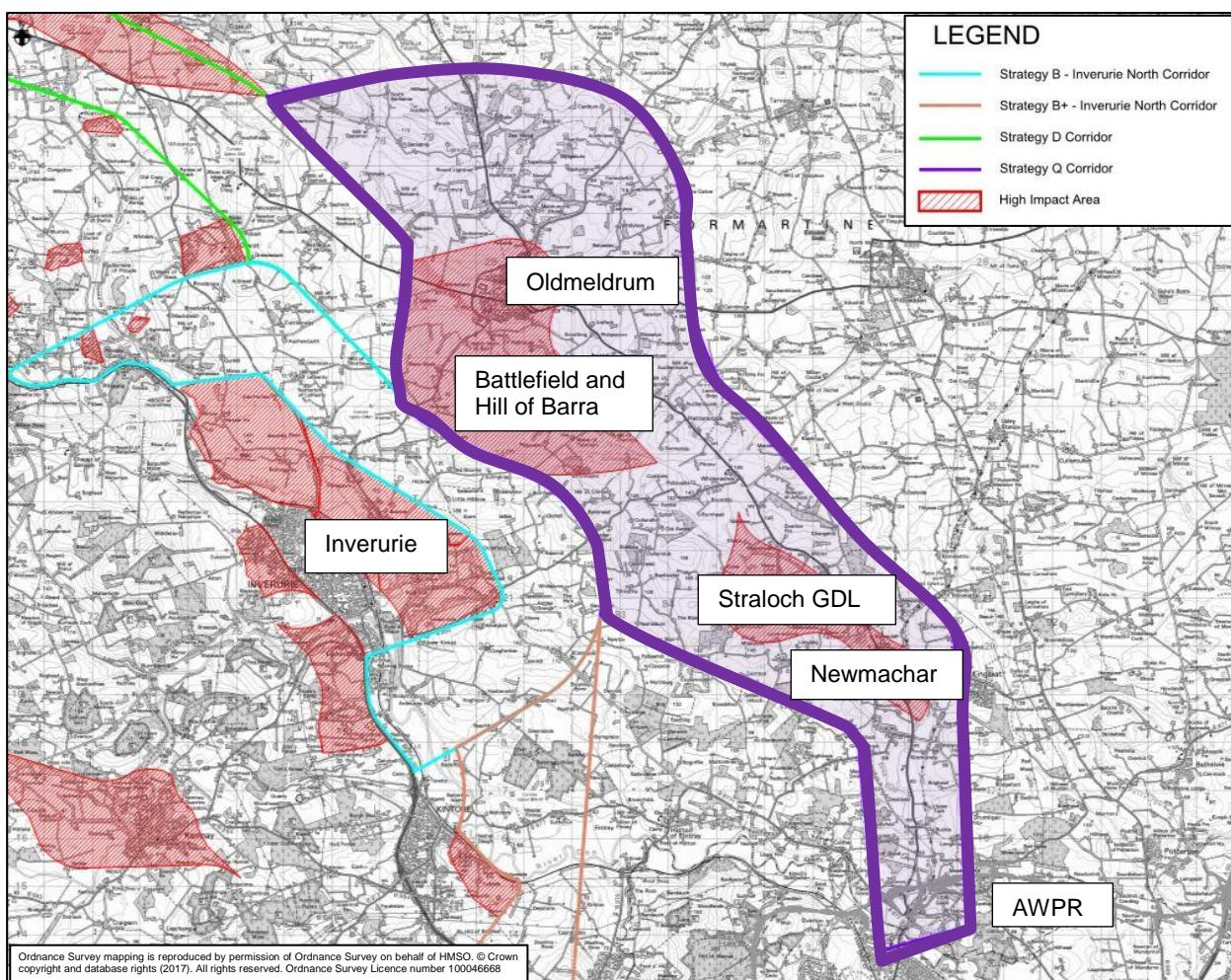


Figure 5: High Impact Areas for the Improvement Strategy Option Q Corridor Area

4.2 Corridor Options Q01 and Q02

To avoid the High Impact Areas, the Corridor Area Q was split into two more precise Corridor Options, denoted Q01 and Q02. These are shown in Figure 6.

Corridor Option Q01 leaves the online corridor of the A920 (D03) and bypasses Oldmeldrum to the north and to the east. It then bypasses Newmachar to the east and follows the line of the A947 to Goval Junction.

Corridor Option Q02 is an extension of the Inverurie north bypass corridor (BN01) and joins the A947 to the south of Newmachar, following the existing route to Goval Junction. It should be noted that these Corridor Options only form part of an end-to-end route and need to be combined with other corridor options to provide an end-to-end solution between east of Huntly and Aberdeen.

These two Corridor Options were appraised against the Scheme Objectives and STAG Criteria on their own merit. Under Q01 and Q02 the existing section of A96 dual-carriageway would become de-trunked. It is therefore sensible to draw comparisons between Q01/Q02 i.e. the A947 Corridor to the AWPR and the existing A96 online corridor south of Tavelty Junction, west of Kintore to Craibstone Junction. (OLS)

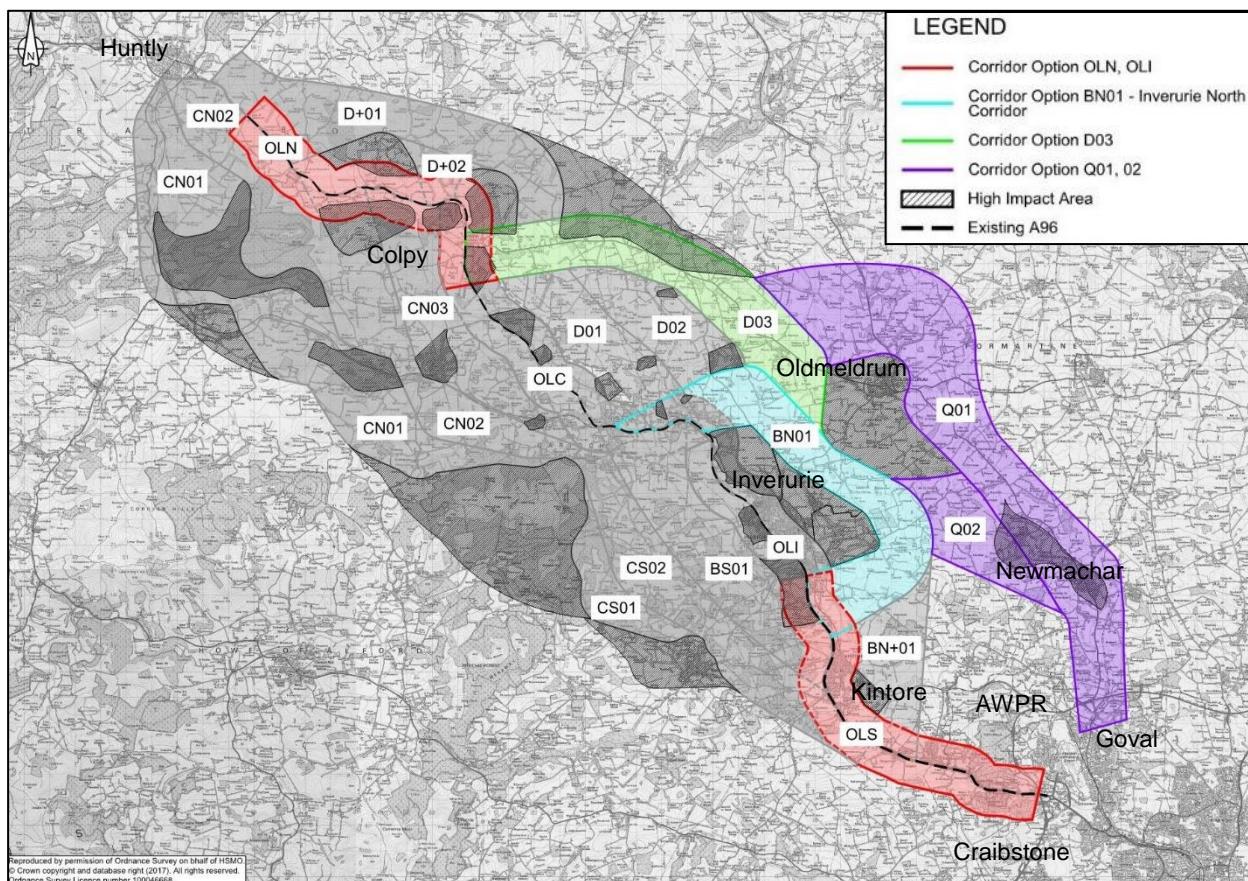


Figure 6: Corridor Options Q01 and Q02 (connecting to D03 and BN01)

There are significant differences in the length of new dual carriageway required depending on the route under consideration. These lengths are compared in Table 16. Being only corridor options rather than alignments at this stage these lengths should be considered indicative estimates of the end to end routes described. Note that the distance via the AWPR between Craibstone Junction and Goval Junction is approximately 6.5km and is dual carriageway. Craibstone Junction was chosen as the common measuring point as strategic trips to the east

end of the A96 from Central Scotland or the rest of the UK will travel via this location on the AWPR.

Table 16: Approximate Lengths of Dualling

Assumed End to End Route (made up of Corridor Options)	Approx. Distance from East of Huntly to Craibstone	Length of new dual-carriageway required
OLN – D03 – Q01 Dualling of A96 using online corridor to Colpy (OLN), then via the A920 Corridor (D03) and A947 corridor (Q01) north of Oldmeldrum to Goval	55.5km (incl. 6.5km from Goval to Craibstone)	49km East of Huntly to Goval
OLN - D03 - BN01 - Q02 Dualling of A96 using online corridor to Colpy (OLN), routing via A920 Corridor (D03), them via north of Inverurie/south of Oldmeldrum (BN01) via the A947 (Q02) to Goval	54.5km (incl. 6.5km from Goval to Craibstone)	48km East of Huntly to Goval
OLN - D03 - BN01 - OLS Dualling of A96 using online corridor to Colpy (OLN), routing via A920 Corridor (D03) north of Inverurie (BN01), joining existing A96 south of Tavelty (OLS)	53.5km	41.5km Huntly to Tavelty (excl. 12km of ex. dual from Tavelty to Craibstone)

This means that the any end-to-end route option using the A947 corridor (Q01 or Q02) would require at least 6.5km additional new dual carriageway than route options using the existing A96 (OLS). It would also mean that the full extent of the existing A96 dual carriageway would be de-trunked.

5 Assessment of Corridor Options Q01 and Q02

5.1 Methodology

Corridor Options Q01 and Q02 have been assessed against the A96 Dualling East of Huntly to Aberdeen Scheme Objectives (SOs) listed in Table 17 and the five STAG Criteria listed in Table 18. The performance of the options in terms of feasibility, affordability and public acceptability has also been considered. The overall results are presented in Appendix A. A summary of the assessment from an engineering, environmental and traffic perspective is contained in the following sections.

Table 17: A96 Dualling East of Huntly to Aberdeen Scheme Objectives

No.	Objective
SO1	To improve the operation of the A96 and inter-urban connectivity through: SO1.1 - Reduced journey times; SO1.2 - Improved journey time reliability; SO1.3 - Increased overtaking opportunities SO1.4 - Improved efficiency of freight movements along the transport corridor; SO1.5 - Reduced conflicts between local traffic and strategic journeys; and SO1.6 - Improved network resilience.
SO2	To improve safety for motorised and non-motorised users through: SO2.1 - Reduced accident rates and severity; SO2.2 - Reduced driver stress; and SO2.3 - Reduced potential conflicts between Motorised and Non-Motorised Users.
SO3	To provide opportunities to grow the regional economies on the corridor through: SO3.1 - Improved access to the wider strategic transport network; and SO3.2 - Enhanced access to jobs and services.
SO4	- To facilitate active travel in the corridor
SO5	- To facilitate integration with Public Transport Facilities
SO6	To avoid significant environmental impacts and, where this is not possible, to minimise the environmental effect on: - The communities and people in the corridor; and - natural and cultural heritage assets.

Table 18: STAG Criteria

STAG 1	Environment
STAG 2	Safety
STAG 3	Economy
STAG 4	Integration
STAG 5	Accessibility and Social Inclusion

5.2 Engineering Assessment of Q01 & Q02

Alignment and Buildability

Engineering and other constraints, including the High Impact Areas, are such that there is the potential for a number of alternative alignments in the Corridor Options. There are relatively few frontages on the existing A947 except in Newmachar, so some sections of dual carriageway could be provided parallel to the existing route within the online corridor so long as the many private and minor accesses can be accommodated via connector roads and via sections of the existing road.

The constraints of Straloch Gardens and Designed Landscape and the built-up area of Newmachar limit the options for the northern progression of a south west bypass around Newmachar. A south west bypass would need to be orientated towards the eastern edge of Inverurie (Corridor Option Q02) whilst a north east bypass would continue towards Oldmeldrum (Corridor Option Q01).

The Hill of Barra and Lawell Hill together present significant physical obstacles to any alignment around the south and west of Oldmeldrum. This leaves the east and northern side of the town which has a variable, undulating topography.

Construction access should be possible from the local road network. However, sections that are constructed 'on-line' would cause significant disruption to the existing A947 traffic.

The existing junction between the AWPR and the A947 has been built for the connection of a single carriageway and may not be suitable for the connection of a dual carriageway.

Substantial upgrades to the junction with AWPR at Goval would therefore be required for both Q01 and Q02.

A key issue is that neither Q01 nor Q02 make use of the existing dual-carriageway between the west of Kintore and Craibstone that would be re-used by alternative options. Albeit the existing A96 dual carriageway does require junction upgrades and closure of gaps in the central reserve to achieve Category 7A standard. However, this work is not seen as extensive or costly as providing new dualling within the A947 corridor which would also require new grade separated junctions.

Geotechnical

Corridor Area Q contains localised areas of compressible peat deposits and moderate areas of compressible alluvial deposits. Localised areas of sand and gravel are likely with the potential for use during construction.

In Corridor Option Q01 moderate areas of near surface rock have been identified. Extensive areas of surface rock are likely in Corridor Option Q02. Surface or near surface rock can result in hard, slow digging for road cuttings.

There are localised areas of made or reworked ground in Q01 between Newmachar and Oldmeldrum with the potential for contamination risk but there no recorded areas of made or reworked ground in Q02.

Flooding and Drainage

In Corridor Option Q01 there are a number of small, active flood plain areas but these are generally contained within burn corridors and could be easily avoided. The Yowlie Burn near Oldmeldrum Golf Course has a small area of flood plain but this should be easily avoided. The Balcairn Burn is west of Oldmeldrum and is just 100 metres wide at its widest point so any large

structures can avoid it. To the south east of Oldmeldrum the Bronie Burn has a small area of active floodplain which could also be avoided.

The Burn of Straloch runs north to south through the corridor roughly parallel to the A947 and has minor areas of floodplain. This connects to the Goval Burn which also runs north to south, from south of Newmachar to the River Don. There are several locations where the floodplain extends beyond the channel width and up to 100 metres wide.

At the southern end of Q01 the River Don floods covering an area of about 43 hectares. Depending on the connection with the AWPR the Don floodplain maybe avoided.

Corridor Option Q02 does not contain any notable floodplains.

Structures

Within Corridor Option Q01 it is anticipated that up to three A-class roads, five B-class roads and a large number of local roads or farm access roads will potentially be crossed or stopped up. There are multiple watercourse crossings required but it is anticipated that all but one of these could be culverted.

On Corridor Option Q02 the number of road crossings is smaller with one B-class road and up to four local roads or farm roads requiring to be traversed. Structures are not likely to require complex engineering and could be constructed using conventional construction techniques.

Both Improvement Strategy Option Q Corridor Options have the benefit of being able to tie into the AWPR north of the River Don. Consequently, no new major river crossings are required. The Aberdeen to Inverness railway is also remote from this corridor and so there is no need for any new railway bridges.

Utilities

Several National Grid gas pipelines cross the area including one to the north of Oldmeldrum and four between Oldmeldrum and Newmachar. There are also strategic utilities in the vicinity of the AWPR and across both corridor options.

A total of five National Grid gas pipelines cross Corridor Option Q01, one to the north of Oldmeldrum and four between Oldmeldrum and Newmachar. At the AWPR tie in there is likely to be a conflict with existing strategic utilities. SSE 275Kv electricity transmission lines also cross this corridor.

Corridor Option Q02 crosses four National Grid gas pipelines and SSE 275Kv electricity transmission lines.

5.3 Environmental Assessment of Q01 & Q02

The environmental assessment of Corridor Options Q01 and Q02 is based on the same methodology used for the Stage 2 Assessment undertaken for the other options considered as part of AmeyArup's initial assessment of the East of Huntly to Aberdeen scheme. There have been no specific site visits or additional data acquisition outwith the boundary of the Strategic Environmental Statement (SEA).

The Strategic Environmental Statement (SEA) noted that Improvement Strategy Option Q was significantly more constrained than other options being considered at the time.

The key environmental receptors and constraints were assessed by AmeyArup under the following 9 sub criteria:

- Air Quality

- Noise and Vibration
- People & Communities
- Policies & Plans
- Cultural Heritage
- Landscape & Visual
- Nature Conservation
- Geology, Soils, Contaminated Land and Groundwater
- Road Drainage and the Water Environment.

The following were identified as key issues within Corridor Options Q01 and Q02:

- Straloch Garden and Designed Landscape (GDL) is located adjacent to the A947 and to the north-west of Newmachar. The GDL also has within it Straloch House, a Category A listed building. There is the potential for direct impacts, or impacts upon the setting of these receptors.
- The Battle of Barra battlefield is on the inventory of Historic Battlefields, and is located to the south-west of Oldmeldrum. There is the potential to impact the setting of the site.
- The Hill of Barra Site of Special Scientific Interest (geological SSSI) is located about 1km south of Oldmeldrum, and is in the same location as the Hill of Barra fort scheduled monument. There is the potential for the setting of the scheduled monument to be affected.
- Other key constraints include scattered listed buildings (e.g. Meldrum House) and scheduled monuments (St Mary's Chapel, Four Braehead Cottages standing stone) and ancient woodland.
- The Formartine and Buchan Way, the solum of the disused Aberdeen to Peterhead railway, runs north to south along the east side of the A947. This is part of the National Cycle Network.
- There are a number of small, active floodplain areas but these are generally contained within burn corridors and could be easily avoided.

Any emerging Option Q alignment within Corridor Options Q01 or Q02 would need to be considered carefully to reduce or, where possible remove the impact of a new route on these sensitive locations.

Q01 would require a bypass of Oldmeldrum and a bypass of Newmachar, while option Q02 passes close to the south west side of Newmachar. This would introduce issues associated with dualling, such as noise and vibration, and air quality, to a range of communities currently not directly affected by these issues. In comparing both Corridor Options Q01 and Q02 to the existing A96 Corridor, it is noted that these options would not utilise the existing section of dualling on the A96 between Kintore and the AWPR.

Therefore, in summary, with both Corridor Options Q01 and Q02, environmental impacts would be introduced in areas not currently affected by a dual carriageway, with little compensatory benefit for the existing A96 road corridor since A96 traffic is unlikely to divert to use this new A947 road corridor. Further details of the effect on traffic is explained in Section 5.4.

5.4 Traffic Assessment of Q01 & Q02

Traffic modelling was carried out using the A96 CRAM v1.3 and the modelling results are presented in Appendix D. The traffic volume results from the A96 CRAM v1.3 modelling are summarised in Table 19.

Table 19: A96 daily traffic volumes (AADT) predicted by the A96 CRAM Model

Between junctions at	Year	AADT (PCUs)				Percentage change from Do-Min		
		Do-Min	OLS	Q01	Q02	OLS	Q01	Q02
Huntly East to Colpy	2030	16,238	696	834	794	-96%	-95%	-95%
	2045	19,802	740	895	851	-96%	-95%	-96%
Colpy and Kellockbank	2030	12,905	3,123	7,467	8,945	-76%	-42%	-31%
	2045	14,964	4,711	8,531	10,462	-69%	-43%	-30%
Kellockbank and Oyne	2030	12,267	2,423	6,401	7,997	-80%	-48%	-35%
	2045	14,198	3,859	7,322	9,386	-73%	-48%	-34%
Oyne and Pitcaple	2030	15,659	5,962	9,518	11,153	-62%	-39%	-29%
	2045	17,724	7,632	10,559	12,691	-57%	-40%	-28%
Pitcaple and Drimmies	2030	16,076	6,372	9,630	11,133	-60%	-40%	-31%
	2045	18,229	8,229	10,634	12,600	-55%	-42%	-31%
Drimmies and Blackhall	2030	19,088	9,523	12,542	13,973	-50%	-34%	-27%
	2045	22,290	12,475	14,568	16,276	-44%	-35%	-27%
Blackhall and Port Elphinstone	2030	26,992	17,749	20,232	21,217	-34%	-25%	-21%
	2045	30,937	21,733	23,274	24,408	-30%	-25%	-21%
Port Elphinstone and Thainstone	2030	42,927	31,486	35,525	36,288	-27%	-17%	-15%
	2045	48,119	36,594	40,095	40,928	-24%	-17%	-15%
Thainstone and Tavety	2030	43,517	32,083	36,123	36,874	-26%	-17%	-15%
	2045	48,676	37,290	40,632	41,451	-23%	-17%	-15%
Tavety and Gauchhill	2030	38,470	41,325	31,798	32,703	+7%	-17%	-15%
	2045	43,192	46,738	35,801	36,846	+8%	-17%	-15%
Gauchhill and Broomhill	2030	35,898	38,338	29,126	30,047	+7%	-19%	-16%
	2045	40,447	43,599	32,970	34,035	+8%	-18%	-16%
Broomhill and Kinellar	2030	42,829	44,968	35,876	36,819	+5%	-16%	-14%
	2045	48,152	50,857	40,443	41,540	+6%	-16%	-14%
Kinellar and Clinterty	2030	32,916	35,520	27,287	28,059	+8%	-17%	-15%
	2045	36,772	39,008	30,459	30,910	+6%	-17%	-16%
Clinterty and Tyrebagger	2030	37,150	40,060	31,306	32,058	+8%	-16%	-14%
	2045	41,513	44,222	34,972	35,422	+7%	-16%	-15%
Tyrebagger and Craibstone	2030	36,791	38,641	31,470	32,194	+5%	-14%	-12%
	2045	41,203	42,463	35,090	35,516	+3%	-15%	-14%
New A96 Alignments								
Colpy and B9001 Junction	2030	-	13,396	11,131	9,341	-	-	-
	2045	-	14,366	13,923	11,591	-	-	-
B9001 Jn and B9170 Jn (OLS); B9001 Jn and Oldmeldrum (Q1); B9001 Jn and B9170 Jn (Q2)	2030	-	15,201	12,394	10,797	-	-	-
	2045	-	15,914	15,066	12,916	-	-	-
B9170 Jn and Kintore (OLS); Oldmeldrum and Newmachar (Q1); B9170 Jn and Newmachar (Q2);	2030	-	14,542	19,290	16,388	-	-	-
	2045	-	15,690	23,221	19,964	-	-	-
Newmachar and Goval (Q1 & Q2)	2030	-	-	23,384	22,684	-	-	-
	2045	-	-	27,664	26,827	-	-	-

Note: to convert PCUs to vehicles multiply by a conversion factor of 0.914

The traffic volume results in Table 19 show three Corridor Options; OLS, Q01 and Q02. OLS represents the upgrade of the existing A96 section of dualling between Tavelty and Craibstone Junctions i.e. junction upgrades and closure of central reserve gaps. The traffic modelling also demonstrated that end-to-end dualling routes remove the vast majority of traffic from the existing A96 between Huntly and Colpy.

The main differences between the three Corridor Options are evident on the section between Inverurie and Craibstone Junction. Compared with the Do-Minimum scenario:

- By 2030, Corridor Options Q01 and Q02 reduce traffic volumes on the existing A96 through Inverurie by between 15 and 25% (5,300-7,300vpd). However, at the 2030 year of opening, the volume of traffic remaining on the existing A96 in Inverurie will be over 32,000vpd, which is approximately 12% greater than current traffic volumes in this area (29,300vpd). By comparison, OLS generates 28,800vpd on the existing A96 through Inverurie, which is 2% less than current traffic volumes in this area. Corridor Options Q01 and Q02 are therefore unlikely to address the current peak hour congestion problems experienced in Inverurie.
- By 2045, Corridor Option Q01 reduces traffic on the Kintore bypass by up to 18% (6,800 vpd). From Kintore to Craibstone, traffic volumes reduce by an average of 14% (6,300vpd), with 37,700vpd remaining on the existing A96.
- Corridor Option Q02 reduces traffic on the A96 Kintore bypass by up to 16% (5,800vpd). From Kintore to Craibstone, traffic volumes reduce by an average of 13% (5,600vpd) by 2045, with 38,400vpd remaining on the existing A96.
- Both Corridor Options Q01 and Q02 are limited in their effectiveness of attracting traffic away from the existing A96. On the busiest section of the A96 between Kintore and Blackburn a maximum of 14% of traffic transfers to the new route, with more than 37,000vpd continuing to use the existing route. The accident rate on the existing A96 is therefore unlikely to be reduced by developing an alignment through Option Q. Similarly, the safety, operation and journey time reliability of the existing at-grade junctions on the A96 between Broomhill Roundabout and Craibstone are unlikely to be improved with an Option Q.
- The upgraded A96 between Tavelty and Craibstone Junctions (OLS) increases traffic on this route by up to 8%. This suggests that the OLS successfully attracts more traffic away from the local road network and onto the improved trunk road, thus enhancing the safety, operation and journey time reliability benefits that it will bring.

The busiest section of a Q01 option between Newmachar and Goval Junction attracts 20,700vpd in 2030 (25,300 in 2045). However, the unimproved A96 between Blackburn and Craibstone in 2030 retains up to 28,800vpd (32,100vpd in 2045) and between Kintore and Blackburn it retains up to 32,800vpd (37,000vpd in 2045).

Therefore, more traffic continues to use the unimproved A96 road (approximately 60%), rather than the new dual carriageway along the A947 corridor (approximately 40%).

Table 20: A96 AM and PM peak hour traffic volumes predicted by the A96 CRAM Model

Between junctions at	Year	Eastbound AM 0800 to 0900 PCUs				Westbound PM 1700 to 1800 PCUs			
		Do-Min	OLS	Q01	Q02	Do-Min	OLS	Q01	Q02
Tavelty and Gauchhill	2030	1,866	2,057	1,612	1,625	1,884	2,272	1,635	1,660
	2045	1,895	2,250	1,771	1,762	1,939	2,452	1,747	1,772
Gauchhill and Broomhill	2030	1,758	1,947	1,503	1,515	1,779	2,112	1,497	1,523
	2045	1,801	2,145	1,656	1,647	1,811	2,299	1,607	1,631
Broomhill and Kinellar	2030	2,150	2,337	1,898	1,912	2,217	2,552	1,960	1,986
	2045	2,184	2,555	2,063	2,056	2,262	2,760	2,099	2,126
Kinellar and Clinterty	2030	1,639	1,805	1,385	1,397	1,593	1,848	1,385	1,375
	2045	1,612	1,876	1,548	1,539	1,604	1,897	1,468	1,472
Clinterty and Tyrebagger	2030	1,741	1,919	1,481	1,492	1,665	1,933	1,453	1,444
	2045	1,735	2,011	1,664	1,654	1,696	2,002	1,557	1,561
Tyrebagger and Craibstone	2030	1,559	1,646	1,391	1,403	1,779	2,013	1,563	1,553
	2045	1,607	1,689	1,528	1,530	1,847	2,110	1,677	1,685

Table 20 shows the peak hour traffic volumes on the Aberdeen-Kintore-Inverurie corridor predicted by the A96 CRAM v1.3. These PCU values can be converted to vehicles by applying the PCU conversion factor of 0.914. They can then be compared with the 2017 survey values in Table 8.

For the AM peak hour of 0800 to 0900 eastbound between Kintore and Blackburn in 2030 Option Q01 has 1,898 vehicles and Option Q02 has 1,912 vehicles, compared with the 2017 survey value of 1,470.

For the PM peak hour of 1700 to 1800 westbound between Blackburn and Kintore in 2030 Option Q01 has 1,960 vehicles and Option Q02 has 1,986 vehicles, compared with the 2017 survey value of 1,590.

This means that, while Q01 and Q02 both reduce the volume of traffic using the Aberdeen to Kintore section of the existing A96, the peak hour traffic in 2030 will be higher than it was in 2017 and this section of road will not have had any junction or other improvements. Therefore, Corridor Options Q01 and Q02 will not improve the peak hour performance of this key road.

Table 21: A947 daily traffic volumes (AADT) predicted by the A96 CRAM Model

A947 Between junctions at	Year	Do-Min	OLS	%
Oldmeldrum (A920 eastern junction) and Newmachar (B979 northern junction)	2030	11,964	9,552	-20%
	2045	14,471	11,485	-21%
Newmachar (B979 southern junction) and Goval (northern slip road merge)	2030	14,765	12,424	-16%
	2045	17,489	14,601	-17%

The results shown in Table 21 show the impact that upgrade of the existing A96 between Tavelty and Craibstone junctions is predicted to have on traffic volumes on the A947. Indirect benefits result on the existing single carriageway by removing between 16% and 21% of the traffic, compared with the Do-Minimum scenario. This is likely to be a result of traffic from Oldmeldrum, or from the north of Oldmeldrum, re-routeing via the B9170 and the new dual-carriageway to Craibstone Junction.

Journey time benefits predicted by the A96 CRAM v1.3 are shown in Table 22. Additional details are provided in Appendix D. These results show that upgrading of the existing A96 between Tavelty and Craibstone Junctions (OLS) produces the largest predicted improvement in journey times both for long distance Huntly to Craibstone trips and for shorter distance Kintore to Craibstone trips. Although a new dual carriageway along the A947 corridor (Q01 and Q02) would improve journey times compared with the Do-Minimum scenario they are consistently poorer than OLS.

Table 22: Journey Time improvements predicted by the A96 CRAM Model

Route	Year	AM 0800 to 0900			Interpeak			PM 1700 to 1800		
		OLS	Q01	Q02	OLS	Q01	Q02	OLS	Q01	Q02
Huntly to Craibstone	2030	8:25	1:56	1:51	5:47	0:21	0:20	5:55	0:23	0:18
	2045	12:10	4:05	4:06	6:33	0:44	0:41	6:50	0:55	0:53
Craibstone to Huntly	2030	5:30	0:20	0:19	5:35	0:25	0:20	9:50	3:16	3:10
	2045	6:01	0:30	0:25	6:04	0:37	0:30	13:16	5:11	4:54
Kintore to Craibstone	2030	0:59	0:32	0:32	0:28	0:05	0:04	0:29	0:05	0:05
	2045	2:17	1:24	1:26	0:31	0:07	0:06	0:32	0:09	0:09
Craibstone to Kintore	2030	0:23	0:04	0:04	0:24	0:05	0:03	0:51	0:38	0:38
	2045	0:22	0:06	0:04	0:23	0:05	0:04	1:34	1:11	1:07

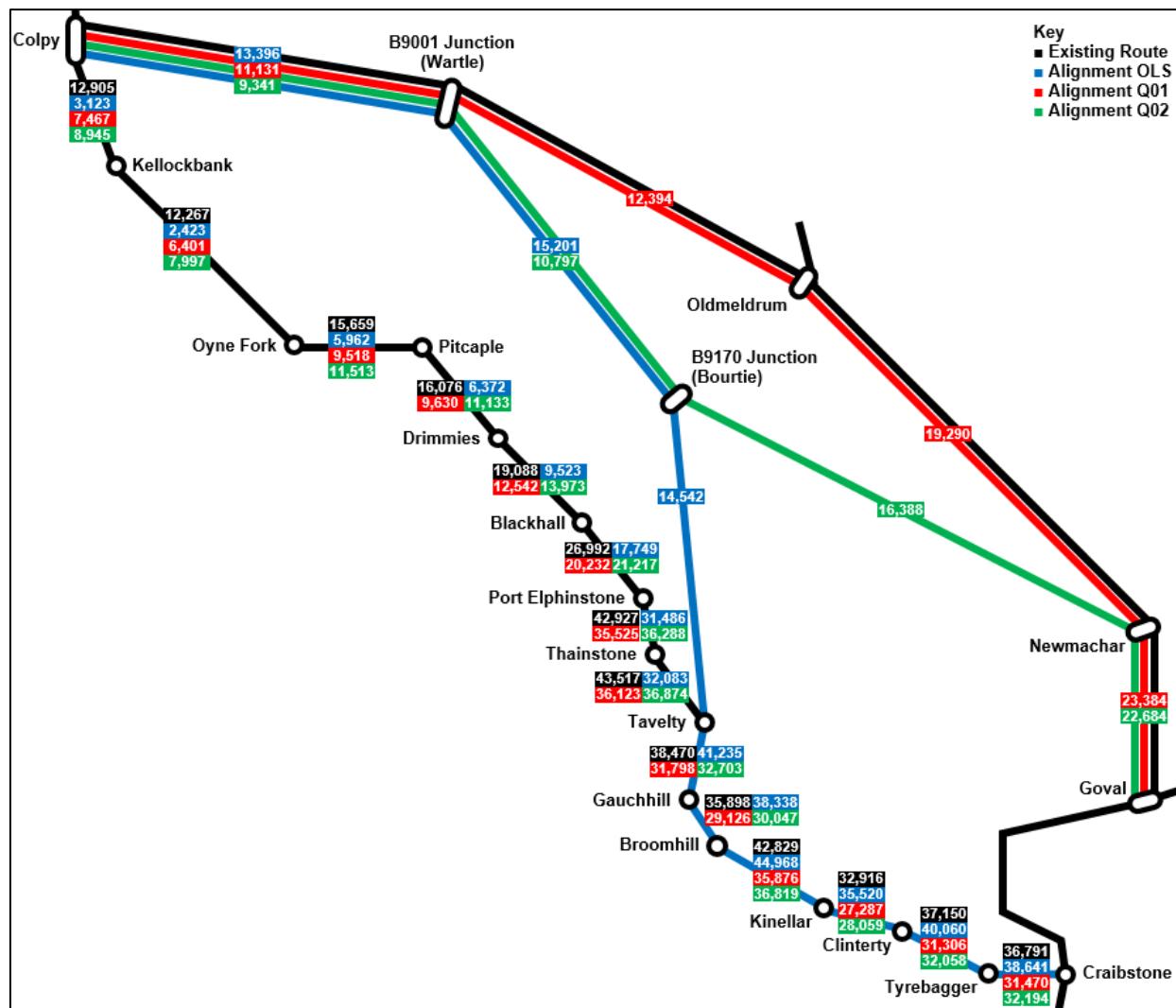


Figure 7: The AADT traffic volumes for 2030 predicted by the A96 CRAM Model

5.5 Summary of Assessment of Q01 and Q02

Table 23 presents a summary of the findings of the assessment of a dual carriageway corridor along the A947 (Corridor Options Q01 and Q02) compared to a dualling that upgrades the existing A96 to category 7A between Kintore and Craibstone (OLS). Each of the three Corridor Options have been assessed against the Scheme Objectives and the STAG Criteria using a 5-point scale as outlined below and in the Corridor Options Assessment Tables in Appendix A.

Table 23: Summary of the Assessment of Corridor Options Q01 and Q02

	Scheme Objectives												STAG Criteria									
	SO1.1	SO1.2	SO1.3	SO1.4	SO1.5	SO1.6	SO2.1	SO2.2	SO2.3	SO3.1	SO3.2	SO4	SO5	SO6	Environment	Safety	Economy	Integration	Accessibility	Feasibility	Affordability	Acceptability
Q01	Green	Green	Green	Yellow	Green	Light Blue	Light Blue	Green	Green	Green	Red	Yellow	Yellow	Yellow	*	Yellow	Yellow	Yellow	Red	Yellow	Red	Light Blue
Q02	Green	Green	Green	Light Blue	Green	Light Blue	Yellow	Green	Green	Green	Yellow	Red	Light Blue	Yellow	*	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Light Blue
OLS	Green	Green	Green	Green	Green	Light Blue	Green	Green	Green	Green	Green	Green	Yellow	Yellow	*	Yellow	Yellow	Yellow	Green	Yellow	Red	Light Blue

*Covered under SO6

Colour Coding	Assessment				
Red	Major Adverse Impact				
Yellow	Adverse Impact				
Light Blue	Neutral Impact				
Green	Beneficial Impact				
Dark Green	Major Beneficial Impact				

Table 23 concludes that providing a Category 7A dual carriageway on the A96 corridor between Kintore and Craibstone (OLS) performs consistently better than Corridor Options Q01 or Q02, which both fail to deliver the following scheme objectives:

- SO3 – To grow the regional economies in the corridor
- SO4 – To facilitate active travel in the corridor
- SO5 - To facilitate integration with public transport.

Q01 and Q02 also fail to meet several of the STAG criteria.

6 Conclusions and Recommendations

The key conclusions of this report are as follows:

Improvement Strategy Option Q following the A920 road corridor – Colpy to Oldmeldrum (Corridor Option D03)

- Options that use the western end of Improvement Strategy Option Q, along the A920 corridor (Corridor Option D03), will continue to be developed as part of the DMRB Stage 2 assessment process for the following reasons:
 - It follows an existing road corridor (A920) and facilitates a connection to a northern bypass of Inverurie.
 - It forms part of a route that performs well against the scheme objectives.

Improvement Strategy Option Q following the A947 road corridor - Oldmeldrum to Dyce (Corridor Options Q01 and Q02)

- Both Corridor Options Q01 and Q02 fail to perform better than alternative options that re-use and upgrade the existing dual-carriageway between the west of Kintore and Craibstone. All options currently being investigated that provide a bypass to the north east of Inverurie and connect to the existing A96 dual-carriageway to the west of Kintore have the potential to provide secondary benefits to the Aberdeen to Oldmeldrum corridor.
- It is therefore recommended that options along the A947 corridor (Corridor Options Q01 and Q02) are not taken forward for further consideration as part of the ongoing DMRB Stage 2 process for the following reasons:
 - The population of the towns along the existing A96 corridor is about four times greater than that of the towns in the Oldmeldrum to Aberdeen (A947) corridor. There are also significantly more journeys within the A96 corridor than in the A947 corridor. The Aberdeenshire Local Development Plan supports significant housing and employment growth in the Inverurie to Aberdeen corridor. The potential benefits of improvement along the Inverurie to Aberdeen corridor are therefore significantly greater.
 - Whilst Corridor Options Q01 and Q02 remove a proportion of traffic from the existing dualled section of the A96, the volume of traffic remaining on this road in 2030 is still higher than it is at present. Therefore, both Q01 and Q02 fail to improve the current issues on this section of the A96. The unimproved dual-carriageway between west of Kintore and the AWPR would remain busier than a potential new dual-carriageway along the A947 corridor.
 - Strategic journey times between Huntly and Craibstone on the AWPR are longer with Q01 and Q02 than with an option that re-uses and upgrades the existing dual-carriageway between the west of Kintore and Craibstone.
 - An option utilising the existing A96 dual carriageway provides a greater level of integration with rail services at Inverurie and Kintore and the major park and ride site at Dyce. There are also more people in this corridor who can benefit from improvements to bus services and walking and cycling facilities.
 - High level traffic modelling shows that an online upgrade of the A96 between west of Kintore and Craibstone can have the secondary effect of significantly reducing traffic on the A947 between Aberdeen and Oldmeldrum by providing an upgraded route into Aberdeen and onto the AWPR.

- Efficient use of existing transport infrastructure is identified in national, regional and local policies. Neither Q01 nor Q02 would use the existing 12km section of dual-carriageway between west of Kintore and Craibstone and would require the construction at least 6.5km of additional dual-carriageway in comparison to utilising the existing A96 online dual carriageway at OLS. (The existing A96 dual carriageway will require some junction upgrades and closure of gaps in the central reserve to achieve Category 7A standard).
- The junction with the AWPR at Goval has been built for the connection of the existing single carriageway A947. Substantial upgrades to this junction would therefore be required.
- Both Corridor Options Q01 and Q02 have the benefit of being able to tie into the AWPR north of the River Don and this avoids the cost of constructing a major crossing over the River Don. However, this does not outweigh the extra length of dual-carriageway that would be required in the A947 corridor. In addition, improvements at Goval Junction and upgrades to local roads would be needed with both Corridor Options Q01 and Q02.
- Corridor Option Q01 essentially follows the same route as the eastern section of Improvement Strategy Option Q that was sifted out at DMRB Stage 1. This more detailed assessment does not change the conclusions reached at Stage 1. Corridor Option Q02 performs slightly poorer than Q01, from a traffic perspective, as it is more remote from Oldmeldrum. However, both Corridor Options Q01 and Q02 are limited in their effectiveness of attracting traffic away from the existing A96. On the busiest section of the A96 between Kintore and Blackburn only 14% (6,300vpd) of traffic transfers to the new route, with more than 37,000vpd continuing to use the existing route.

Appendix A – Corridor Options Assessment Tables

Table 24: Scheme Objective S01

Corridor Option	S01.1 - Reduced journey times	S01.2 - Improved journey time reliability	S01.3 - Increased overtaking opportunities;	S01.4 - Improved efficiency of freight movements along the transport corridor;	S01.5 - Reduced conflicts between local traffic and strategic journeys	S01.6 - Improved network resilience
Q 01 Corridor Option Q01 follows D03 to west of Oldmeldrum. At Oldmeldrum it swings north to bypass the town, then connecting to the A947, 1km corridor offset to either side. It ties into the AWPR northeast of Aberdeen.	<p>Journey Time (JT) savings between Huntly and Craibstone.</p> <p>Longer route means that JT savings on Q01 are less than for OLS. JT savings of 4 mins in AM peak, < 1 min in inter peak, and 5 mins in PM Peak = Beneficial Impact.</p> <p>JT savings between Kintore and Craibstone offer only marginal benefits to the JT savings. (JT savings of 1½ mins in AM peak, < 1 min in inter peak, and < 1 min in PM Peak).</p>	<p>Under Q01, 2030 peak hour traffic levels on the existing A96 between Aberdeen and Inverurie are predicted to be higher than in 2017. The absence of any junction improvements on this section of the existing A96 corridor means that the current journey time and journey time reliability problems will remain.</p> <p>Reduction in JT variability between Huntly and Craibstone 3½ mins during AM peak, and 4½ mins during PM peak=Beneficial Impact.</p> <p>Marginal reductions in JT variability between Kintore and Craibstone 1½ mins during AM peak, and 1 min during PM peak.</p>	<p>Q01, provides a consistent category 7A dual carriageway, offering improved overtaking opportunities along its length. However, it does not improve the existing A96 dual carriageway between Kintore and Craibstone, where opportunities to overtake can be affected by at grade junctions and gaps in the central reserve.</p>	<p>Longer route means that strategic freight traffic travelling between Huntly and Aberdeen is unlikely to route via Q01 and is more likely to remain on the existing A96, which is the key freight route along the A96 Strategic Growth Corridor between Aberdeen, Kintore and Inverurie.</p> <p>With Q01 in place, the existing A96 dual carriageway between Kintore and Craibstone will not be upgraded but will continue to be de-restricted, attracting over 60% of traffic. By 2030, the peak hour traffic levels on this section of road are predicted to be higher than in 2017 and as such current levels of freight inefficiency on this section will remain = Adverse Impact.</p>	<p>Q01 reduces the potential for conflicts by separating long distance strategic traffic (Aberdeen to Huntly and Inverness) from more local trips between Aberdeen, Inverurie and Kintore.</p> <p>It also reduces the potential for conflicts between local traffic in Oldmeldrum and Newmachar and longer distance traffic travelling from the north of Old Meldrum along the A947 to Aberdeen.</p> <p>However, it does little to reduce potential conflicts between local and strategic trips between Inverurie and Aberdeen, with only 13% of trips on the A96 through Inverurie being attracted to the new Q01 alignment in the AM peak.</p>	<p>Q01 provides an alternative dual carriageway route between Inverurie and AWPR, which could improve the resilience of network in the case of incidents on the existing A96. However, the existing junction between the AWPR and the A947 is designed to accommodate a single carriageway and may not be suitable for the connection of a dual carriageway under Corridor Option Q01. Substantial upgrades to the junction with AWPR at Goval may therefore be required.</p> <p>There are also several locations where the floodplain encroaches on Corridor Option Q1.</p> <p>The risk of closures on Q01 due to snow and ice is likely to be low. The elevation in the A947 corridor is relatively consistent or lower than the existing A96 Aberdeen to Inverurie corridor and so snow risk would be broadly the same.</p>
Q 02 Corridor Option Q02 follows D03 to west of Oldmeldrum. At Oldmeldrum it swings south to bypass the town on to Corridor Option BN01, then heading east connecting to the A947, 1km corridor offset to either side. It ties into the AWPR northeast of Aberdeen.	<p>Journey Time (JT) savings between Huntly and Craibstone.</p> <p>Longer route means that JT savings on Q02 are less than for OLS. JT savings of 4 mins in AM peak, < 1 min in inter peak, and 5 mins in PM Peak = Beneficial Impact</p> <p>JT savings between Kintore and Craibstone offer only marginal benefits to the JT savings. (JT savings of 1½ mins in AM peak, < ½ min in inter peak, and 1 min in PM Peak).</p>	<p>Under Q02, 2030 peak hour traffic levels on the existing A96 between Aberdeen and Inverurie are predicted to be higher than in 2017. The absence of any junction improvements on this section of the existing A96 corridor means that the current journey time and journey time reliability problems will remain.</p> <p>Reduction in JT variability between Huntly and Craibstone 3½ mins during AM peak, and 4½ mins during PM peak=Beneficial Impact</p> <p>Marginal reductions in JT variability between Kintore and Craibstone 1½ mins during AM peak, and 1 min during PM peak.</p>	<p>Q02, provides a consistent Category 7A dual carriageway, offering improved overtaking opportunities along its length. However, it does not improve the existing A96 dual carriageway between Kintore and Craibstone, where opportunities to overtake can be affected by at grade junctions and gaps in the central reserve.</p>	<p>Longer route means that strategic freight traffic travelling between Huntly and Aberdeen is unlikely to route via Q02 and is more likely to remain on the existing A96, which is the key freight route along the A96 Strategic Growth Corridor between Aberdeen, Kintore and Inverurie. It does however come closer to the planned growth area on the north-eastern side of Inverurie.</p> <p>With Q02 in place, the existing A96 dual carriageway between Kintore and Craibstone will not be upgraded but will continue to be de-restricted, attracting over 60% of traffic. By 2030, the peak hour traffic levels on this section of road are predicted to be higher than in 2017 and as such current levels of freight inefficiency on this section are likely to remain = Neutral/Marginal impact.</p>	<p>Q02 reduces the potential for conflicts by separating long distance strategic traffic (Aberdeen to Huntly and Inverness) from more local trips between Aberdeen, Inverurie and Kintore.</p> <p>It also reduces the potential for conflicts between local traffic in Newmachar and longer distance traffic travelling from the north of Newmachar along the A947 to Aberdeen.</p> <p>Q02 provides a new link from the north east of Inverurie to Inverness or Aberdeen, reducing the volume of trips on the existing A96 through Inverurie by 16% in the AM peak.</p>	<p>Q02 provides an alternative dual carriageway route between Inverurie and AWPR, which could improve the resilience of network in the case of incidents on the existing A96. However, the existing junction between the AWPR and the A947 is designed to accommodate a single carriageway and may not be suitable for the connection of a dual carriageway under Corridor Option Q02. Substantial upgrades to the junction with AWPR at Goval may therefore be required. The risk of closures on Q01 due to snow and ice is likely to be low. The elevation in the A947 corridor is relatively consistent or lower than the existing A96 Aberdeen to Inverurie corridor and so snow risk would be broadly the same.</p>

Corridor Option	Scheme Objective S01 – To improve the operation of the A96 and inter-urban connectivity through:					
	S01.1 - Reduced journey times	S01.2 - Improved journey time reliability	S01.3 - Increased overtaking opportunities;	S01.4 - Improved efficiency of freight movements along the transport corridor;	S01.5 - Reduced conflicts between local traffic and strategic journeys	S01.6 - Improved network resilience
OLS This Corridor Option is similar to Q02, following D03 to west of Oldmeldrum. At Oldmeldrum it swings south to bypass the town on to Corridor Option BN01, then heading south east to tie-in to the existing A96 online corridor south of Tavely Junction at Kintore and continues on-line to Craibstone Junction. (The online section between Tavely and Craibstone is Corridor Option OLS)	<p><i>Journey Time (JT) savings between Huntly and Craibstone.</i></p> <p>Shorter route means that JT savings on OLS are significantly more than for Q01 or Q02. JT savings of 12 mins in AM peak, 6½ mins in inter peak, and 13½ mins in PM Peak = Large Beneficial Impact.</p> <p><i>JT savings between Kintore and Craibstone offer slightly greater benefits in JT savings compared to Q01 and Q02. (JT savings of 2½ mins in AM peak, ½ min in inter peak, and 1½ mins in PM Peak).</i></p>	<p><i>Reduction in JT variability between Huntly and Craibstone 5½ mins during AM peak, and 7½ mins during PM peak=Large Beneficial Impact.</i></p> <p><i>Slightly greater reductions in JT variability between Kintore and Craibstone compared to Q01 and Q02. (1¾ mins during AM peak, and 1 min during PM peak).</i></p>	<p>Upgrading the existing dual carriageway on OLS to Category 7A would improve overtaking opportunities on this section through the provision of grade separated junctions and closing of the gaps in the central reserve.</p>	<p>Shorter and more direct route between Huntly and Aberdeen means that strategic freight traffic is likely to continue to route along this key freight corridor. Junction upgrades to GSJ's and closure of gaps in the central reserve mean that by 2045 freight traffic will benefit from journey time savings of 2½ mins in the AM peak and 1 ½ mins in the PM peak between Kintore and Craibstone. Strategic freight traffic between Huntly and Craibstone experience significant JT savings in 2045 of 12½ mins in the AM peak and 13½ mins in the PM peak.</p>	<p>OLS reduces the potential for conflicts by separating long distance strategic traffic (Aberdeen to Huntly and Inverness) from more local trips between Aberdeen, Inverurie and Kintore, offering the greatest reduction in traffic volumes on the existing A96 through Inverurie (average reduction in 2030 AADT approximately 30%)</p> <p>It also provides an opportunity for traffic from Oldmeldrum and the A947 corridor to the north to use the new dual carriageway to access Aberdeen without having to route via Inverurie or Newmachar. (predicted to reduce the 2045 AADT on the existing A947 by between 17 and 21%.</p>	<p>OLS is predominantly an online corridor along the existing A96 between Tavely and Craibstone. There are therefore limited sections of existing road that could be de-trunked and used as diversion routes. Local diversion routes B class or lower.</p> <p>Maintenance requirement comparable to current existing dual carriageway over this section.</p> <p>Winter - road at comparable elevation to existing road and dualling will make it easier for snow clearance etc.</p> <p>Climate change - Scheme can comply with best practice for design for climate change.</p>

Table 25: Scheme Objective SO2 and SO3

Corridor Option	SO2 - To improve safety for motorised and non-motorised users through:			SO3 – To provide opportunities to grow the regional economies on the corridor through:	
	S02.1 - Reduced accident rates and severity;	S02.2 - Reduced driver stress;	S02.3 – reduced potential conflicts between motorised and non-motorised users.	S03.1 - Improved access to the wider strategic transport network;	S03.2 – Enhanced access to jobs and services
Q 01 Corridor Option Q01 follows D03 to west of Oldmeldrum. At Oldmeldrum it swings north to bypass the town, then connecting to the A947, 1km corridor offset to either side. It ties into the AWPR northeast of Aberdeen.	<p>There is a high rate of personal injury accidents on the existing A947 between Goval and Oldmeldrum. Providing a category 7A dual carriageway with an improved alignment, grade separated junctions and stopped up gaps in the central reserve has the potential to reduce the accident rate and severity of overtaking and junction accidents on this section.</p> <p>The separation of local and strategic trips through Oldmeldrum and Newmachar will also improve road safety for all road users in this area.</p> <p>However, the current accident rate on the existing A96 between Inverurie and Craibstone is unlikely to reduce as traffic volumes on the unimproved A96 in 2030 will remain broadly the same as now.</p> <p>Nor does Q01 improve facilities for road users and NMUs in the most populated areas along the corridor (Inverurie, Kintore, Blackburn)</p>	<p>Driver stress likely to be reduced through;</p> <ul style="list-style-type: none"> - provision of consistent overtaking opportunity - potential reduction in number of junctions and accesses and improved quality of junctions - dual carriageway allows consistent and predictable driving conditions - improved alignment 	<p>Users of the existing A947 will benefit from lower traffic volumes on the de-trunked sections of the route. There are a number of locations where the alignments cross existing footways and cycle paths, however, it is assumed that suitable NMU facilities will be provided to manage the interaction of motorised and non-motorised users.</p>	<p>Together with adjoining sections, Q01 facilitates quicker and more reliable journey time access to Dyce railway station for journeys to Dundee, the Central Belt and the south; to Aberdeen Airport; Aberdeen Western Peripheral Route for the A90 north and south and to Aberdeen Harbour; Inverness Airport and the A9 north to Invergordon etc. thereby connecting, amongst other things, the regional energy sector.</p> <p>However, Q01 offers less direct access for strategic traffic travelling between Aberdeen airport and the A96 west of Colpy. It also does not readily connect to Inverurie railway station and the planned railway station at Kintore.</p>	<p>Q01 improves road connectivity and the opportunity for growth on the A947 corridor between Aberdeen, Newmachar and Oldmeldrum, offering improved access by road to jobs and services in Aberdeen.</p> <p>It also partially improves connectivity between Huntly and the Aberdeen-Peterhead Growth Corridor. However, as much of the route remains single carriageway, the benefits are limited.</p> <p>The A96 Strategic Growth Corridor, is by far the largest growth corridor in Aberdeenshire, with the greatest allocation of land for housing and employment. Its predominantly situated in the vicinity of key residential and employment centres around Inverurie and Kintore. Q01 is remote from this key Growth Corridor, and fails to improve, connectivity, journey times or journey time reliability along this corridor.</p>
Q 02 Corridor Option Q02 follows D03 to west of Oldmeldrum. At Oldmeldrum it swings south to bypass the town on to Corridor Option BN01, then heading east connecting to the A947, 1km corridor offset to either side. It ties into the AWPR northeast of Aberdeen.	<p>Upgrading the existing A947 to a high standard Category 7A dual carriageway has the potential to reduce the high rate of accidents over a shorter section of the A947 than Q01, between Goval and Newmachar</p> <p>The separation of local and strategic trips through Newmachar will also improve road safety for all road users in this area.</p> <p>However, the current accident rate on the existing A96 between Inverurie and Craibstone is unlikely to reduce as traffic volumes on the unimproved A96 in 2030 will remain broadly the same as now.</p> <p>Nor does Q01 improve facilities for road users and NMUs in the most populated areas along the corridor (Inverurie, Kintore, Blackburn)</p>	<p>Driver stress likely to be reduced through;</p> <ul style="list-style-type: none"> - provision of consistent overtaking opportunity - potential reduction in number of junctions and accesses and improved quality of junctions - dual carriageway allows consistent and predictable driving conditions - improved alignment 	<p>Users of the existing A947 will benefit from lower traffic volumes on the de-trunked sections of the route. There are a number of locations where the alignments cross existing footways and cycle paths, however, it is assumed that suitable NMU facilities will be provided to manage the interaction of motorised and non-motorised users.</p>	<p>Together with adjoining sections, Q02 facilitates quicker and more reliable journey time access to Dyce railway station for journeys to Dundee, the Central Belt and the south; to Aberdeen Airport; Aberdeen Western Peripheral Route for the A90 north and south and to Aberdeen Harbour; Inverness Airport and the A9 north to Invergordon etc. thereby connecting, amongst other things, the regional energy sector.</p> <p>However, Q02 offers less direct access for strategic traffic travelling between Aberdeen airport and the A96 west of Colpy. It also does not readily connect to the planned railway station at Kintore.</p>	<p>Q02 improves road connectivity and the opportunity for growth on the A947 corridor between Aberdeen and Newmachar, offering improved access by road to jobs and services in Aberdeen.</p> <p>It also partially improves connectivity between Huntly and the Aberdeen-Peterhead Growth Corridor. However, as much of the route remains single carriageway, the benefits are limited.</p> <p>The A96 Strategic Growth Corridor, is by far the largest growth corridor in Aberdeenshire, with the greatest allocation of land for housing and employment. Its predominantly situated in the vicinity of key residential and employment centres around Inverurie and Kintore. Q02 does serve the growth area to the north east of Inverurie but is remote from other key growth areas along the A96 such as Kintore. It also fails to improve, connectivity, journey times or journey time reliability along this corridor.</p>

Corridor Option	SO2 - To improve safety for motorised and non-motorised users through:			SO3 – To provide opportunities to grow the regional economies on the corridor through:	
	S02.1 - Reduced accident rates and severity;	S02.2 - Reduced driver stress;	S02.3 – reduced potential conflicts between motorised and non-motorised users.	S03.1 - Improved access to the wider strategic transport network;	S03.2 – Enhanced access to jobs and services
OLS This Corridor Option is similar to Q02, following D03 to west of Oldmeldrum. At Oldmeldrum it swings south to bypass the town on to Corridor Option BN01, then heading south east to tie-in to the existing A96 online corridor south of Tavety Junction at Kintore and continues on-line to Craibstone Junction. (The online section between Tavety and Craibstone is Corridor Option OLS)	<p>Providing a category 7A dual carriageway with an improved alignment, grade separated junctions and stopped up gaps in the central reserve has the potential to reduce the accident rate and severity of overtaking and junction accidents on this section of the existing A96 dual carriageway.</p> <p>The reduction in traffic volumes on the de-trunked section of the A96 through Inverurie (average reduction in 2030 AADT approximately 30%) will also help improve road safety for all road users in this area.</p> <p>OLS also reduces the traffic volumes routing via the A947 at Newmachar, helping to improve road safety in this area. (Predicted to reduce the 2045 AADT on the existing A947 by between 17 and 21%).</p> <p>The separation of strategic traffic from local trips will also improve facilities for road users and NMUs in the most populated areas along the corridor (Inverurie, Kintore, Blackburn)</p>	<p>Driver stress likely to be reduced through:</p> <ul style="list-style-type: none"> - potential reduction in number of junctions and accesses and improved quality of junctions - dual carriageway allows consistent and predictable driving conditions - improved alignment - improved overtaking opportunities - potential reduction in peak time congestion on the A947 near Newmachar and Oldmeldrum and the de-trunked section of the A96 through Inverurie 	<p>The existing A96 has shared footways /cycleways adjacent to the carriageway and bus stops between Thainstone and Kintore.</p> <p>Users of the existing A96 through Inverurie and the existing A947 between Oldmeldrum and Newmachar will benefit from lower traffic volumes as strategic traffic is removed from the route, reducing the potential for conflict between motorised and non-motorised users in this area.</p> <p>There are a number of locations where the alignments cross existing footways and cycle paths, however, it is assumed that suitable NMU facilities will be provided to manage the interaction of motorised and non-motorised users.</p>	<p>Together with adjoining sections, OLS facilitates quicker and more reliable journey time access to Dyce railway station for journeys to Dundee, the Central Belt and the south; to Aberdeen Airport; Aberdeen Western Peripheral Route for the A90 north and south and to Aberdeen Harbour; Inverness Airport and the A9 north to Invergordon etc. thereby connecting, amongst other things, the regional energy sector.</p> <p>OLS also offers direct access for strategic traffic travelling between Aberdeen airport and the A96 west of Colpy, and readily connects to Inverurie railway station and the planned railway station at Kintore.</p>	<p>Whilst OLS does not directly improve road connectivity and the opportunity for growth on the A947 corridor between Aberdeen and Oldmeldrum, it does remove between 16% and 21% of traffic on the A947, offering indirect improvements in access along the A947 corridor to jobs and services in Aberdeen.</p> <p>The proximity of OLS to Oldmeldrum also creates an opportunity for improved access from Oldmeldrum and adjacent settlements to existing and proposed jobs and services on the A96 Strategic Growth Corridor. This includes access and journey times to key housing and employment centres in Inverurie, Kintore and Aberdeen.</p>

Table 26: Scheme Objectives S04 and S05

Corridor Option	SO4 – To facilitate active travel in the corridor	SO5 – To facilitate integration with Public Transport Facilities
Q 01 Corridor Option Q01 follows D03 to west of Oldmeldrum. At Oldmeldrum it swings north to bypass the town, then connecting to the A947, 1km corridor offset to either side. It ties into the AWPR northeast of Aberdeen.	<p>Q01 has the potential to increase walking and cycling in Oldmeldrum and Newmachar and possibly on sections of the A947 which are no longer heavily trafficked.</p> <p>However, Q01 fails to attract traffic that currently routes through Inverurie to reach junctions at Kintore and Blackburn. As a result, it fails to improve opportunities for active travel in the largest population and employment centres around Inverurie and Kintore on the existing A96 corridor.</p> <p>Under Q01, the existing A96 between Aberdeen, Inverurie and Kintore continues to attract the bulk of the traffic (60%) from the existing A96. However, under Q01, there are unlikely to be any NMU upgrades on this section. Thus, Q01 fails to improve walking and cycling facilities on the busiest corridor between Aberdeen, Inverurie and Kintore.</p>	<p>Together with adjoining sections, Q01 facilitates quicker and more reliable journey time access along the A947 corridor to Dyce railway station and 'mini-hub' Park and Ride sites planned for the A947 for onward journeys by bus to Aberdeen city centre.</p> <p>In the longer term, it could provide access to rail based park and ride on the Dyce to Ellon railway line.</p> <p>It provides an opportunity to improve express bus journey times between Inverness and Aberdeen</p> <p>However, Q01 does not provide convenient access to Inverurie or Kintore railway stations and associated rail park and ride facilities, or the park and ride facilities at Craibstone. Providing a new dual carriageway on Q01 would therefore encourage population and business growth on a corridor where there is no convenient option for travelling by train, as it fails to integrate with rail transport facilities.</p> <p>Q01 also fails to improve bus journey times or reliability on the existing A96 Aberdeen, Kintore, Inverurie corridor, which serves the largest population and employment centres in this area.</p>
Q 02 Corridor Option Q02 follows D03 to west of Oldmeldrum. At Oldmeldrum it swings south to bypass the town on to Corridor Option BN01, then heading east connecting to the A947, 1km corridor offset to either side. It ties into the AWPR northeast of Aberdeen.	<p>Q02 removes some traffic from the existing A947 in Newmachar with the potential to increase walking and cycling in this area.</p> <p>However, Q02 fails to attract traffic that currently routes through Inverurie to reach junctions at Kintore and Blackburn. As a result, it fails to improve opportunities for active travel in the largest population and employment centres around Inverurie and Kintore on the existing A96 corridor.</p> <p>Under Q02, the existing A96 between Aberdeen, Inverurie and Kintore continues to attract the bulk of the traffic (60%) from the existing A96. However, under Q02, there are unlikely to be any NMU upgrades on this section. Thus, Q02 fails to improve walking and cycling facilities on the busiest corridor between Aberdeen, Inverurie and Kintore.</p>	<p>Together with adjoining sections, Q02 facilitates quicker and more reliable journey time access along the A947 corridor between Newmachar to Dyce railway station and 'mini-hub' Park and Ride sites planned for the A947 for onward journeys by bus to Aberdeen city centre.</p> <p>In the longer term, it could provide access to rail based park and ride on the Dyce to Ellon railway line.</p> <p>It provides an opportunity to improve express bus journey times between Inverness and Aberdeen</p> <p>However, Q02 does not provide convenient access to Kintore railway station and associated rail park and ride facility, or the park and ride facilities at Craibstone. Providing a new dual carriageway on Q02 would therefore encourage population and business growth on a corridor where there are limited options for travelling by train, as it fails to integrate with rail transport facilities.</p> <p>Q02 also fails to improve bus journey times or reliability on the existing A96 Aberdeen, Kintore, Inverurie corridor, which serves the largest population and employment centres in this area.</p>
OLS This Corridor Option is similar to Q02, following D03 to west of Oldmeldrum. At Oldmeldrum it swings south to bypass the town on to Corridor Option BN01, then heading south east to tie-in to the existing A96 online corridor south of Tavely Junction at Kintore and continues on-line to Craibstone Junction. (The online section between Tavely and Craibstone is Corridor Option OLS)	<p>OLS has the potential to increase walking and cycling in Inverurie and adjacent sections of the de-trunked A96 as it reduces the AADT on this section by up to 30%. It also removes between 16 and 21% of traffic from the existing A947 between Oldmeldrum and Newmachar which may encourage active travel in this area.</p> <p>As OLS runs along the busiest section of the A96 between Aberdeen, Inverurie and Kintore, its upgrade to a Category 7A, high standard dual carriageway offers opportunities to improve NMU facilities in this area as part of the dualling scheme.</p>	<p>OLS utilises the existing A96 dual carriageway between Kintore and Craibstone. This provides greater levels of integration with the rail services at Inverurie and Kintore and the park and ride site at Craibstone. OLS also provides an opportunity to improve express bus journey times between Inverness and Aberdeen. There are also more people in this corridor who can benefit from improvements in bus travel times and reliability and improved NMU facilities in this area. Providing a high standard dual carriageway on this bus corridor would therefore encourage population and business growth on a corridor where there is good public transport links.</p>

Table 27: Scheme Objectives SO6 (1)

Corridor Option	Scheme Objective SO6 (1) – To avoid significant environmental impacts and, where this is not possible, to minimise the environmental effect on:					
	Air Quality	Noise and Vibration	People & Communities	Materials	Policies & Plans	Cultural Heritage
Q 01 Corridor Option Q01 follows D03 to west of Oldmeldrum. At Oldmeldrum it swings north to bypass the town, then connecting to the A947, 1km corridor offset to either side. It ties into the AWPR northeast of Aberdeen.	A medium sized corridor immediately adjacent to the settlement of Oldmeldrum which has a high population density, including residential areas and schools. Receptors are located in the villages of Newmachar, and the settlement of Kingseat is immediately adjacent to the east side of the corridor. Although most receptors are high sensitivity, potential impacts are considered to be low if settlements are avoided. Potential for lowered air quality in close proximity to Oldmeldrum, and the A920 and A947.	A medium sized corridor immediately adjacent to the settlement of Oldmeldrum which has a high population density, including residential areas and schools. Receptors are located in the villages of Newmachar, and the settlement of Kingseat is immediately adjacent to the east side of the corridor. The existing A947 and A920 are within this corridor. It is considered that there would be adverse impacts, but the potential impacts are considered to be low if main settlements are avoided.	There are a number of receptors within the corridor, including: residential receptors (over 1000), prime agricultural land (13.88km ²), green belt (2.9km ²), urban greenspace (2.20km ²), core paths (14.26km ²), and cycle paths (2.4km ²) including the Formartine and Buchan Way, which is also part of National Cycle Network Route 1 - 8.95km ² . Newmachar is central to the corridor. To the north of Oldmeldrum there is a golf course, and two hotels are present (one north of Oldmeldrum and the other immediately north of Newmachar). The introduction of a dual carriageway into the area could lead to community severance, including farm units, and loss of green belt.	N/A (scoped out of appraisal)	There are potentially a number of Policies and Plans constraints, as follows: planning applications (3.25km ²), settlement boundaries (0.895km ²), protected reserved land (0.065km ²), opportunity sites (0.278km ²), greenbelt (3.25km ²), urban greenspace (0.013km ²), greenspace network (0.16km ²) and business and industry allocations (0.099km ²).	There is one Inventory Garden and Designed Landscape, with 1.61km ² of Straloch GDL being within the corridor, to the north west of Newmachar. Scheduled Monuments include the following: Hill of Barra Fort Hillhead of Barra Standing Stone Kirkton of Bourtie Stone Circle Sheldon Stone Circle St Mary's chapel to the north of Oldmeldrum (SM 12147). Inventory of Historic Battlefield, Battle of Barra Battlefield, is immediately adjacent to the corridor and there could be potential impacts upon the setting of it. Category A Listed Buildings: Barra Castle Bourtie Parish Church. There are 23 listed buildings within the corridor in total (including Category B and C).
Q 02 Corridor Option Q02 follows D03 to west of Oldmeldrum. At Oldmeldrum it swings south to bypass the town on to Corridor Option BN01, then heading east connecting to the A947, 1km corridor offset to either side. It ties into the AWPR northeast of Aberdeen.	A small area and with a relatively low population density. The population is evenly spread across small settlements (Nether Crimond, Tillykerrie and Middleton) and scattered hamlets. Impacts are likely in the corridor but on a small number of receptors	A small area and with a relatively low population density. The population is evenly spread across small settlements (such as Nether Crimond, Tillykerrie and Middleton) and scattered hamlets. Impacts are possible but on a small number of receptors.	There is a relatively low number of residential receptors (88), and minimal areas of prime agricultural land (2.25km ²) and short lengths of core paths within the corridor (0.78km). The introduction of a dual carriageway into the area could lead to community severance, including farm units, and loss of green belt.	N/A (scoped out of appraisal)	No LDP allocations. Committed development = 0.22 km ² .	There is one Inventory Garden and Designed Landscape, with 0.45km ² of Straloch GDL being within the corridor, to the north west of Newmachar. There are no scheduled monuments within the corridor. There are 3 listed buildings within the corridor including one Category A at Straloch House. Inventory Historic Battlefield, Battle of Barra Battlefield, is immediately adjacent to the corridor and there could be potential impacts upon the setting of it if alignments are developed.
OLS This Corridor Option is similar to Q02, following D03 to west of Oldmeldrum. At Oldmeldrum it swings south to bypass the town on to Corridor Option BN01, then heading south east to tie-in to the existing A96 online corridor south of Tavelty Junction at Kintore and continues on-line to Craibstone Junction. (The online section between Tavelty and Craibstone is Corridor Option OLS)	A large corridor with a high number of residential receptors. There are many high sensitive receptors within this corridor in the towns of Kintore, Kinellar and Blackburn which heavily constrain the zone. Many receptors are already exposed to emissions from the existing A96 which means baseline air quality is relatively high.	This is a large corridor with the second highest number of residential receptors of all corridors. There are many sensitive receptors within this corridor including Kintore, Kinellar and Blackburn. The potential impacts are considered to be high, although it is noted that most receptors are exposed to road traffic noise arising from the existing A96 and the Aberdeen-Inverness railway line.	Agricultural land Small pockets of Class 3.1 within this route. Predominantly Class 3.2, with large area of Classes 4.1 - 5.3 to the eastern extents. No Class 1 or 2, Class 3.1: 1.99 km ² (7% of total corridor area). Forestry routes There are National Forest Recreation routes within Kirkhill Forest and Clinterty Woods, which fall either side of the existing A96 between Dyce and Blackburn. Total length of routes within corridor: 17.15 km. LDP open spaces, community land, playparks, recreational playing fields There are large areas of greenspace, particularly in the area west of	N/A (scoped out of appraisal)	The stretch of the existing A96 between Blackburn and the junction with the AWPR is located within designated Green Belt, with portions also located within, or adjacent to, designated Green Space Network and Local Nature Conservation Sites. Further constraints consist of land subject to Compulsory Purchase associated with the AWPR and two pipelines, and Pipeline Notification Areas. The majority of Aberdeenshire LDP allocations which could constrain this corridor lie to the north of the existing road and include: <ul style="list-style-type: none">• Housing land allocation to the eastern edge of Blackburn, north of	National sites There are thirteen Scheduled Monuments within the study corridor. Bruce's Camp, hillfort (SM12523) has a vulnerable setting. It was intentionally situated to have good views over the surrounding landscape. There are long-range views from the site in all directions. Views towards Mither Tap / Bennachie and towards Broomend of Crichtie Henge (SM18) are both considered particularly important. Castle of Hallforest (SM92) has a potentially vulnerable setting. There is one Category A Listed Building in the corridor.

Corridor Option	Scheme Objective SO6 (1) – To avoid significant environmental impacts and, where this is not possible, to minimise the environmental effect on:					
	Air Quality	Noise and Vibration	People & Communities	Materials	Policies & Plans	Cultural Heritage
			<p>Aberdeen. South of Blackburn there is a section of AC greenbelt and LDP greenbelt. The ACC LDP greenbelt stretches across the corridor between Dyce and Blackburn. There are small areas of LDP Protect Areas Reserve Land in Blackburn (P1 - P6 & R1), Kintore (P1 - P7 & R1 - R2) and Port Elphinstone (P12 & 13). Between Dyce and Blackburn there are a large number of ACC LDP greenspace network areas, including Kirkhill Forest and Clinterty Woods. AC greenspace network areas are also present within this route in Blackburn, Kintore and Thainstone/Port Elphinstone. Other greenspace includes private gardens, areas of natural greenspace, playing fields and amenity areas. The total area of recognised greenspace is 20.21 km² (69% of total corridor area).</p> <p>Core paths To the eastern extent of this corridor there are core paths within Kirkhill Forest and Clinterty Woods. There are also core paths traversing the corridor around and between Blackburn and Kintore. A core path between Kintore and Port Elphinstone runs adjacent to the existing A96. Length of paths within corridor: 30.71 km</p> <p>Cycle paths Aberdeen City Cycle Route - Blackburn to Walton Road (A96T) is along the existing A96. Length of cycle route within corridor: 4.07 km.</p> <p>Community severance Within this corridor there are four primary school catchments (Port Elphinstone Primary to the north, Kintore Primary and Midmill School within Kintore and, Kinellar Primary School at Blackburn). These are all impacted by the existing A96 alignment.</p> <p>Blackburn provides some community services (primary school, shops including post office and chemist, and play park). Kintore also has a range of services (primary schools, play parks, medical centre, Overdon Nursing home, shops including post office and chemist, and church).</p>		<p>the existing A96 Clinterty Roundabout.</p> <ul style="list-style-type: none"> • Designated business land to the western settlement edge of Blackburn, adjacent to the Kinellar Roundabout, with associated protected landscape buffer at the existing junction. • Valued view corridor identified from Blackburn facing west through which the existing A96, Option C and Option D pass. • Housing land allocations to the south western edge of Kintore, and the associated roads infrastructure required to link the sites to the A96, are potential constraints on Option D, as are allocated areas of protected Green Space along the western edge of Kintore. <p>Committed development = 3.84 km².</p>	<p>The setting of Kintore Town House (LB36312) is localised within the town centre of Kintore. There are no Inventory Historic Battlefields in the corridor. The corridor intersects with one Inventory Garden and Designed Landscape - Keith Hall (GDL00232). The corridor intersects with the southernmost part of the GDL, a woodland plantation. The setting of Keith Hall and its GDL have a vulnerable setting.</p> <p>Regional sites There are thirteen Category B Listed Buildings in the corridor. Kinellar House (LB9118) has a potentially vulnerable setting. The house is set within a (non-inventory) garden designed landscape which includes an avenue leading to the south. Views to the south from the house already include the existing A96 road.</p> <p>Thainstone House (LB9152) has a potentially vulnerable setting. The house is set within a (non-inventory) garden and designed landscape which includes key views to the south-east. Currently mature trees enclose the designed landscape and form a localised setting for the House.</p> <p>There are no Conservation Areas in the corridor.</p> <p>There is one Property in Care in the corridor.</p> <p>Kinkell Church and burial ground (SM90188) is not considered to have a particularly vulnerable setting.</p>

Table 28: Scheme Objectives SO6 (2)

Corridor Option	Scheme Objective SO6 (2) – To avoid significant environmental impacts and, where this is not possible, to minimise the environmental effect on:			
	Landscape & Visual	Nature Conservation	Geology, Soils, Contaminated Land and Groundwater	Road Drainage and the Water Environment
Q 01 Corridor Option Q01 follows D03 to west of Oldmeldrum. At Oldmeldrum it swings north to bypass the town, then connecting to the A947, 1km corridor offset to either side. It ties into the AWPR northeast of Aberdeen.	<p>Landscape Sensitivity The landscape in the northwest of the corridor option to the east of the A947 is large in scale consisting of an elevated, broad, rolling plateau with large fields and an open, exposed character. There are views towards Bennachie which is a distinctive silhouette. Such views are characteristic of this part of the corridor option and land to the west extending as far as Old Rayne. Mature tree lines on field boundaries occur although not as frequently as some other areas within the SEA boundary. This is an area of medium sensitivity.</p> <p>Between the A947 and the B9170 there is a relatively high proportion of woodland. Meldrum House Hotel and Golf Course is also present within this area. While the golf course has modified the landscape the wider area around the hotel and gardens is well wooded with ponds in the north of the area set within relatively small scale undulating topography. There are frequent single dwellings and farmsteads. This area is of high sensitivity due to the recreational use and wooded, small scale settled landscape.</p> <p>Between the B9170 and Straloch GDL the landscape is large in scale consisting of a series of broad rolling ridges with a relatively low proportion of woodland. Field size is large with boundaries of post and wire fencing and occasionally tree lines and hedges. The area is generally medium sensitivity and a scheme could potentially be absorbed without substantial impacts on landscape character. There is an area of higher sensitivity to the south of Old Meldrum extending southwest from the A947 to Lawel Hill outside the option.</p> <p>At Straloch GDL and south to Kinmuck and the B979 topography is less diverse and there are smaller undulations within a generally open large scale landscape across which there are long distance views on the east side of the A947. On the east side of the A947 the landscape is less sensitive due to its large scale topography and relative absence of woodland although the Formartine and Buchan Way and National Cycle Network route 1 run south to north along the route of a dismantled railway. On the west side of the A947 the landscape is of high sensitivity due to the higher proportion of woodland and the presence of Straloch GDL.</p>	<p>There are no statutory designated sites within the corridor. There is ancient woodland scattered throughout the corridor and it totals 2.42km², with 1.86km² of native woodland. There are 33.76km of watercourse within the corridor, including the Elrick Burn.</p>	<p>Peat: Localised plan areas of compressible peat deposits. Topography: Localised areas of steep-sided slopes and high ground identified which have potential for substantial cuttings and embankments and possible slope stability issues. Compressible soils: moderate areas of compressible alluvial deposit (Concentrated in the south). Earthworks: Localised areas of material (sand and gravel) with a potential for high proportion of re-use. Shallow rock: Moderate areas of near surface rock identified resulting in potentially hard/slow digging within road cuttings. Contamination: Localised areas of made up (or reworked) ground with potential contamination risk.</p>	<p>There are 33.76km of watercourse within the corridor. There are small areas of active floodplain associated with the tributary to the Lochter Burn, Raxton Burn and Keithfield Burn near Oldmeldrum however these generally remain within the burn corridor and could be easily avoided. The Youlie Burn has a small area of floodplain 5ha approximately (500x100m), however it sits at the eastern edge of the corridor and could easily be avoided. The Balcairn burn to the west of Oldmeldrum shows a floodplain which generally runs in line with the channel and is 100m at its widest point near Mill of Balcairn, however it can also be easily avoided. The Burn of Straloch runs parallel with the corridor and has minor areas of floodplain, again mostly within the channel of the watercourses and at 100m width at maximum. The Goval burn runs parallel to the existing A947 and corridor from Newmachar to the confluence with the River Don. There are several locations where the floodplain extends beyond the channel width up to 100m in width. Based on the orientation, these areas could be avoided if required. At the most southern boundary of the corridor, the River Don floods about 50% of the corridor width covering an area of about 43ha. Depending on the connection to the AWPR, the Don floodplain might be avoided. In general, bridges would be required to cross over these therefore the impact on the floodplain could be minimised. The number of watercourse crossings required is dependent on the position of the alignment within the corridor, and could be as high as 24. Culverting of watercourses is viewed as an adverse impact.</p>

Corridor Option	Scheme Objective SO6 (2) – To avoid significant environmental impacts and, where this is not possible, to minimise the environmental effect on:			
	Landscape & Visual	Nature Conservation	Geology, Soils, Contaminated Land and Groundwater	Road Drainage and the Water Environment
	<p>From the B979 to the AWPR topography on the east side of the A947 is large scale consisting of broad rolling ridges with shelterbelts and medium to large pasture fields. The landscape could potentially absorb a scheme due to its large scale and general absence of woodland. On the west side of the A947 the topography is more undulating than on the east side of the A947 and more wooded giving a smaller scale character albeit influenced by New Machar golf course. It is therefore of higher sensitivity.</p> <p>Visual sensitivity</p> <p>The option is well settled with frequent farmsteads and rural dwellings in addition to small villages such as Whiterashes. New Machar is the largest settlement in the south of the corridor option. Other visual receptors include the Formartine and Buchan Way and National Cycle Network route 1 in the east of the corridor option and other NMU routes around New Machar, Old Meldrum and to the north of Meldrum House Hotel at Den Wood. The A947, A920 pass through the corridor option with the A947 running the entire length. A high voltage transmission line on lattice pylons crosses the corridor option to the north of New Machar. Number of residential properties within the corridor option: 1621</p> <p>Visual sensitivities to be confirmed following detailed survey work to inform alignments. Given these factors impacts on the option are assessed as large adverse.</p>			
Q 02	<p>Corridor Option Q02 follows D03 to west of Oldmeldrum. At Oldmeldrum it swings south to bypass the town on to Corridor Option BN01, then heading east connecting to the A947, 1km corridor offset to either side. It ties into the AWPR northeast of Aberdeen.</p> <p>Landscape sensitivity</p> <p>Topography within the corridor option is large scale consisting of rolling hills. Land cover is varied consisting of pasture, arable, conifer and broadleaf woodland, scrub and heath. Field size is varied with small scale pasture in the north to large scale arable and pasture in the south of the option. The northern extent of the corridor option is defined by a ridge that extends from Old Bourtie in the west to the A947 in the east. The ridge lies outside the corridor option although it is of high sensitivity and is an important landmark feature and a natural physical and visual barrier.</p> <p>The western part of Straloch GDL lies in the south of the corridor option where the option narrows. There is ancient woodland within the GDL that forms a continuous belt stretching beyond the GDL to the west.</p> <p>While the GDL is of high sensitivity it occupies a</p>	<p>There are no statutory designated sites within the corridor. There is limited ancient woodland around Straloch and it totals 0.40km², with 0.39km² of native woodland. There are 5.12km of watercourse within the corridor.</p>	<p>Peat: Localised plan areas of compressible peat deposit.</p> <p>Topography: Localised areas of steep sided slopes and high ground identified which have potential for substantial cuttings and embankments and possible slope stability issues.</p> <p>Compressible soils: Localised areas of compressible alluvial deposit (concentrated in the south).</p> <p>Earthworks: Localised areas of material (sand and gravel) with a potential for high proportion of re-use.</p> <p>Shallow rock: extensive areas of near surface rock identified resulting in potentially hard/slow digging within road cuttings (based on the corridor area).</p> <p>Contamination: No recorded areas of made up (or reworked) ground with potential contamination risk.</p>	<p>There are 5.12km of watercourse within the corridor. There are no notable floodplains within the corridor.</p> <p>The number of watercourse crossings required is dependent on the position of the alignment within the corridor, but could be as high as seven. Culverting of watercourses is viewed as an adverse impact.</p>

Corridor Option	Scheme Objective SO6 (2) – To avoid significant environmental impacts and, where this is not possible, to minimise the environmental effect on:			
	Landscape & Visual	Nature Conservation	Geology, Soils, Contaminated Land and Groundwater	Road Drainage and the Water Environment
	<p>relatively small proportion of the corridor option and overall the landscape within the option is of medium sensitivity due to its large scale and open character with infrequent woodland and hedges.</p> <p>Visual sensitivity</p> <p>The settlement pattern within the corridor option consists of scattered farmsteads and dwellings which occur regularly giving a settled character. As mentioned there is a well defined ridge to the north of the corridor option that acts as a visual barrier to the north. Topography falls from northwest to southeast giving wide panoramic views although Bennachie is not visible being screened topography.</p> <p>Visual sensitivities to be confirmed following detailed survey work to inform alignments. Number of residential properties within the corridor option: 88</p> <p>Given the factors described above impacts on the corridor option are assessed as adverse.</p>			
OLS This Corridor Option is similar to Q02, following D03 to west of Oldmeldrum. At Oldmeldrum it swings south to bypass the town on to Corridor Option BN01, then heading south east to tie-in to the existing A96 online corridor south of Tavely Junction at Kintore and continues on-line to Craibstone Junction. (The online section between Tavely and Craibstone is Corridor Option OLS)	<p>Landscape Sensitivity</p> <p>Area 16 The eastern part of this area which includes Thainstone House and surrounding woodland, the commercial area at Thainstone Agricultural Centre, a hill fort and ancient woodland. It is therefore sensitive to change.</p> <p>Area 17 The northern part of this area lies within the option. It consists of the floodplain of the River Don which contrasts with the surrounding areas of undulating farmland and woodland. The area has limited capacity to absorb a dual carriageway without substantial change to its character.</p> <p>Area 18 A small area of hilly, wooded farmland that forms the setting to Blackburn and contrasts markedly with the large scale open landscapes of rectilinear fields that lie to the north and west.</p> <p>Area 19 A hilly, well wooded area of recreational importance with sculpture trails and Elrick Country Park on the south side of the A96 and Kirkhill Forest cycle trails to the north.</p> <p>Visual Sensitivity Number of residential properties within the corridor option: 2,958.</p> <p>Visual sensitivities to be confirmed following detailed survey work to inform alignments.</p>	<p>Terrestrial Habitat Extensive areas of native, anthropogenic, ancient woodland and National forest are all recorded within the corridor (3.48km²). Small pockets of woodland are scattered throughout the corridor option; however, larger mosaics of woodland (including Ancient woodland) are present to the south. Alignments are possible, however, a loss of woodland including Ancient woodland within this corridor option would be anticipated.</p> <p>Aquatic Habitat A network of larger watercourses is located throughout the corridor option (22.48km). The number of watercourses requiring crossing is dependent on the position of the alignment within the corridor.</p> <p>Protected and Priority Species No information pertaining to protected or priority species has been received to facilitate sifting.</p> <p>Designated sites The corridor contains no statutory or non-statutory designated sites pertaining to ecology.</p>	<p>Peat Moderate plan areas of compressible peat deposit have been identified.</p> <p>Contamination Moderate areas of made up (or reworked) ground with potential contamination risk. Including two super quarries</p> <p>Compressible Soils Moderate areas of compressible alluvial deposit identified.</p> <p>Earthworks Moderate areas of material (Sand and Gravel) with a potential for high proportion of re-use without processing.</p> <p>Shallow Rock Localised areas of near surface rock identified resulting in potentially hard/slow digging within road cuttings.</p>	<p>Named water bodies – three Named water body size - One large (River Don) the rest small Moderate density channel network in northern half of corridor including the River Don. Channels present but smaller and more distributed in the southern half. Large total area at risk of fluvial flooding but this is concentrated along the north-eastern boundary. Two other pockets of risk along the south-western boundary. Risk of impact to hydrological receptors low to moderate given the density of small channels and potential impact on the River Don floodplain. Crossing of water bodies is unavoidable but should be able to be limited to smaller channels of lower status.</p>

Table 29: STAG Criteria - STAG 1 – STAG 5

Corridor Option	STAG Criteria				
	STAG 1 - Environment	STAG 2 - Safety	STAG 3 - Economy	STAG 4 - Integration	STAG 5 - Accessibility and Social Inclusion
Q 01 Corridor Option Q01 follows D03 to west of Oldmeldrum. At Oldmeldrum it swings north to bypass the town, then connecting to the A947, 1km corridor offset to either side. It ties into the AWPR northeast of Aberdeen.	Covered under SO6	<p>Safety is mainly covered under SO2 above.</p> <p>Consistent dual carriageway cross section allowing easier overtaking and reduced driver frustration.</p> <p>Does not address accident cluster sites or driver stress on existing A96 corridor between Aberdeen, Kintore and Inverurie which serves the largest population.</p>	<p>A detailed economic assessment will not be carried out until later in the DMRB Stage 2 process, including Wider Economic Impacts. Wider economic benefits will not be considered until later in the DMRB Stage 2 process.</p> <p>At this stage the economic benefits in terms of Journey times and Vehicle Operating Costs are assumed to be in line with the journey time results considered under SO1 which offer moderate journey time savings.</p> <p>No detailed costs are provided for any of the options at this stage of assessment. However, the additional length of dual-carriageway for Q01 is expected to make this option more expensive than re-using 12km of existing dual-carriageway with OLS. This is expected to outweigh any savings from not having to build a bridge over the River Don.</p> <p>There is also significant extra cost risk associated with the upgrade to Goval Junction that would be required to allow to link the new dual-carriageway to the AWPR and to allow it to cope with a much higher volume of traffic.</p>	<p>Public Transport integration is covered in SO5. Q01 does not integrate with the Aberdeen to Inverurie rail corridor. It therefore focuses growth on a corridor that does not offer alternatives to road travel.</p> <p>Provides a bypass of Newmachar and Oldmeldrum which is supported in the Aberdeenshire Local Development Plan.</p> <p>Fails to support the main land use allocations for housing and employment that are set out in the Aberdeenshire Local Development Plan.</p>	<p>Q01 corridor has limited integration with public transport options and therefore limits access to jobs and services for those who do not have a car.</p> <p>Walking and cycling is covered in SO4.</p> <p>Opportunity to improve bus journey times, particularly express buses on the corridors that are improved. This could slightly improve accessibility for those without a car.</p> <p>Bus and car journey accessibility between Aberdeen and the North Aberdeenshire Regeneration Area near Banff would be improved.</p>
Q 02 Corridor Option Q02 follows D03 to west of Oldmeldrum. At Oldmeldrum it swings south to bypass the town on to Corridor Option BN01, then heading east connecting to the A947, 1km corridor offset to either side. It ties into the AWPR northeast of Aberdeen.	Covered under SO6	<p>Safety is mainly covered under SO2 above.</p> <p>Consistent dual carriageway cross section allowing easier overtaking and reduced driver frustration and driver stress.</p> <p>Does not address accident cluster sites or driver stress on existing A96 corridor between Aberdeen, Kintore and Inverurie which serves the largest population.</p>	<p>A detailed economic assessment will not be carried out until later in the DMRB Stage 2 process. Wider economic benefits will not be considered until later in the DMRB Stage 2 process.</p> <p>At this stage the economic benefits in terms of Journey times and Vehicle Operating Costs are assumed to be in line with the journey time results considered under SO1 which offer moderate journey time savings.</p> <p>No detailed costs are provided for any of the options at this stage of assessment. However, the additional length of dual-carriageway for Q02 is expected to make this option more expensive than re-using 12km of existing dual-carriageway with OLS. This is expected to outweigh any savings from not having to build a bridge over the River Don.</p> <p>There is also significant extra cost risk associated with the upgrade to Goval Junction that would be required to allow to link the new dual-carriageway to the AWPR and to allow it to cope with a much higher volume of traffic.</p>	<p>Public Transport integration is covered in SO5. Q02 does not integrate with the Aberdeen to Inverurie rail corridor. It therefore focuses growth on a corridor that does not offer alternatives to road travel.</p> <p>Option Q02 could provide access to the railway station at Inverurie but does not provide access to the planned railway station at Kintore.</p> <p>Fails to support the main land use allocations for housing and employment that are set out in the Aberdeenshire Local Development Plan.</p> <p>However, Q02 does support the planned developments to the north east of Inverurie.</p>	<p>Q02 corridor has limited integration with public transport options and therefore limits access to jobs and services for those who do not have a car.</p> <p>Walking and cycling is covered in SO4.</p> <p>Opportunity to improve bus journey times, particularly express buses on the corridors that are improved. This could slightly improve accessibility for those without a car.</p> <p>Bus and car journey accessibility between Aberdeen and the North Aberdeenshire Regeneration Area near Banff would be improved</p>

Corridor Option	STAG Criteria				
	STAG 1 - Environment	STAG 2 - Safety	STAG 3 - Economy	STAG 4 - Integration	STAG 5 - Accessibility and Social Inclusion
<p>OLS This Corridor Option is similar to Q02, following D03 to west of Oldmeldrum. At Oldmeldrum it swings south to bypass the town on to Corridor Option BN01, then heading south east to tie-in to the existing A96 online corridor south of Tavety Junction at Kintore and continues on-line to Craibstone Junction. (The online section between Tavety and Craibstone is Corridor Option OLS)</p>	Covered under SO6	<p>Safety is mainly covered under SO2 above.</p> <p>Consistent dual carriageway cross section allowing easier overtaking and reduced driver frustration and driver stress.</p> <p>Potential to address accident cluster sites and driver stress on existing dual carriageway section between Inverurie and Aberdeen.</p>	<p>At this stage the economic benefits in terms of Journey times and Vehicle Operating Costs are assumed to be in line with the journey time results considered under SO1 which offer moderate journey time improvements.</p> <p>This option also presents the opportunity to reuse the existing A96 dual carriageway between Craibstone and Inverurie.</p> <p>Therefore, OLS is expected to bring greater economic benefits as it brings the greatest improvements to the busiest corridors.</p>	<p>Public Transport integration is covered in SO5. OLS integrates with all the stations along the A96 rail corridor, including Huntly, Inverurie, Kintore and Aberdeen. It also integrates well with the bus routes along the corridor, helping to focus growth on a corridor that offers bus and rail alternatives to road travel.</p> <p>Option has greatest potential to make use of and improve the efficiency of the existing infrastructure, in line with local and national policy.</p> <p>Junction upgrades could help maintain and improve access to LDP allocations throughout the Strategic Growth Corridor, including major allocations at Kintore and Port Elphinstone/Crichie.</p>	<p>OLS integrates with existing public transport services along the A96 corridor, providing alternatives to road travel.</p> <p>It also offers reduced traffic volumes on the A947 between Oldmeldrum and Aberdeen and the A96 through Inverurie, making it easier to walk and cycle. Thus, OLS offers improved access to access to jobs and for all modes of travel.</p> <p>Opportunity to improve bus journey times, particularly express buses on the corridors that are improved. This could improve accessibility for those without a car. A greater population would benefit from improvements to the Aberdeen-Kintore-Inverurie corridor than the Aberdeen-Newmarchar-Oldmeldrum corridor.</p>

Table 30: STAG Criteria - STAG 6

Corridor Option	Alignment & Buildability	Geotechnical	STAG 6 – Feasibility Flooding and Drainage	Structures	Utilities
Q 01 Corridor Option Q01 follows D03 to west of Oldmeldrum. At Oldmeldrum it swings north to bypass the town, then connecting to the A947, 1km corridor offset to either side. It ties into the AWPR northeast of Aberdeen.	<p>1. A variety of compliant alignments are likely to be available within this corridor option. Use of the existing A947 corridor for an online alignment is an option between the AWPR tie in and south of Newmachar, adjacent routes to the east or west are also possible. The A947 single carriageway which runs through Newmachar is not suitable for dualling due to the large number of properties either side so a northern or southern bypass is required. The Straloch GDL makes it difficult for southern bypass routes rejoin Q01. To the north of Newmachar it is possible to follow the A947 (online or offline) prior to a Northern bypass of Oldmeldrum.</p> <p>2. The existing topography within this corridor is generally quite flat apart from likely significant earthworks due to the Hill of Easterton at the north end of this corridor. This can be avoided depending on the alignment to the north west of Oldmeldrum.</p> <p>3a. Construction access possible from A947 for much of this corridor. Access available from the A920 and B9170 adjacent to Oldmeldrum.</p> <p>3b. Online construction on the A96, A920 and the A947 would lead to major disruption to the strategic road network. Offline construction would result in less disruption.</p>	<p>Peat: Localised plan areas of compressible peat deposit. Topography: Localised areas of steep sided slopes and high ground identified which have potential for substantial cuttings and embankments and possible slope stability issues. Compressible Soils: moderate areas of compressible alluvial deposit (Concentrated in the south). Earthworks: Localised areas of material (Sand and Gravel) with a potential for high proportion of re-use. Shallow Rock: Moderate areas of near surface rock identified resulting in potentially hard/slow digging within road cuttings. Contamination: Localised areas of made up (or reworked) ground with potential contamination risk.</p> <p>[Neutral Impact - Blue]</p>	<p>There are small areas of active flood plain associated with the Tributary to the Lochter Burn, Raxton Burn and Keithfield Burn near old Meldrum however these generally remain within the burn corridor and could be easily avoided. The Youlie Burn has a small area of floodplain 5Ha approx. (500x100m) however it sits at the eastern edge of the corridor and could easily be avoided. The Balcairn burn to the west of Old Meldrum shows a flood plain which generally runs in line with the channel and is 100m at its widest point near Mill of Balcairn, however it can also be easily avoided. The Burn of Straloch runs parallel with the corridor and has minor areas of floodplain, again mostly within the channel of the watercourses and at 100m width at maximum. The Goval burn runs parallel to the existing A947 and corridor from Newmachar to the confluence with the River Don. There are several locations where the floodplain extends beyond the channel width up to 100m in width. Based on the orientation, these areas could be avoided if required. At the most southern boundary of the corridor, the River Don floods about 50% of the corridor width covering an area of about 43Ha. Depending on the connection to the AWPR, the Don Floodplain might be avoided. In general, bridges would be required to cross over these therefore the impact on the flood plain could be minimised. [Neutral/Marginal Impact]</p> <p>The number of watercourse crossings required is dependent on the position of the alignment within the corridor. At the western extent of the corridor, it is estimated that 13 small piped culverts, 4 large piped culvert, 1 box culvert and 1 bridge would be required. At the eastern extent, 13 small piped culvert, 8 large piped culverts, 2 box culverts and 1 bridge would be required. Culverting of watercourses is viewed as an Adverse Impact. [Large Adverse Impact]</p>	<p>"The number of bridges and retaining structures required is dependent on the alignment within the corridor but there is the potential for a large number of crossings.</p> <p>However, it is envisaged that up to three A-class roads, five B-class roads a large number of local roads or farm access roads will potentially be crossed. There are multiple watercourse crossings required but it is anticipated that all but one of these could be culverted. None of the structures are likely to be particularly complex or large and could be constructed using conventional construction techniques.</p> <p>Due to topographical constraints, viaducts or tunnels may need to be considered as an alternative to significant embankments but it is assumed at this stage, that these will not be required.</p> <p>Operation and maintenance requirements for the structures within the corridor are unlikely to pose any significant issues.</p> <p>Demolition or modification of existing structures is not anticipated.</p> <p>The crossing of the watercourses and associated flood-plain will require consultation with SEPA and other environmental bodies. It is envisaged that any constraints can be readily accommodated within the design."</p>	<p>SSE Overhead transmission line crosses this corridor. 1no 275Kv line to the north of Newmachar and 1no 132Kv line present adjacent to AWPR tie in. (Adverse Impact)</p> <p>SSE 33 Kv, 11 Kv and Lv infrastructure present within this corridor. (Neutral / Marginal Impact)</p> <p>National Grid - 5no crossings of high pressure gas pipelines. Diversion Works required (Heavy Wall Section of Pipeline). (Large Adverse Impact)</p> <p>Wind Turbines / Masts - Wind turbine located at the north west corner of Q01 (Neutral / Marginal Impact)</p> <p>Strategic utilities cross this corridor at its southern end. (Large Adverse Impact)</p>
Q 02 Corridor Option Q02 follows D03 to west of Oldmeldrum. At Oldmeldrum it swings south to bypass the town on to Corridor Option BN01, then heading east connecting to the A947, 1km corridor offset to either side. It ties into the AWPR northeast of Aberdeen.	<p>1. A variety of compliant alignments are available within this corridor. Corridor Option Q02 likely to be more suitable for alignments that bypass Newmachar to the south but it is also possible for northern bypass options to connect back to Q02.</p> <p>2. The corridor is generally flat with some local undulations. Earthworks likely to be required to facilitate crossings of local roads.</p> <p>3a. Construction access is possible from the B993 for the north of this</p>	<p>Peat: Localised plan areas of compressible peat deposit. Topography: Localised areas of steepsided slopes and high ground identified which have potential for substantial cuttings and embankments and possible slope stability issues. Compressible Soils: Localised areas of compressible alluvial deposit (Concentrated in the south). Earthworks: Localised areas of material (Sand and Gravel) with a potential for high proportion of</p>	<p>There are no notable floodplains within the corridor. [Neutral / Marginal Impact]</p> <p>The number of watercourse crossings required is dependent on the position of the alignment within the corridor. At the northern extent of the corridor, it is estimated that 3 small piped culvert and 4 large piped culverts would be required. At the southern extent, 3 large piped culverts and 1 bridge would be required. Culverting of watercourses is viewed as an Adverse Impact. [Large Adverse Impact]</p>	<p>Due to the limited size of this corridor, there are only a limited number of structures required.</p> <p>It is envisioned that one B-class road and up to 4 local roads or farm roads will potentially be crossed. None of these structures are likely to be particularly complex or large and could be constructed using conventional construction techniques.</p> <p>Operation and maintenance requirements for the structure within</p>	<p>SSE Overhead transmission line crosses this corridor at its southern end. 1no 275Kv line (Adverse Impact)</p> <p>SSE 33 Kv, 11 Kv and Lv infrastructure present within this corridor. (Neutral / Marginal Impact)</p> <p>National Grid - 4no crossings of high pressure gas pipelines. Diversion Works required (Heavy Wall Section of Pipeline). (Large Adverse Impact)</p>

Corridor Option	Alignment & Buildability	Geotechnical	STAG 6 – Feasibility Flooding and Drainage	Structures	Utilities
	<p>corridor. Access possible from local roads to the south.</p> <p>3b. Offline routes likely so onerous traffic management not likely to be required.</p>	<p>re-use.</p> <p>Shallow Rock: extensive areas of near surface rock identified resulting in potentially hard/slow digging within road cuttings (based on the corridor area).</p> <p>Contamination: No recorded areas of made up (or reworked) ground with potential contamination risk.</p> <p>[Neutral Impact - Blue]</p>		<p>the corridor are unlikely to pose any significant issues.</p> <p>Demolition or modification of existing structures is not anticipated.</p>	
<p>OLS This Corridor Option is similar to Q02, following D03 to west of Oldmeldrum. At Oldmeldrum it swings south to bypass the town on to Corridor Option BN01, then heading south east to tie-in to the existing A96 online corridor south of Tavety Junction at Kintore and continues on-line to Craibstone Junction. (The online section between Tavety and Craibstone is Corridor Option OLS)</p> <p>For online upgrading the existing overbridge structures at Kintore clearance heights do not achieve high load route requirements of 6.45 metres. Therefore, side road improvements and upgrading may be required in addition to works to the mainline A96 to meet High Load Standards.</p> <p>For offline alignments, particularly to the south, existing levels and topography throughout the corridor varying levels are encountered with some proposed upgrading offline facing extensive earthworks in order to achieve the allowed gradients.</p> <p>Online and localised offline upgrades will affect local road networks due to</p>	<p>Compliant alignments are possible to address sections of the existing A96 dual carriageway that are either currently not to standard or required to achieve grade separation of existing at grade junctions. This potentially can be achieved by localised offline options or online realignments.</p> <p>A number of constraints are present throughout the corridor that will influence alignment locations. Notable to the North side of the A96 is the presence of built up settlements (Blackburn and Kintore) and planned future developments, both commercial & housing that will restrict any offline proposals and in addition. Ancient woodlands, listed buildings and scheduled monuments are also present and will impact on development of alignment options.</p> <p>For online upgrading the existing overbridge structures at Kintore clearance heights do not achieve high load route requirements of 6.45 metres. Therefore, side road improvements and upgrading may be required in addition to works to the mainline A96 to meet High Load Standards.</p> <p>For offline alignments, particularly to the south, existing levels and topography throughout the corridor varying levels are encountered with some proposed upgrading offline facing extensive earthworks in order to achieve the allowed gradients.</p> <p>Online and localised offline upgrades will affect local road networks due to</p>	<ul style="list-style-type: none"> - PEAT: Moderate plan areas of compressible peat deposit have been identified. - Topography: Localised areas of steep sided slopes and high ground identified which have potential for substantial cuttings and embankments and possible slope stability issues. - Contamination: Moderate areas of made up (or reworked) ground with potential contamination risk. Including two super quarries - Compressible Soils: Moderate areas of compressible alluvial deposit identified. - Earthworks: Moderate areas of material (Sand and Gravel) with a potential for high proportion of re-use without processing. - Shallow Rock: Localised areas of near surface rock identified resulting in potentially hard/slow digging within road cuttings. 	<p>Six main areas of active flood plain are shown on the SEPA flood maps, within this corridor, at "North of Kintore", "Burgh Muir", "Torry Burn", "B997 /B987", "South of Womblehill" and "South of Blackburn".</p> <ul style="list-style-type: none"> - The area North of Kintore forms part of a large extensive flood plain associated with the River Don. Within the corridor, it extends for 3.5km, but in reality, there is an extensive flood plain associate with this section of the river for around 12km. At its widest, the flood plain is almost 900m across taking up to 50% of the corridor section, however its alignments runs parallel with the corridor and could be avoided if necessary. - The area at Burgh Muir is approximately 500m long with a variable width up to around 300m. The water would appear to back up behind the existing A96. - The area at Torry Burn is approximately 400 x 150m (6.0ha) and coincides with an undeveloped area between Castle Road and Wyness Way in Kintore. - There is an area of flood plain shown around the junction of the existing B997 and the B987. The flood plain extends along a 1km length of the Tuach Burn and, in places, is as wide as 500m. Areas already developed for residential and business use would appear to lie within the active flood plain. A 250m length of the A96 is shown to flood as a result of a flood plain along the Tuach Burn to the east side of the A96. The floodplain associated with the Tuach burn would be unavoidable. - The flood plain to the South of Womblehill has an area of approximate 60ha, lies to the south of the existing A96 and is associated with the Sheriff Burn. And occupies 35% of the corridor section. - The area south of Blackburn measures approximately 600 x 600m (36ha) and is associated with the Black Burn, occupying about 40% of the corridor section. The existing A96 passes through the flood plain. There would be little room to alter the existing A96 alignment at this location. 	<p>The existing A96 is a dual carriageway throughout the corridor, with 13 structures associated with it; 4 overbridges (OB), 4 concrete boxes (UB) and 3 corrugated steel (ARMCO) culverts (UB). All of the structures are in 'good' condition, according to latest GI's (2016).</p> <p>There are 3 B-class roads and 6-7 smaller council roads south of the existing A96. Areas north of existing A96 are densely built-up (Blackburn, Kintore) and across from these on the south side are sections prone to flooding.</p> <p>The number of bridges and retaining structures required is dependent on the alignment within the corridor however, it is envisaged that several grade-separated junctions would be required.</p> <p>A crossing of the River Don, associated flood plain and a railway North of Kintore may be required if the alignment runs north east towards corridor BN01. This would require a structure of 500+ meters length.</p> <p>Operation and maintenance requirements of the major river crossing are likely to be complex and access arrangements will require careful consideration.</p> <p>Although the majority of the structures within the corridor will not require any widening or modification, 3 of the Overbridges have insufficient headroom for a high load route (5.52m-5.62m). These may need to</p>	<p>SSE - Overhead transmission lines cross this corridor to the south of Kintore (1 no. 275 Kv & 1 no. 132 Kv). (Adverse Impact)</p> <p>SSE 33 Kv, 11 Kv and Lv infrastructure present within this corridor. (Neutral / Marginal Impact)</p> <p>National Grid - 4no. high pressure gas pipelines crossed within this corridor. 2no. pipelines to the west of Kintore (1200mm &900mm). 2 further pipeline crossings to the south west of Kintore (900mm & 900mm). The southernmost pipeline also has an Above Ground Installation (AGI) at the southern edge of this corridor on the line of the pipeline. Diversion Works (Heavy Wall Pipe Section) required. (Major Adverse Impact)</p> <p>SGN - High pressure gas pipeline (324mm steel) crosses into this corridor at its south eastern end and 219mm steel pipeline within this corridor to the south of Inverurie. (Adverse Impact)</p> <p>SGN - Intermediate pressure infrastructure at the south eastern end of this corridor. Medium pressure infrastructure (diameter varies) following the route of the existing A96 and low pressure infrastructure in Kintore and Blackburn. (Adverse Impact or Neutral / Marginal Impact)</p> <p>Strategic utilities cross this corridor at its south eastern end. (Adverse Impact)</p>

Corridor Option	Alignment & Buildability	Geotechnical	STAG 6 – Feasibility Flooding and Drainage	Structures	Utilities
	<p>removal of access points within existing A96 & incorporating grade separated roundabouts. For all online upgrades access will be achieved through the existing A96 whilst construction traffic for localised offline upgrades will require the use of local roads in order to gain access to areas.</p> <p>Online options will require strategic traffic management due to the closure of sections of roads with diversions required. This will be achieved via local roads creating disruption with increased volumes of vehicles using roads that may not be capable of handling the traffic loads. Offline proposals within areas of below par standards will be minimal at points in which the alignment diverges and merges from & onto the existing A96</p>		<p>With a couple of crossings of the existing A96, it is likely that a route could be plotted through the corridor without having interactions with the existing flood plain.</p> <p>The number of watercourse crossings required is dependent on the position of the alignment within the corridor.</p> <p>As a starting point, a previous study has shown there to be 14 existing watercourse crossings on this section of the existing A96.</p> <p>At the eastern extent, 1 small piped culvert, 3 large piped culvert, 1 box culvert and 4 bridges would be required.</p> <p>At the western extent of the corridor, it is estimated that 3 small piped culverts, 3 large piped culverts, 2 box culverts and 1 bridge would be required.</p>	<p>be replaced or the A96 realigned vertically to achieve necessary clearance.</p> <p>The crossing of the watercourses and in particular, the River Don and associated flood-plain will require consultation with SEPA and other environmental bodies. It is envisaged that any constraints can be readily accommodated within the design.</p>	<p>Shell - Natural gas liquids pipeline crosses this corridor at its south eastern end. (Adverse Impact)</p>

Table 31: STAG Criteria - STAG 7 and STAG 8

Corridor Option	STAG 7 - Affordability	STAG 8 - Public Acceptability
<p>Q 01</p> <p>Corridor Option Q01 follows D03 to west of Oldmeldrum. At Oldmeldrum it swings north to bypass the town, then connecting to the A947, 1km corridor offset to either side. It ties into the AWPR northeast of Aberdeen.</p>	<p>1. Low number of abnormal engineering works required to deliver this scheme. However capital costs likely to be higher than alternatives as this option does not utilise the existing dualled section of the A96 (Approximately 13km).</p> <p>2. No abnormal maintenance costs expected.</p> <p>3. Cost Risk associated with Strategic pipeline crossings and SSE utility crossings.</p>	<p>At this stage, it is not clear which of the options would be most acceptable to the public and to stakeholders. There has been some concern from the public and stakeholders that Improvement Strategy Q was sifted out too early in the appraisal process and that a dual carriageway alignment which offers improvements to the A920/A947 corridor and connects to the AWPR could offer sufficient benefits. There has also been significant support for alignments to be taken forward that are remote from the environmentally sensitive areas around Bennachie. There is also some support for an alignment that provides a north-eastern bypass of Inverurie, tackles congestion and safety issues on the existing A96 Aberdeen-Blackburn-Kintore-Inverurie corridor, has minimal environmental impact and makes use of existing infrastructure.</p> <p>Q01 avoids the sensitive area around Bennachie and provides a north-eastern bypass of Inverurie. It offers some safety and operational improvements to the A947 between Aberdeen, Newmachar and Oldmeldrum.</p> <p>However, Q01 fails to tackle the issues on the existing A96 Growth Corridor between Aberdeen, Blackburn, Kintore and Inverurie. Nor does it utilise the existing dual carriageway section of the A96 between Kintore and Craibstone. It does however have the potential to re-use existing sections of the A947 single carriageway between Oldmeldrum and the AWPR.</p>
<p>Q 02</p>	<p>1. Low number of abnormal engineering works required to deliver this scheme. However capital costs likely to be higher than alternatives as this</p>	<p>Q02 is similar to Q01 as it too avoids the sensitive area around Bennachie and provides a north-eastern bypass of Inverurie. It's closer to the LDP allocations on the north-eastern side of Inverurie It</p>

Corridor Option	STAG 7 - Affordability	STAG 8 - Public Acceptability
Corridor Option Q02 follows D03 to west of Oldmeldrum. At Oldmeldrum it swings south to bypass the town on to Corridor Option BN01, then heading east connecting to the A947, 1km corridor offset to either side. It ties into the AWPR northeast of Aberdeen.	<p>option does not utilise the existing dualled section of the A96 (Approximately 13km).</p> <p>2. No abnormal maintenance costs expected.</p> <p>3. Cost Risk associated with Strategic pipeline crossings and SSE utility crossings.</p>	<p>offers some safety and operational improvements to the A947 between Aberdeen and Newmachar. It also attracts some trips from Oldmeldrum and Inverurie negating the need for them to travel through the village to access the trunk road.</p> <p>However, like Q01, Q02 fails to tackle the issues on the existing A96 corridor between Aberdeen, Blackburn, Kintore and Inverurie. Nor does it utilise the existing dual carriageway section between Kintore and Craibstone, making best use of existing transport infrastructure</p>
<p>OLS</p> <p>This Corridor Option is similar to Q02, following D03 to west of Oldmeldrum. At Oldmeldrum it swings south to bypass the town on to Corridor Option BN01, then heading south east to tie-in to the existing A96 online corridor south of Tavety Junction at Kintore and continues on-line to Craibstone Junction. (The online section between Tavety and Craibstone is Corridor Option OLS)</p>	<p>1. Potential for abnormal cost and high cost risk</p> <p>2. Construction work in operational road corridor</p> <p>3. Significant utilities crossings</p> <p>4. Works to existing structures and existing routes</p>	<p>OLS also offers a north-eastern bypass of Inverurie avoiding the sensitive area around Bennachie. It re-joins the existing A96 dual carriageway at Kintore where it continues to follow an on-line alignment to Craibstone. It's close to the LDP allocations at Inverurie and Kintore and offers operational and safety improvements on the busiest and most densely populated section of the A96 Growth Corridor.</p>

Appendix B – City of Aberdeen Intermediate Zone Groupings

Table 32: City of Aberdeen Intermediate Zone groupings

Intermediate Zone Code	Intermediate Zone Name	Group name used in this report
S02001236	Culter	Aberdeen West (part 1)
S02001237	Cults, Bieldside and Milltimber West	
S02001238	Cults, Bieldside and Milltimber East	
S02001239	Garthdee	
S02001240	Braeside, Mannofield, Broomhill & Seafield East	
S02001241	Braeside, Mannofield, Broomhill & Seafield South	
S02001242	Braeside, Mannofield, Broomhill & Seafield North	
S02001243	Hazlehead	
S02001244	Summerhill	
S02001245	Midstocket	
S02001246	Rosemount	Aberdeen City Centre (part 1)
S02001247	West End North	
S02001248	West End South	
S02001249	City Centre West	
S02001250	City Centre East	
S02001251	Ferryhill North	
S02001252	Ferryhill South	
S02001253	Kincorth, Leggart and Nigg North	
S02001254	Kincorth, Leggart and Nigg South	
S02001255	Cove South	
S02001256	Cove North	Aberdeen South of the Dee
S02001257	Torry West	
S02001258	Torry East	
S02001259	Hanover South	
S02001260	Hanover North	
S02001261	George Street	
S02001262	Ashgrove	Aberdeen City Centre (part 2)
S02001263	Froghall, Powis and Sunnybank	
S02001264	Seaton	
S02001265	Old Aberdeen	
S02001266	Tillydrone	
S02001267	Woodside	
S02001268	Hilton	
S02001269	Stockethill	
S02001270	Mastrick	
S02001271	Sheddoxley	
S02001272	Cummings Park	Aberdeen West (part 2)
S02001273	Northfield	
S02001274	Heathryfold and Middlefield	
S02001275	Kingswells	
S02001276	Bucksburn South	
S02001277	Bucksburn North	Aberdeen, Dyce
S02001278	Dyce	
S02001279	Danestone	
S02001280	Oldmachar West	Aberdeen, Bridge of Don
S02001281	Oldmachar East	
S02001282	Balgownie and Donmouth West	
S02001283	Balgownie and Donmouth East	
S02001284	Denmore	

Table 33: Aberdeenshire Intermediate Zone groupings

Intermediate Zone Code	Intermediate Zone Name	Group name used in this report
S02001285	East Cairngorms	
S02001286	Aboyne and South Deeside	Aberdeenshire West (part 1)
S02001287	Mearns and Laurencekirk	
S02001288	Mearns South and Benholm	
S02001289	Mearns North and Inverbervie	
S02001290	Fetteresso, Netherley and Catter	
S02001291	Stonehaven South	Aberdeenshire South
S02001292	Stonehaven North	
S02001293	Newtonhill	
S02001294	Portlethen	
S02001295	Banchory-Devenick and Findon	
S02001296	Dunecht, Durris and Drumoak	
S02001297	Banchory East	
S02001298	Banchory West	Aberdeenshire West (part 2)
S02001299	Crathes and Torphins	
S02001300	Cromar and Kildrummy	
S02001301	Howe of Alford	
S02001302	Kemnay	Kemnay
S02001303	Inverurie North	
S02001304	Inverurie South	Inverurie
S02001305	Durno-Chapel of Garioch	
S02001306	Kintore	Kintore
S02001307	Blackburn	Blackburn
S02001308	Westhill North and South	
S02001309	Westhill Central	Westhill
S02001310	Garlogie and Elrick	
S02001311	Newmachar and Fintray	Newmachar
S02001312	Balmedie and Potterton	Balmeddie
S02001313	Ellon East	
S02001314	Ellon West	Ellon, Peterhead & Fraserburgh (part 1)
S02001315	Ythanside	
S02001316	Ythsie	
S02001317	Barrahill	Oldmeldrum
S02001318	Fyvie-Rothie	Fyvie
S02001319	Insch, Oyne and Ythanwells	Insch
S02001320	Clashindarroch	
S02001321	Huntly	Huntly & District
S02001322	Auchterless and Monquhitter	
S02001323	Turriff	Turriff & District
S02001324	Portsoy, Fordyce and Cornhill	
S02001325	Aberchirder and Whitehills	
S02001326	Banff	Banff & Macduff
S02001327	Macduff	
S02001328	Gardenstown and King Edward	
S02001329 to S02001343	Fraserburgh, Peterhead and surrounding area. (New Pitsligo, Deer and Mormond, Mintlaw, Auchnagatt, Cruden, Peterhead Links, Peterhead Bay, Peterhead Harbour, Peterhead Ugieside, Longside and Rattray, Rosehearty and Strathbeg, Fraserburgh Smiddyhill, Fraserburgh Lochpots, Fraserburgh Central-Academy, Fraserburgh Harbour and Broadsea)	Ellon, Peterhead & Fraserburgh (part 2)

Appendix C – Census Travel to Work Data

Table 34: Travel to Place of Work in Aberdeen (Scotland's Census 2011)

Origin	Total Trips to Aberdeen	%	Area within Aberdeen					
			City Centre	Dyce	West	South of the Dee	Bridge of Don	North
Inverurie	2,910	24%	1,018	1,008	280	259	192	153
Newmachar	1,545	13%	447	613	126	138	140	81
Kintore	1,432	12%	503	459	158	144	102	66
Blackburn	1,149	10%	407	364	108	111	78	71
Oldmeldrum	1,013	8%	362	317	96	99	86	53
Kemnay	711	6%	218	267	78	68	48	32
Banff	710	6%	287	209	77	57	54	26
Insch	705	6%	284	228	65	58	43	27
Huntly	666	6%	246	200	60	80	39	41
Fyvie	599	5%	190	215	59	54	49	32
Turriff	569	5%	179	216	53	43	50	28
Total	12,009		4,141	4,106	1,160	1,111	881	610
			34%	34%	10%	9%	7%	5%

Table 35: Travel to Place of Work (Scotland's Census 2011) Part 1

	From Inverurie (8,920)	Trips	%
1	Work Locally	2597	29%
2	Aberdeen City Centre	1018	11%
3	Aberdeen, Dyce	1008	11%
4	Working at Home	857	10%
5	No fixed place of work	711	8%
6	Kintore	302	3%
7	Aberdeen West	280	3%
8	Aberdeen South of the Dee	259	3%
9	Westhill	247	3%
10	Offshore or Shetland	202	2%
11	Aberdeen, Bridge of Don	192	2%
	From Kemnay (1,897)	Trips	%
1	Aberdeen, Dyce	267	14%
2	Inverurie	266	14%
3	Aberdeen City Centre	218	12%
4	Work Locally	200	11%
5	Working at Home	177	9%
6	No fixed place of work	158	8%
7	Kintore	88	5%
8	Aberdeen West	78	4%
9	Westhill	72	4%
10	Aberdeen South of the Dee	68	4%
11	Offshore or Shetland	56	3%
	From Kintore (3,116)	Trips	%
1	Aberdeen City Centre	503	16%
2	Aberdeen, Dyce	459	15%
3	Inverurie	349	11%
4	Working at Home	320	10%
5	No fixed place of work	243	8%
6	Work Locally	181	6%
7	Aberdeen West	158	5%
8	Aberdeen South of the Dee	144	5%
9	Westhill	134	4%
10	Aberdeen, Bridge of Don	102	3%
11	Offshore or Shetland	88	3%
	From Blackburn (1,942)	Trips	%
1	Aberdeen City Centre	407	21%
2	Aberdeen, Dyce	374	19%
3	Working at Home	165	8%
4	No fixed place of work	146	8%
5	Aberdeen South of the Dee	111	6%
6	Aberdeen West	108	6%
7	Westhill	104	5%
8	Inverurie	84	4%
9	Work Locally	83	4%
	From Turriff (3,981)	Trips	%
1	Work Locally	1249	31%
2	Working at Home	515	13%
3	No fixed place of work	440	11%
4	Banff & Macduff	218	6%
5	Aberdeen, Dyce	216	5%
6	Aberdeen City Centre	179	5%
7	Inverurie	177	4%
8	Ellon, Fraserburgh, Peterhead	176	4%
9	Offshore or Shetland	172	4%
10	Huntly and District	69	2%
11	Fyvie	65	2%
	From Fyvie (2,172)	Trips	%
1	Working at Home	363	17%
2	Inverurie	230	11%
3	No fixed place of work	221	10%
4	Aberdeen, Dyce	215	10%
5	Aberdeen City Centre	190	9%
6	Work Locally	164	8%
7	Oldmeldrum	106	5%
8	Ellon, Fraserburgh, Peterhead	100	5%
9	Turriff and District	68	3%
10	Aberdeen West	59	3%
11	Offshore or Shetland	56	3%
	From Oldmeldrum (2,716)	Trips	%
1	Inverurie	375	14%
2	Aberdeen City Centre	362	13%
3	Aberdeen, Dyce	317	12%
4	Work Locally	310	11%
5	Working at Home	291	11%
6	No fixed place of work	231	9%
7	Aberdeen South of the Dee	99	4%
8	Aberdeen West	96	4%
9	Ellon, Fraserburgh, Peterhead	90	3%
10	Aberdeen, Bridge of Don	86	3%
11	Westhill	70	3%
	From Newmachar (2,505)	Trips	%
1	Aberdeen, Dyce	613	24%
2	Aberdeen City Centre	447	18%
3	Working at Home	226	9%
4	No fixed place of work	159	6%
5	Aberdeen, Bridge of Don	140	6%
6	Aberdeen South of the Dee	138	6%
7	Aberdeen West	126	5%
8	Work Locally	91	4%
9	Inverurie	84	3%

10	Aberdeen, Bridge of Don	78	4%
11	Aberdeen North	71	4%

10	Aberdeen North	81	3%
11	Offshore or Shetland	79	3%

Table 36: Travel to Place of Work (Scotland's Census 2011) Part 2

	From Huntly (4,556)	Trips	%
1	Work Locally	1408	31%
2	Working at Home	738	16%
3	No fixed place of work	486	11%
4	Aberdeen City Centre	246	5%
5	Inverurie	236	5%
6	Moray & Highland	201	4%
7	Aberdeen, Dyce	200	4%
8	Aberdeenshire West	171	4%
9	Offshore or Shetland	110	2%
10	Insch	100	2%
11	Aberdeen South of the Dee	80	2%
	From Insch (2,604)	Trips	%
1	Working at Home	406	16%
2	Inverurie	377	14%
3	Aberdeen City Centre	284	11%
4	No fixed place of work	266	10%
5	Aberdeen, Dyce	228	9%
6	Work Locally	222	9%
7	Huntly and District	117	5%
8	Westhill	74	3%
9	Aberdeen West	65	2%
10	Oldmeldrum	63	2%
11	Ellon, Fraserburgh, Peterhead	62	2%

	From Banff & Macduff (8,958)	Trips	%
1	Work Locally	3302	37%
2	Working at Home	1266	14%
3	No fixed place of work	1008	11%
4	Turriff and District	593	7%
5	Offshore or Shetland	523	6%
6	Ellon, Fraserburgh, Peterhead	493	6%
7	Moray & Highland	349	4%
8	Aberdeen City Centre	287	3%
9	Aberdeen, Dyce	209	2%
10	Huntly and District	157	2%
11	Inverurie	152	2%

Appendix D – CRAM Model Results Summary Tables

Table 37: Journey Time Improvements predicted by the A96 CRAM Model

Route	Year	AM Peak Hour 0800 to 0900				Inter Peak Hour				PM Peak Hour 1700 to 1800			
		Do-Min	OLS	Q01	Q02	Do-Min	OLS	Q01	Q02	Do-Min	OLS	Q01	Q02
Huntly to Craibstone	2030	42:24	8:25	1:56	1:51	39:12	5:47	0:21	0:20	39:25	5:55	0:23	0:18
	2045	46:27	12:10	4:05	4:06	40:07	6:33	0:44	0:41	40:26	6:50	0:55	0:53
Craibstone to Huntly	2030	41:24	5:30	0:20	0:19	41:25	5:35	0:25	0:20	46:49	9:50	3:16	3:10
	2045	42:06	6:01	0:30	0:25	42:01	6:04	0:37	0:30	50:34	13:16	5:11	4:54
Kintore to Craibstone	2030	10:02	0:59	0:32	0:32	9:11	0:28	0:05	0:04	9:17	0:29	0:05	0:05
	2045	11:26	2:17	1:24	1:26	9:19	0:31	0:07	0:06	9:22	0:32	0:09	0:09
Craibstone to Kintore	2030	11:33	0:23	0:04	0:04	11:30	0:24	0:05	0:03	12:37	0:51	0:38	0:38
	2045	11:38	0:22	0:06	0:04	11:33	0:23	0:05	0:04	13:27	1:34	1:11	1:07
Kemnay to Craibstone	2030	13:41	0:59	0:32	0:32	12:45	0:28	0:05	0:04	12:54	0:28	0:06	0:05
	2045	15:05	2:16	1:23	1:26	12:54	0:31	0:08	0:07	12:59	0:32	0:08	0:08
Craibstone to Kemnay	2030	15:06	0:23	0:04	0:03	15:03	0:24	0:04	0:03	16:21	0:51	0:39	0:39
	2045	15:11	0:22	0:06	0:03	15:06	0:24	0:05	0:03	17:11	1:34	1:13	1:08
Turriff to Craibstone	2030	33:26	6:13	5:16	3:01	31:11	4:30	3:59	1:47	31:33	4:45	4:07	1:57
	2045	35:14	7:49	6:20	4:03	31:22	4:33	4:06	1:53	31:53	5:03	3:52	1:36
Craibstone to Turriff	2030	31:22	2:13	2:29	1:49	31:20	2:14	2:26	1:46	34:27	4:24	4:01	3:26
	2045	31:33	2:18	2:31	1:52	31:32	2:22	2:32	1:53	35:47	5:29	3:41	3:02
Oldmeldrum to Goval	2030	21:35	0:56	5:37	3:14	19:34	0:06	4:02	1:48	19:53	0:14	4:15	2:02
	2045	23:05	1:58	6:49	4:27	19:42	0:08	4:07	1:53	20:19	0:12	4:34	2:20
Goval to Oldmeldrum	2030	18:27	0:05	1:45	1:48	18:24	0:03	1:41	1:46	21:28	1:58	1:32	1:37
	2045	18:45	0:09	1:47	1:51	18:38	0:09	1:47	1:53	23:19	3:22	1:56	2:10
Oldmeldrum to Kintore	2030	17:23	5:18	0:48	0:35	16:05	4:06	0:07	-0:08	16:35	4:29	0:18	0:01
	2045	19:13	7:01	1:52	1:41	16:20	4:19	0:11	-0:05	17:01	4:51	0:28	0:14
Kintore to Oldmeldrum	2030	16:44	4:19	0:09	-0:03	16:34	4:15	0:02	-0:08	19:26	6:53	1:49	1:45
	2045	17:00	4:31	0:16	0:03	16:41	4:20	0:02	-0:07	22:06	9:23	3:34	3:24
Oldmeldrum to Huntly	2030	29:01	3:59	3:40	3:03	28:58	4:00	3:37	2:59	30:34	5:12	3:53	3:17
	2045	29:30	4:19	3:43	3:06	29:17	4:15	3:37	3:02	31:14	5:41	3:50	3:15
Huntly to Oldmeldrum	2030	29:23	4:33	4:09	3:29	28:39	4:03	4:07	3:27	28:46	4:02	4:08	3:30
	2045	30:12	5:12	4:18	3:39	28:52	4:12	4:07	3:27	29:07	4:13	4:08	3:31

Table 38: A96 Traffic Volumes predicted by the A96 CRAM Model

Eastbound route section	Year	AM Peak Hour 0800 to 0900				Inter Peak Hour				PM Peak Hour 1700 to 1800			
		Do-Min	OLS	Q01	Q02	Do-Min	OLS	Q01	Q02	Do-Min	OLS	Q01	Q02
Colpy to Kellockbank	2030	569	97	305	355	447	76	295	322	389	106	194	269
	2045	562	106	265	335	545	181	351	379	487	148	225	290
Kellockbank to Oyne	2030	551	77	286	339	425	49	277	307	369	85	186	260
	2045	534	82	254	327	519	151	331	361	461	122	212	276
Oyne to Pitcaple	2030	773	301	490	550	552	181	399	429	551	264	349	430
	2045	755	314	455	540	654	294	462	494	659	315	385	457
Pitcaple to Drimmies	2030	846	373	547	598	589	210	419	449	522	243	331	408
	2045	835	396	519	581	698	340	488	519	627	292	354	419
Drimmies to Blackhall	2030	854	407	574	622	682	310	509	535	589	321	395	466
	2045	863	450	563	612	831	482	611	636	710	392	434	489
Blackhall to Port Elphinstone	2030	1,241	911	1,035	1,046	904	528	714	729	999	753	819	866
	2045	1,197	1,010	1,038	1,036	1,092	740	858	880	1,116	853	881	911
Port Elphinstone to Thainstone	2030	2,040	1,488	1,747	1,742	1,418	997	1,214	1,231	1,570	1,236	1,368	1,399
	2045	2,082	1,640	1,914	1,894	1,661	1,260	1,417	1,436	1,774	1,373	1,495	1,498
Thainstone to Tavelty	2030	2,103	1,520	1,810	1,805	1,430	1,011	1,227	1,244	1,587	1,260	1,385	1,415
	2045	2,159	1,678	1,981	1,959	1,675	1,277	1,431	1,449	1,784	1,394	1,503	1,507
Tavelty to Gauchhill	2030	1,866	2,057	1,612	1,625	1,255	1,366	1,075	1,096	1,403	1,569	1,220	1,263
	2045	1,895	2,250	1,771	1,762	1,480	1,579	1,258	1,284	1,579	1,655	1,320	1,339
Gauchhill to Broomhill	2030	1,758	1,947	1,503	1,515	1,180	1,281	1,000	1,021	1,224	1,376	1,040	1,083
	2045	1,801	2,145	1,656	1,647	1,399	1,487	1,177	1,203	1,392	1,460	1,133	1,151
Broomhill to Kinellar	2030	2,150	2,337	1,898	1,912	1,391	1,481	1,200	1,223	1,507	1,647	1,314	1,358
	2045	2,184	2,555	2,063	2,056	1,645	1,712	1,409	1,438	1,702	1,761	1,429	1,447
Kinellar to Clinterty	2030	1,639	1,805	1,385	1,397	1,133	1,208	953	971	1,179	1,330	1,040	1,042
	2045	1,612	1,876	1,548	1,539	1,359	1,410	1,135	1,159	1,211	1,286	939	925
Clinterty to Tyrebagger	2030	1,741	1,919	1,481	1,492	1,276	1,372	1,089	1,107	1,434	1,604	1,289	1,291
	2045	1,735	2,011	1,664	1,654	1,521	1,601	1,291	1,315	1,482	1,582	1,203	1,189
Tyrebagger to Craibstone	2030	1,559	1,646	1,391	1,403	1,223	1,276	1,062	1,077	1,454	1,496	1,342	1,347
	2045	1,607	1,689	1,528	1,530	1,457	1,485	1,261	1,280	1,457	1,450	1,233	1,220
New A96 Alignments													
Colpy and B9001 Junction	2030	-	721	562	499	-	463	267	231	-	476	408	320
	2045	-	710	753	665	-	431	331	294	-	552	549	469
B9001 Jn and B9170 Jn (OLS); B9001 Jn and Oldmeldrum (Q1); B9001 Jn and B9170 Jn (Q2)	2030	-	864	642	620	-	512	294	252	-	502	451	369
	2045	-	849	828	777	-	468	354	311	-	571	573	504
B9170 Jn and Kintore (OLS); Oldmeldrum and Newmachar (Q1); B9170 Jn and Newmachar (Q2);	2030	-	799	1,037	1,001	-	527	469	415	-	497	641	532
	2045	-	856	1,283	1,269	-	511	575	510	-	477	836	758
Newmachar and Goval (Q1 & Q2)	2030	-	-	1,264	1,277	-	-	640	630	-	-	734	699
	2045	-	-	1,512	1,561	-	-	762	755	-	-	945	940

Table 39: Percentage change in A96 traffic volumes predicted by the A96 CRAM Model

Eastbound route section	Year	AM Peak Hour 0800 to 0900				Inter Peak Hour				PM Peak Hour 1700 to 1800			
		Do-Min	OLS	Q01	Q02	Do-Min	OLS	Q01	Q02	Do-Min	OLS	Q01	Q02
Colpy to Kellockbank	2030	569	-83%	-46%	-38%	447	-83%	-34%	-28%	389	-73%	-50%	-31%
	2045	562	-81%	-53%	-40%	545	-67%	-36%	-30%	487	-70%	-54%	-41%
Kellockbank to Oyne	2030	551	-86%	-48%	-39%	425	-88%	-35%	-28%	369	-77%	-50%	-29%
	2045	534	-85%	-52%	-39%	519	-71%	-36%	-30%	461	-74%	-54%	-40%
Oyne to Pitcaple	2030	773	-61%	-37%	-29%	552	-67%	-28%	-22%	551	-52%	-37%	-22%
	2045	755	-58%	-40%	-28%	654	-55%	-29%	-25%	659	-52%	-42%	-31%
Pitcaple to Drimmies	2030	846	-56%	-35%	-29%	589	-64%	-29%	-24%	522	-53%	-37%	-22%
	2045	835	-53%	-38%	-30%	698	-51%	-30%	-26%	627	-53%	-43%	-33%
Drimmies to Blackhall	2030	854	-52%	-33%	-27%	682	-55%	-25%	-22%	589	-45%	-33%	-21%
	2045	863	-48%	-35%	-29%	831	-42%	-26%	-23%	710	-45%	-39%	-31%
Blackhall to Port Elphinstone	2030	1,241	-27%	-17%	-16%	904	-42%	-21%	-19%	999	-25%	-18%	-13%
	2045	1,197	-16%	-13%	-13%	1,092	-32%	-21%	-19%	1,116	-24%	-21%	-18%
Port Elphinstone to Thainstone	2030	2,040	-27%	-14%	-15%	1,418	-30%	-14%	-13%	1,570	-21%	-13%	-11%
	2045	2,082	-21%	-8%	-9%	1,661	-24%	-15%	-14%	1,774	-23%	-16%	-16%
Thainstone to Tavelty	2030	2,103	-28%	-14%	-14%	1,430	-29%	-14%	-13%	1,587	-21%	-13%	-11%
	2045	2,159	-22%	-8%	-9%	1,675	-24%	-15%	-13%	1,784	-22%	-16%	-16%
Tavelty to Gauchhill	2030	1,866	+10%	-14%	-13%	1,255	+9%	-14%	-13%	1,403	+12%	-13%	-10%
	2045	1,895	+19%	-7%	-7%	1,480	+7%	-15%	-13%	1,579	+5%	-16%	-15%
Gauchhill to Broomhill	2030	1,758	+11%	-15%	-14%	1,180	+9%	-15%	-13%	1,224	+12%	-15%	-11%
	2045	1,801	+19%	-8%	-9%	1,399	+6%	-16%	-14%	1,392	+5%	-19%	-17%
Broomhill to Kinellar	2030	2,150	+9%	-12%	-11%	1,391	+6%	-14%	-12%	1,507	+9%	-13%	-10%
	2045	2,184	+17%	-6%	-6%	1,645	+4%	-14%	-13%	1,702	+3%	-16%	-15%
Kinellar to Clinterty	2030	1,639	+10%	-16%	-15%	1,133	+7%	-16%	-14%	1,179	+13%	-12%	-12%
	2045	1,612	+16%	-4%	-5%	1,359	+4%	-17%	-15%	1,211	+6%	-22%	-24%
Clinterty to Tyrebagger	2030	1,741	+10%	-15%	-14%	1,276	+8%	-15%	-13%	1,434	+12%	-10%	-10%
	2045	1,735	+16%	-4%	-5%	1,521	+5%	-15%	-14%	1,482	+7%	-19%	-20%
Tyrebagger to Craibstone	2030	1,559	+6%	-11%	-10%	1,223	+4%	-13%	-12%	1,454	+3%	-8%	-7%
	2045	1,607	+5%	-5%	-5%	1,457	+2%	-13%	-12%	1,457	-0%	-15%	-16%

Table 40: A96 Traffic Volumes predicted by the A96 CRAM Model

Westbound route section	Year	AM Peak Hour 0800 to 0900				Inter Peak Hour				PM Peak Hour 1700 to 1800			
		Do-Min	OLS	Q01	Q02	Do-Min	OLS	Q01	Q02	Do-Min	OLS	Q01	Q02
Kellockbank to Colpy	2030	374	139	233	278	436	139	234	306	552	110	254	313
	2045	459	168	285	341	502	168	266	373	548	111	281	356
Oyne to Kellockbank	2030	332	96	139	195	415	116	183	259	538	96	193	264
	2045	412	120	172	242	477	139	209	321	528	91	213	301
Pitcaple to Oyne	2030	422	193	224	280	481	189	240	314	761	336	397	480
	2045	511	224	268	332	541	214	261	375	764	346	430	526
Drimmies to Pitcaple	2030	407	190	218	261	474	183	219	290	789	371	424	490
	2045	487	216	248	304	534	206	233	343	803	398	467	541
Blackhall to Drimmies	2030	483	260	285	324	632	339	370	437	819	419	460	536
	2045	580	301	319	388	740	412	437	526	847	454	524	614
Port Elphinstone to Blackhall	2030	907	673	693	706	838	546	552	611	1,396	1,056	1,084	1,117
	2045	1,020	754	763	790	972	642	646	718	1,497	1,160	1,224	1,250
Thainstone to Port Elphinstone	2030	1,391	1,098	1,152	1,148	1,359	993	1,053	1,101	2,182	1,717	1,853	1,872
	2045	1,571	1,217	1,257	1,266	1,506	1,111	1,181	1,240	2,317	1,874	2,018	2,034
Tavelty to Thainstone	2030	1,413	1,123	1,175	1,170	1,378	1,014	1,073	1,121	2,215	1,755	1,885	1,903
	2045	1,590	1,238	1,275	1,283	1,529	1,137	1,204	1,262	2,305	1,924	2,002	2,018
Gauchhill to Tavelty	2030	1,279	1,322	1,055	1,053	1,234	1,254	946	997	1,884	2,272	1,635	1,660
	2045	1,445	1,489	1,138	1,150	1,379	1,440	1,060	1,125	1,939	2,452	1,747	1,772
Broomhill to Gauchhill	2030	1,166	1,191	939	938	1,156	1,162	865	917	1,779	2,112	1,497	1,523
	2045	1,319	1,349	1,012	1,026	1,295	1,341	975	1,040	1,811	2,299	1,607	1,631
Kinellar to Broomhill	2030	1,421	1,434	1,186	1,186	1,356	1,350	1,058	1,110	2,217	2,552	1,960	1,986
	2045	1,589	1,603	1,271	1,285	1,526	1,548	1,191	1,256	2,262	2,760	2,099	2,126
Clinterty to Kinellar	2030	967	1,038	821	811	1,019	1,077	801	857	1,593	1,848	1,385	1,375
	2045	1,050	1,081	797	789	1,139	1,182	896	919	1,604	1,897	1,468	1,472
Tyrebagger to Clinterty	2030	1,170	1,231	1,016	1,006	1,163	1,223	936	990	1,665	1,933	1,453	1,444
	2045	1,261	1,287	1,002	994	1,300	1,351	1,046	1,069	1,696	2,002	1,557	1,561
Craibstone to Tyrebagger	2030	1,188	1,241	1,035	1,025	1,189	1,238	964	1,018	1,779	2,013	1,563	1,553
	2045	1,285	1,290	1,021	1,013	1,332	1,364	1,083	1,106	1,847	2,110	1,677	1,685
New A96 Alignments													
Colpy and B9001 Junction	2030	-	338	402	337	-	383	398	318	-	824	804	726
	2045	-	436	550	477	-	464	495	372	-	911	902	808
B9001 Jn and B9170 Jn (OLS); B9001 Jn and Oldmeldrum (Q1); B9001 Jn and B9170 Jn (Q2)	2030	-	389	446	400	-	440	444	367	-	968	904	874
	2045	-	481	587	531	-	511	539	418	-	1,051	998	951
B9170 Jn and Kintore (OLS); Oldmeldrum and Newmachar (Q1); B9170 Jn and Newmachar (Q2);	2030	-	346	606	515	-	392	677	535	-	919	1,531	1,326
	2045	-	426	773	673	-	481	810	640	-	1,002	1,669	1,446
Newmachar and Goval (Q1 & Q2)	2030	-	-	718	708	-	-	802	747	-	-	1,604	1,627
	2045	-	-	892	881	-	-	762	755	-	-	945	940

Table 41: Percentage change in A96 traffic volumes predicted by the A96 CRAM Model

Westbound route section	Year	AM Peak Hour 0800 to 0900				Inter Peak Hour				PM Peak Hour 1700 to 1800			
		Do-Min	OLS	Q01	Q02	Do-Min	OLS	Q01	Q02	Do-Min	OLS	Q01	Q02
Kellockbank to Colpy	2030	374	-63%	-38%	-26%	436	-68%	-46%	-30%	552	-80%	-54%	-43%
	2045	459	-63%	-38%	-26%	502	-66%	-47%	-26%	548	-80%	-49%	-35%
Oyne to Kellockbank	2030	332	-71%	-58%	-41%	415	-72%	-56%	-37%	538	-82%	-64%	-51%
	2045	412	-71%	-58%	-41%	477	-71%	-56%	-33%	528	-83%	-60%	-43%
Pitcable to Oyne	2030	422	-54%	-47%	-34%	481	-61%	-50%	-35%	761	-56%	-48%	-37%
	2045	511	-56%	-48%	-35%	541	-60%	-52%	-31%	764	-55%	-44%	-31%
Drimmies to Pitcable	2030	407	-53%	-46%	-36%	474	-61%	-54%	-39%	789	-53%	-46%	-38%
	2045	487	-56%	-49%	-38%	534	-61%	-56%	-36%	803	-50%	-42%	-33%
Blackhall to Drimmies	2030	483	-46%	-41%	-33%	632	-46%	-41%	-31%	819	-49%	-44%	-35%
	2045	580	-48%	-45%	-33%	740	-44%	-41%	-29%	847	-46%	-38%	-27%
Port Elphinstone to Blackhall	2030	907	-26%	-24%	-22%	838	-35%	-34%	-27%	1,396	-24%	-22%	-20%
	2045	1,020	-26%	-25%	-23%	972	-34%	-33%	-26%	1,497	-22%	-18%	-16%
Thainstone to Port Elphinstone	2030	1,391	-21%	-17%	-17%	1,359	-27%	-23%	-19%	2,182	-21%	-15%	-14%
	2045	1,571	-23%	-20%	-19%	1,506	-26%	-22%	-18%	2,317	-19%	-13%	-12%
Tavelty to Thainstone	2030	1,413	-21%	-17%	-17%	1,378	-26%	-22%	-19%	2,215	-21%	-15%	-14%
	2045	1,590	-22%	-20%	-19%	1,529	-26%	-21%	-17%	2,305	-17%	-13%	-12%
Gauchhill to Tavelty	2030	1,279	+3%	-18%	-18%	1,234	+2%	-23%	-19%	1,884	+21%	-13%	-12%
	2045	1,445	+3%	-21%	-20%	1,379	+4%	-23%	-18%	1,939	+26%	-10%	-9%
Broomhill to Gauchhill	2030	1,166	+2%	-19%	-20%	1,156	+1%	-25%	-21%	1,779	+19%	-16%	-14%
	2045	1,319	+2%	-23%	-22%	1,295	+4%	-25%	-20%	1,811	+27%	-11%	-10%
Kinellar to Broomhill	2030	1,421	+1%	-17%	-17%	1,356	-0%	-22%	-18%	2,217	+15%	-12%	-10%
	2045	1,589	+1%	-20%	-19%	1,526	+1%	-22%	-18%	2,262	+22%	-7%	-6%
Clinterty to Kinellar	2030	967	+7%	-15%	-16%	1,019	+6%	-21%	-16%	1,593	+16%	-13%	-14%
	2045	1,050	+3%	-24%	-25%	1,139	+4%	-21%	-19%	1,604	+18%	-8%	-8%
Tyrebagger to Clinterty	2030	1,170	+5%	-13%	-14%	1,163	+5%	-20%	-15%	1,665	+16%	-13%	-13%
	2045	1,261	+2%	-21%	-21%	1,300	+4%	-20%	-18%	1,696	+18%	-8%	-8%
Craibstone to Tyrebagger	2030	1,188	+4%	-13%	-14%	1,189	+4%	-19%	-14%	1,779	+13%	-12%	-13%
	2045	1,285	+0%	-21%	-21%	1,332	+2%	-19%	-17%	1,847	+14%	-9%	-9%

