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**A96**  
**DUALLING**  
EAST OF HUNTLY TO ABERDEEN

# **A96 Dualling**

East of Huntly to Aberdeen scheme

**First Fix Alignment Workshop Report**

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# A96 Dualling East of Huntly to Aberdeen

## First Fix Alignment Workshop Report

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## Contents

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<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Project Background	1
1.2	Summary of Previous and Ongoing Work by Others	2
1.3	Further Work Done to Date by AmeyArup	4
1.4	Purpose of this Report	4
<b>2</b>	<b>Pre-Workshop Option Development</b>	<b>6</b>
2.1	Option Development Phases	6
2.2	First Fix Alignments	6
2.3	First Fix Appraisal and Assessment	12
<b>3</b>	<b>First Fix Alignment Workshop</b>	<b>14</b>
3.1	Purpose of the Workshop	14
3.2	Participants	14
3.3	Agenda Summary	14
3.4	Workshop Notes	14
<b>4</b>	<b>First Fix Alignment Appraisal Summary</b>	<b>15</b>
4.1	Scheme Objectives Appraisal	15
4.2	Appraisal against STAG Criteria	19
4.3	Combined Appraisal (The Assessment)	22
<b>5</b>	<b>Workshop Outcomes</b>	<b>27</b>
5.1	Appraisal Outcomes	27
5.2	Post-workshop Actions	51
<b>6</b>	<b>Overall Workshop Outcomes</b>	<b>52</b>
<b>7</b>	<b>Design Development Following First Fix Alignment Assessment</b>	<b>53</b>

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## Appendices

### Appendix A

**First Fix Alignments Plan and Profile Drawings**

### Appendix B

**First Fix Alignments Appraisal Metrics**

### Appendix C

**First Fix Alignment Workshop Agenda and Presentation Material**

### Appendix D

**First Fix Alignments Workshop Minutes**

### Appendix E

**First Fix Alignments - Engineering Appraisal**

### Appendix F

**First Fix Alignments - Environmental Appraisal**

### Appendix G

**First Fix Alignments - Landscape, Ecology and Water Appraisal Summary Drawings**

### Appendix H

**First Fix Alignments - Traffic and Transportation Appraisal**

### Appendix I

**First Fix Alignments - Assessment Summaries**

### Appendix J

**CN01 Further Investigation – Technical Note**

### Appendix K

**Online at Inverurie – Dualling Feasibility and Appraisal**

### Appendix L

**First Fix Alignments to Second Fix Alignment Development**

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## Figures

Figure 1.1 - A96 Dualling Extents

Figure 1.2 - Scheme Extents - A96 Dualling East of Huntly to Aberdeen

Figure 1.3 - DMRB Stage 1 Improvement Strategy Options

Figure 2.1 - Option Development Process

Figure 2.2 - First Fix Alignment Options within Corridor Options

Figure 2.3 - Example Plan and Profile drawing for First Fix Alignment D01-001

Figure 4.1 - Engineering Graphical Appraisal of First Fix Alignments within D01 Corridor Option

Figure 4.2 - Engineering Graphical Appraisal of First Fix Alignments within D01 Corridor Option

Figure 5.1 - Selected First Fix Alignments.

## Tables

Table 2.1 - Summary of First Fix Alignments within Corridor Options

Table 2.2. - Scheme Objectives

Table 2.3 - Seven Point Scale.

Table 4.1 - First Fix Alignment Appraisal against Scheme Objectives.

Table 4.2 - Stag Criteria

Table 4.3 - Cross-Discipline Assessment Summary of first Fix Alignments within Corridor Option D01

Table 6.1 - First Fix Alignment status

## Glossary of terms/Abbreviations

AWPR	Aberdeen Western Peripheral Route
BGS	British Geological Survey
DMRB	Design Manual for Roads and Bridges
GDL	Gardens and Designed Landscape
GIS	Geographic Information Systems
HES	Historic Environment Scotland
HIC	High Impact Constraints
HIA	High Impact Areas
IIP	Infrastructure Investment Plan
LDP	Local Development Plan
NMU	Non-Motorised User
SAC	Special Area of Conservation
SBC	Strategic Business Case
SEA	Strategic Environmental Assessment
SEPA	Scottish Environment Protection Agency
SGN	Scottish Gas Networks
SLA	Special Landscape Area
SNH	Scottish Natural Heritage
SO	Scheme Objective
SSE	Scottish and Southern Energy
STAG	Scottish Transport Analysis Guide
TEE	Transport Economic Efficiency
TS	Transport Scotland

# 1 Introduction

## 1.1 Project Background

The Scottish Government's commitment to complete the dualling of the A96 between Inverness and Aberdeen by 2030, thus completing the dual carriageway network between all Scottish cities, is contained within the 2011 Infrastructure Investment Plan (IIP). This was followed up in May 2013 when the then Minister for Transport and Veterans set out how the A96 Dualling Programme would be taken forward over the coming years.

Transport Scotland commenced the preliminary engineering and strategic environmental assessment work in 2013 along the route between east of Nairn and Aberdeen. The outcome of this preliminary strategic environmental assessment work was presented at a series of public information exhibitions along the A96 corridor between Forres and Aberdeen in May 2015.

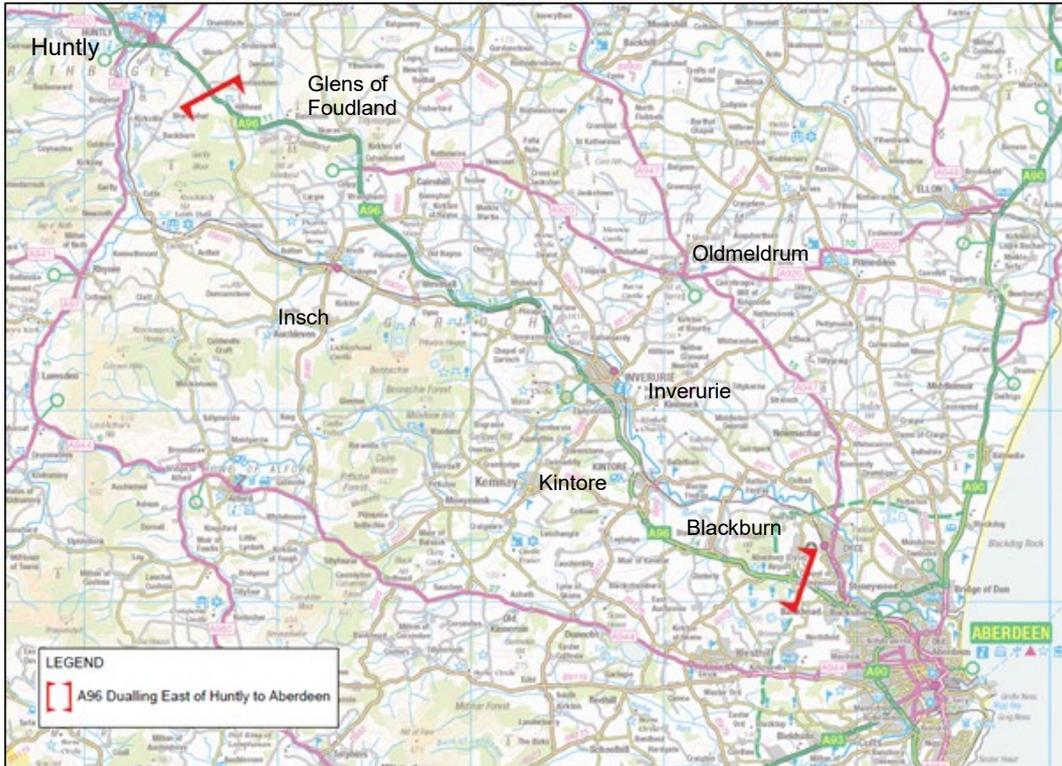
Based on the outcome of the preliminary work it was proposed to progress the next stage of design (i.e. Design Manual for Roads and Bridges (DMRB) Stage 2 assessment) in three geographic sections as shown below in red in Figure 1.1.



Figure 1.1 A96 Dualling Extents

Amey OW Ltd and Ove Arup and Partners Ltd (AmeyArup) were appointed by Transport Scotland in July 2017 under a Joint Venture agreement for the purposes of delivering the A96 Dualling East of Huntly to Aberdeen Multi-Disciplinary Support Services Contract. The first task is to progress the DMRB Stage 2 Assessment (i.e. identification of the preferred option) for the Eastern Section (East of Huntly to Aberdeen), referred to as 'the Scheme'.

The approximate scheme extents are shown in Figure 1.2.



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Figure 1.2 – Scheme Extents – A96 Dualling East of Huntly to Aberdeen

Transport Scotland has requested that the west end of the Scheme will tie in to the existing A96, at an appropriate location, to the east of Huntly with a dual carriageway to single carriageway transition that allows a future dualling scheme to be developed westwards towards Huntly and beyond. The east end of the Scheme will tie in to the existing A96 junction with the Aberdeen Western Peripheral Route (AWPR) at Craibstone. An assessment of the existing dual carriageway, including junction provision, will be required between Thainstone Roundabout, Inverurie and the proposed junction with the AWPR at Craibstone.

## 1.2 Summary of Previous and Ongoing Work by Others

The following roles or studies have been undertaken by others and, in some cases, are ongoing as indicated:

- Inverness to Aberdeen Corridor Study – A96 Dualling Inverness to Aberdeen Strategic Business Case (September 2014).
- A96 Dualling Inverness to Aberdeen Preliminary Engineering Services (PES) Commission - DMRB Stage 1 Report - Jacobs UK Ltd (Appointed 2013 - May 2015).
- A96 Dualling Inverness to Aberdeen Strategic Environmental Assessment (SEA) Commission - CH2M Hill (Appointed September 2013 - June 2015).
- A96 Dualling Programme Outline Business Case (including Model Strategy Development and Implementation) and Lead Traffic and Economic Advisor - AECOM (Appointed November 2014 - Ongoing).

- A96 Dualling Inverness to Nairn (including Nairn Bypass) Multi-Disciplinary Support Services Contract – Jacobs UK Ltd (Appointed May 2015 - Ongoing).
- A96 Dualling BIM Manager – Jacobs UK Ltd (Appointed May 2015 - Ongoing).
- A96 Dualling Hardmuir to Fochabers (Western Section) Multi-Disciplinary Support Services Contract - Mott MacDonald Sweco (MMS) Joint Venture (Appointed June 2016 - Ongoing).

### 1.2.1 Preliminary Engineering Services – DMRB Stage 1 Assessment

Jacobs were commissioned by Transport Scotland in 2013 to undertake the preliminary engineering assessment work (DMRB Stage 1 Assessment) for the dualling of the A96 between Inverness and Aberdeen.

This commission was undertaken in parallel with the A96 Inverness to Aberdeen Dualling SEA to produce engineering constraints mapping, broadly defined improvement strategies and other design strategies such as a junction and access strategy, a lay-by and rest area strategy, and a Non-Motorised User (NMU) strategy.

The outcome of the DMRB Stage 1 Assessment was presented to the public at a series of exhibitions held between 11 and 21 May 2015.

The Stage 1 Assessment involved:

- Identification of baseline (existing) conditions and constraints.
- Developing, sifting and assessing the advantages and disadvantages associated with broadly defined improvement strategies.
- Developing design strategies for key elements (such as treatment of junctions and accesses, non-motorised users, lay-bys and rest areas, and community engagement) as part of the overall dualling programme.

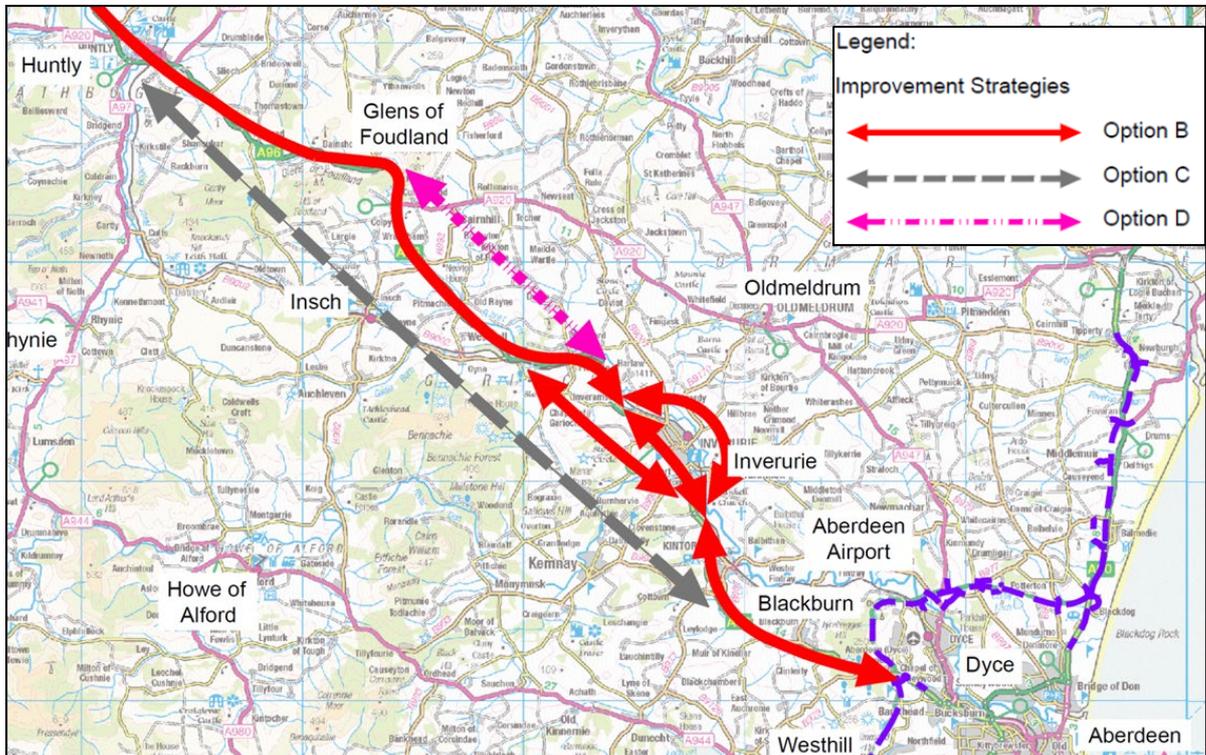
High level improvement strategies were identified comprising a range of approaches to provide a dual carriageway between Inverness and Aberdeen, for example a bypass north or south of towns along the existing A96.

The outcomes of the DMRB Stage 1 Assessment for the East of Huntly to Aberdeen section of the A96 recommended further consideration of the following Improvement Strategies as part of the DMRB Stage 2 assessment process (see also Figure 1.3):

- Improvement Strategy Option B - Existing A96 Corridor with offline bypasses.
- Improvement Strategy Option C - Offline from Huntly to Blackburn.
- Improvement Strategy Option D - Offline from Glens of Foudland to north - west of Inverurie.

### 1.3 Further Work Done to Date by AmeyArup

Between October 2017 and February 2018, AmeyArup undertook a Corridor Options Appraisal. The Corridor Option Appraisal subdivided the Corridor Areas, which were derived from the DMRB Stage 1 Improvement Strategies (Figure 1.3), into Corridor Options.



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Figure 1.3 – DMRB Stage 1 Improvement Strategy Options

The Corridor Options were developed taking account of identified significant constraints and groups of serious constraints, which were used to create High Impact Areas (HIAs). The HIAs represented initial areas to be avoided where possible for the proposed Corridor Options. A description of the Corridor Options (including the development of HIAs) and the appraisal carried out on them is described in detail in the Corridor Options Workshop Report but has not been reproduced in this document.

First Fix Alignments were then developed within the better performing Corridor Options carried forward for further appraisal. The First Fix Alignment Workshop was held on 19 April 2018.

### 1.4 Purpose of this Report

The purpose of this report is to outline the design and assessment work undertaken as part of the First Fix Alignment Development. It also records the outcomes of the First Fix Alignment Assessment undertaken by AmeyArup as part of the DMRB Stage 2 Assessment process between February and April 2018.

Section 2 summarises the option development work done to date in preparation for the workshop including a summary of the methodology used, as described at the workshop.

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The purpose of the workshop and its objectives are described in Section 3.

Section 4 describes a summary of the First Fix Alignment Appraisal, followed by an account of the issues raised and the main outcomes of the workshop itself in Section 5 and 6. Section 7 summarises the design development work that has taken place following the First Fix Alignment Workshop, as part of the Second Fix Alignment development to form end to end Alignments.

## 2 Pre-Workshop Option Development

### 2.1 Option Development Phases

As outlined in the introduction in Section 1, AmeyArup have been commissioned to develop Improvement Strategy Options B, C and D from DMRB Stage 1 into defined dualling options for assessment through DMRB Stage 2, using a progressive option development and appraisal process.

The option development and appraisal methodology adopted is shown in Figure 2.1 with text that outlines how this is used to realise a preferred option for further development and assessment at DMRB Stage 3.

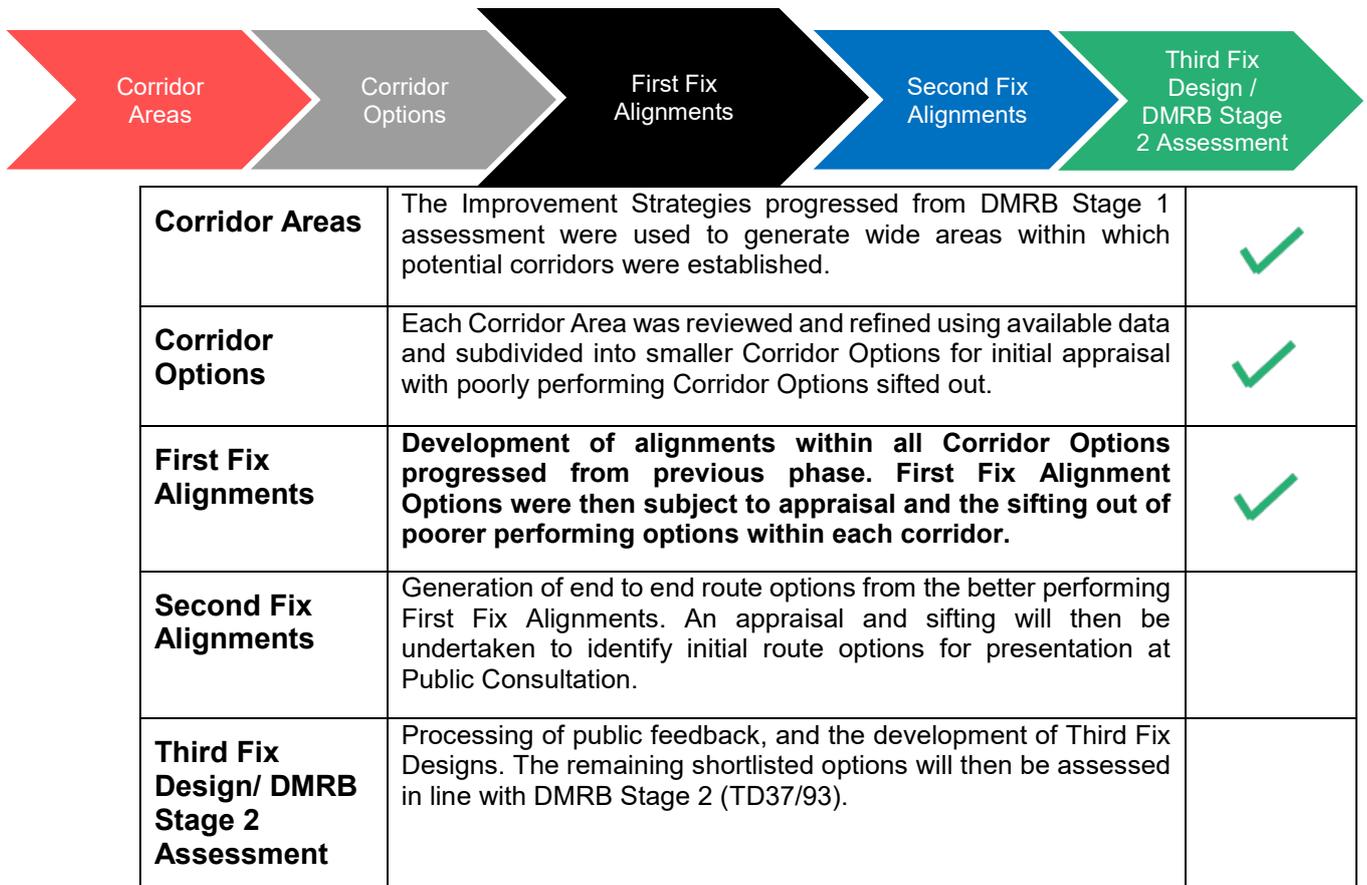


Figure 2.1 – Option Development Process

### 2.2 First Fix Alignments

The First Fix Alignments have been developed within the Corridor Options carried forward for further assessment and do not represent complete end to end alignments from east of Huntly to Aberdeen. The First Fix Alignments were intended to assess the feasibility of alternative alignments spread across the Corridor Options and have been developed as 80m wide lines. [Note: The first fix alignments will be subject to further development as the scheme progresses as will the location and form of junctions. Connections to local accesses and Non-

Motorised User routes will be developed following the identification of the preferred route option.]

Full end to end alignments will be developed and assessed as part of the Second Fix Alignment development.

It was acknowledged that one alignment is unlikely to offer the best end to end solution within a Corridor Option. As a result, a range of alignments are needed to find the better performing sections of alignment within a Corridor Option and assess the Engineering and Environmental constraints of an area.

In total, 80 First Fix Alignments were developed across the 16 remaining Corridor Options. The First Fix Alignments are shown within the Corridor Options on Figure 2.2.

The First Fix Alignments were developed to:

- Avoid remaining High Impact Areas and constraints where possible.
- Be fully compliant with desirable minimum horizontal and vertical geometry standards, as defined by DMRB.
- Represent a geographical spread across each Corridor Option.
- Avoid onerous engineering elements where possible.
- Avoid unnecessary social and environmental impacts where possible.

The First Fix Alignments were geographically spread across the Corridor Options, to ensure that the results of the assessment give a robust appraisal of the topography, engineering and environmental constraints within the Corridor Options.

Due to the high number of First Fix Alignments (80), full descriptions of individual alignments are not included in this report. Drawings were produced for each of the alignments for the assessment process. These plan and profile drawings are included in Appendix A. Table 2.1 provides a summary of the First Fix Alignments within each Corridor Option.

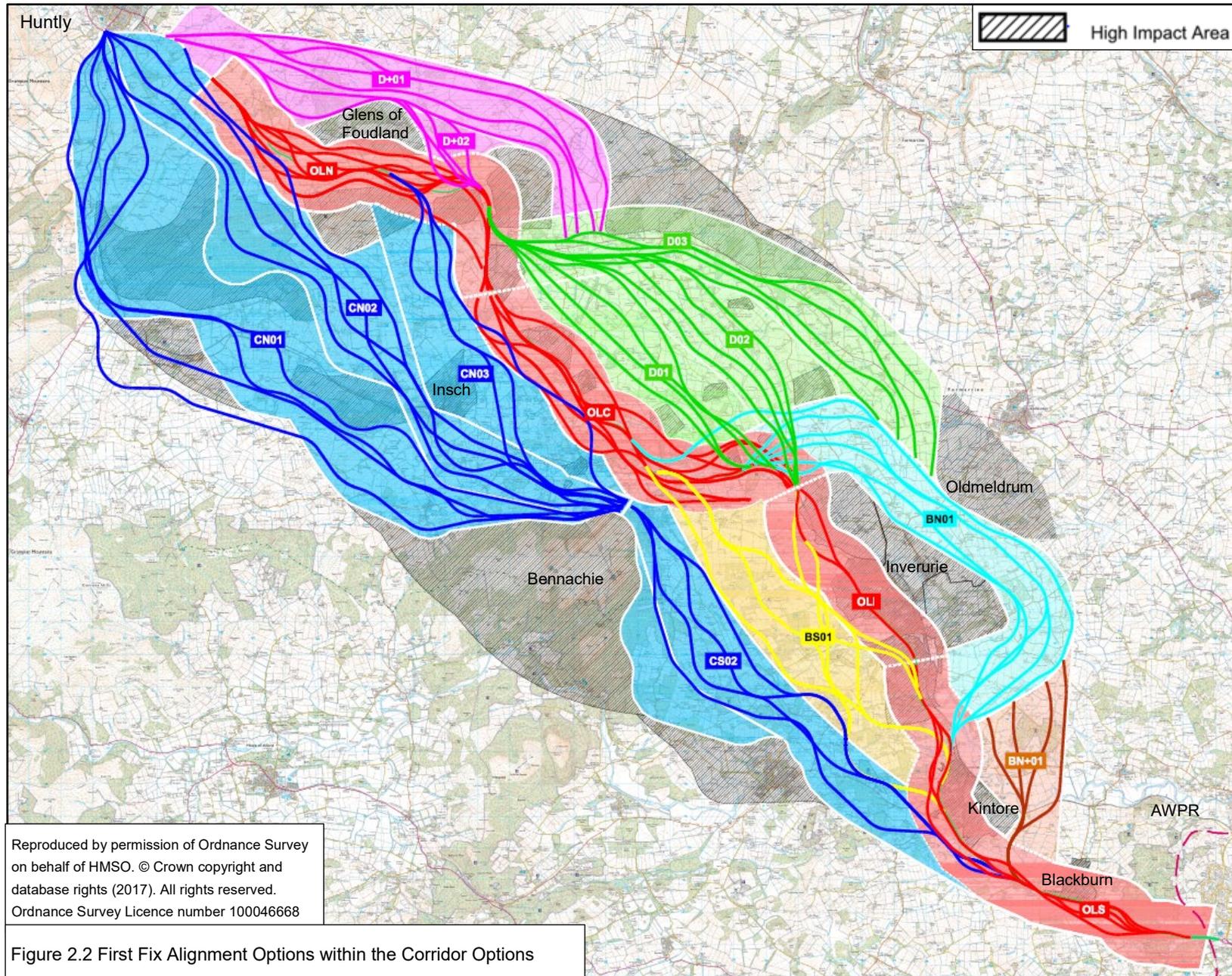
Table 2.1 – Summary of First Fix Alignments within the Corridor Options

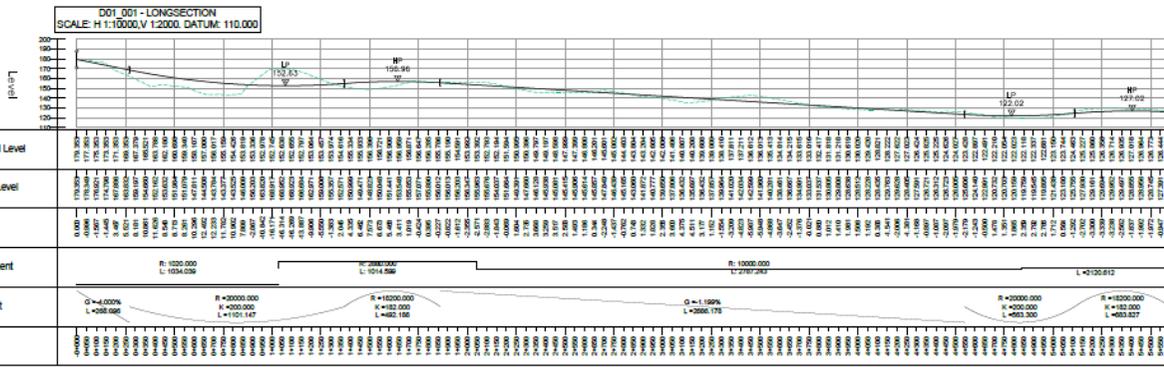
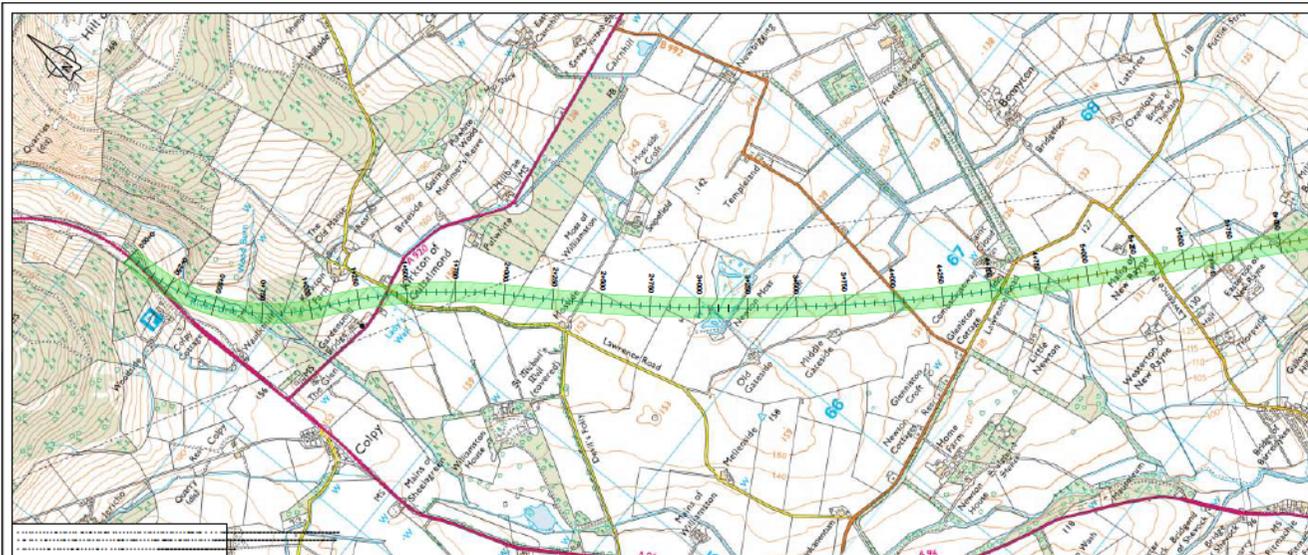
Improvement Strategy Option	Corridor Option	First Fix Alignments
Improvement Strategy Option B	<b>OLS</b> - 2km wide corridor (1km each side of the existing A96 centre line) between the at grade roundabout at Port Elphinstone and the Craibstone Junction at the AWPR.	There is one main alignment within the Corridor which is the existing dual carriageway section of the A96 from Port Elphinstone to Craibstone roundabout. There are multiple short alignment links within the Corridor to test a series of offline options.
	<b>OLI</b> - 2km wide corridor (1km each side of the existing A96 centre line) between the at grade roundabout at Port Elphinstone and terminating at Milton of Inveramsay.	There is one main alignment within the Corridor which is an online improvement of the existing A96 through Inverurie. There are two short link alignments to the west and east of Inverurie
	<b>OLC</b> - 2km wide corridor (1km each side of the existing A96 centre line) from Colpy going south-eastward and terminating near Milton of Inveramsay	There are seven alignments within the Corridor comprising both online and offline options to the north and south of the existing A96. The alignments typically run

Improvement Strategy Option	Corridor Option	First Fix Alignments
		from Colpy to Pitcaple. There are two short alignment links to test the feasibility of options around Pitcaple
	<b>OLN</b> - 2km wide corridor (1km each side of the existing A96 centre line) from east of Huntly to Colpy	There are eight alignments within the Corridor comprising both online and offline options to the north and south of the existing A96.
Improvement Strategy Option B with northern bypass of Inverurie	<b>BN01</b> - Commences at Pitcaple and is an offline northern bypass of Inverurie. The corridor crosses the River Don to reconnect to the existing A96 between Inverurie and Kintore.	There are four alignments within the Corridor and three alignment links. the alignments leave the existing A96 at Pitcaple and Garioch. All alignments tie back into the existing A96 at Kintore.
Improvement Strategy Option B with southern bypass of Inverurie	<b>BS01</b> - Commences at the Chapel of Garioch and runs south east to Kintore. The corridor is an offline southern bypass of Inverurie	There are five alignments within the Corridor which tie into the existing A96 to the north and south of Inverurie at multiple locations.
Improvement Strategy Option C	<b>CS02</b> - Commences at the foot of Bennachie and runs south east to Kintore.	There are four alignments within the Corridor which start at Garioch and tie back into the existing A96 at Kintore.
	<b>CN01</b> - Is the western most corridor in the section north of Bennachie. The corridor commences at Huntly at the A96/A97 roundabout running south and then south east to the tie in point at Bennachie.	There are four alignments within the Corridor. The alignments follow the existing alignments of the Aberdeen to Inverness railway and the A97.
	<b>CN02</b> - Commences at Huntly and runs in a southeast direction to the tie in point at Bennachie.	There are four alignments within the Corridor. The alignments start at Huntly and run parallel to the existing A96 in the northern section of the corridor before passing south of Inch and terminating at Garioch.
	<b>CN03</b> - Commences at Huntly and runs in a southeast direction parallel to the OLN Corridor to the tie in point at Bennachie	There are three alignments within the Corridor. The alignments run parallel to the A96, tie into the A96 to the west of the Glens of Foudland, pass to the north of Inch and terminate at Garioch.
Improvement Strategy Option D	<b>D01</b> - Commences to the south of Glens of Foudland at Colpy and continues in a south-easterly direction towards Durno and ties into OLC Corridor at Pitcaple.	There are four alignments within the Corridor. The alignments all leave the existing A96 at Colpy and tie back in to the A96 at Pitcaple. All the alignments run parallel to the existing A96.
	<b>D02</b> - Commences to the south of Tocher and the east of Meikle Wartle. The corridor continues in a south-easterly direction passing to the east of Durno and linking to the BN01 Corridor at Daviot.	There are four alignments within the Corridor. The alignments all leave the existing A96 at Colpy and tie back in to the A96 at Inveramsay.
	<b>D03</b> - Commences to the south of the Glens of Foudland at Colpy and broadly follows the existing A920 route to Daviot where the corridor terminates.	There are four alignments within the Corridor. One of the alignments is an online dualling of the A920. All the alignments leave the existing A96 at Colpy and terminate at the interface with BN01 Corridor.

Improvement Strategy Option	Corridor Option	First Fix Alignments
-	<p><b>D+01</b> - Commences to the east of Huntly and continues eastwards bypassing the Hill of Bainshole and Glens of Foudland before turning southwards to pass through the gap between the Hill of Tillymorgan and the Hill of Rothmaise.</p>	<p>There are four alignments and two alignment linkages within the Corridor. These alignments were developed to access ground at a lower level compared to the existing A96.</p>
	<p><b>D+02</b> - Is to the west of the Hill of Tillymorgan and passes through the gap between the Hill of Bainshole and Glens of Foudland and the Hill of Tillymorgan</p>	<p>There are four alignments within the Corridor which provide linkages between the D+01 and OLN Corridors.</p>
-	<p><b>BN+01</b> - Extends from Kinmuck and aligns due south, across the River Don to the existing A96 to the east of Kintore and to the west of Blackburn.</p>	<p>There are four alignments within the Corridor. The alignments were added to provide an alternative route between a northern bypass of Inverurie and the existing A96 dual carriageway in the event that a tie-in across the River Don at Port Elphinstone was not considered to be feasible.</p>

Appendix A also includes a short guide of how the overall plan showing all of the First Fix Alignments (Figure 2.2) links to the individual plan and profile drawings. An example plan and profile drawing for alignment D01-001 is shown in Figure 2.3.





Revision details					
Rev	By	Checkd	Apprvd	Authz	DDMMYY
P01	S2				
	25/02/18	25/02/18	25/02/18	18/04/18	18/04/18

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Project Name:  
 A96 Dualling East of Huntly to Aberdeen

Drawing Title:  
 D01-001 First Fix Alignment  
 Plan and Profile  
 Sheet 1 of 3

Project Ref. No.	Stage	Scale
250002-92	2	1:10000H   1:2000V @ A1
		Dimensions: M

Drawing Number	Project	Originator	Volume
A96PEA - AMAR - HGN -			
CD	-DR-CH-	001101	
Location		Type	Role

Subsidiary	Subsidiary Description	Revision
S2	Fit for information	P01

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 Figure 2.3 – Example Plan and Profile drawings for First Fix Alignment D01-001

## 2.3 First Fix Appraisal and Assessment

The First Fix Alignments were appraised against the Scheme Objectives (SO) as described in Table 2.2 and STAG criteria (included in Section 4.2).

Table 2.2 – Scheme Objectives

Scheme Objectives - A96 Dualling East of Huntly to Aberdeen
SO 1: To improve the operation of the A96 and inter-urban connectivity through: <ul style="list-style-type: none"> <li>(i) Reduced journey times;</li> <li>(ii) Improved journey time reliability;</li> <li>(iii) Increased overtaking opportunities;</li> <li>(iv) Improved efficiency of freight movements along the transport corridor;</li> <li>(v) Reduced conflicts between local traffic and strategic journeys;</li> <li>(vi) Improved network resilience</li> </ul>
SO 2: To improve safety for motorised and non-motorised users through: <ul style="list-style-type: none"> <li>(i) Reduced accident rates and severity;</li> <li>(ii) Reduced driver stress</li> <li>(iii) Reduced potential conflicts between motorised and non-motorised users</li> </ul>
SO 3: To provide opportunities to grow the regional economies on the corridor through: <ul style="list-style-type: none"> <li>(i) Improved access to the wider strategic transport network;</li> <li>(ii) Enhanced access to jobs and services.</li> </ul>
SO 4: To facilitate active travel in the corridor
SO 5: To facilitate integration with Public Transport Facilities
SO 6: To avoid significant environmental impacts and, where this is not possible, to minimise the environmental effect on: <ul style="list-style-type: none"> <li>(i) The communities and people in the corridor;</li> <li>(ii) Natural and cultural heritage assets</li> </ul> (Refer to STAG Environmental Criteria)

A seven-point scale was used to undertake the appraisal, as outlined in Table 2.3. The decision to move from a five-point scale (Corridor Options appraisal) to a seven-point scale was to allow greater differentiation and more granularity between the adverse impacts (or beneficial impacts) of the alignments to be assessed and to further align with the STAG criteria.

As with the Corridor Options appraisal, no traffic modelling was undertaken as part of the First Fix Alignment appraisal given end to end alignments were not yet developed. Therefore, the traffic and transportation appraisal was carried out qualitatively against baseline conditions, in a similar manner to the previous phase.

Following the appraisal from an engineering, environmental and traffic and transportation perspective, the First Fix Alignments within individual Corridor Options were compared against each other (e.g. all the D01 First Fix Alignments) to identify the better performing alignments or better performing sections of an alignment within the Corridor Option. If there were better performing sections of alignments, these were linked to other alignments (or sections of alignments) within the Corridor Option to form hybrid alignments.

The First Fix Alignments from different Corridor Options were not compared, for example alignments from the D01 Corridor Option were not compared to alignments from the OLC Corridor Option. The purpose of the appraisal was to identify the best performing alignments within each of the Corridor Options.

A seven-point scale with colour coding as shown in Table 2.3 was used for the appraisal.

Table 2.3 Seven-Point Scale

Colour Coding	Assessment
Red	Major Adverse Impact
Orange	Moderate Adverse Impact
Yellow	Minor Adverse Impact
Light Blue	Neutral Impact
Light Green	Minor Beneficial Impact
Medium Green	Moderate Beneficial Impact
Dark Green	Major Beneficial Impact

The appraisal was carried out using criteria and associated metrics as detailed in Appendix B. An appraisal summary is included in Section 4 of this report.

## **3 First Fix Alignment Workshop**

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### **3.1 Purpose of the Workshop**

The main purpose of the First Fix Alignment Workshop was to present the results of the engineering, environmental and traffic and transportation appraisals of 80 First Fix Alignments. The alignments were developed within the Corridor Options taken forward from the Corridor Options Workshop in February 2018 and were appraised within the extent of these Corridor Options. The workshop enabled the ratification of the assessment outcome.

### **3.2 Participants**

Participants were in attendance from the whole of the Project Team including representatives from the Senior Management team, engineering, environmental and traffic and transportation work streams, and Transport Scotland. The full list of participants is contained in the agenda in Appendix C.

### **3.3 Agenda Summary**

The following were the main items discussed. The full agenda and presentation material is contained in Appendix C.

1. Safety Moment;
2. Purpose and Objectives of the Workshop;
3. Presentation of Metrics Used and Process Followed;
4. Detailed Example Review of Corridor D01 (Engineering and Environmental);
5. Summary of Alignments within Other Corridor Options;
6. Workshop Discussion – Challenging Areas; and
7. Summary and Conclusions.

### **3.4 Workshop Notes**

The workshop ran for a full day, with the main focus of discussion being agenda items 3, 4 and 6. Minutes were taken at the workshop and these are contained in Appendix D.

## 4 First Fix Alignment Appraisal Summary

The following section summarises the First Fix Alignment appraisal. This is split into two parts:

- Scheme Objective Appraisal.
- Appraisal using STAG Criteria.

### 4.1 Scheme Objectives Appraisal

The SO used to appraise the First Fix Alignments are as described in Table 2.2.

It should be noted that the 'Improved Network Resilience' sub-category within SO 1 has been scoped out for the First Fix Alignment appraisal. This is because the First Fix Alignments appraisal is a comparative appraisal between alignments within a Corridor Option i.e. performing the same function. The Improved Resilience Metric remains the same as at Corridor Options stage since there is insufficient variation between alignment options within one Corridor Option in terms of geographical location, elevation and other conditions contributing to resilience to undertake a comparative appraisal.

End to end alignments will be developed as part of the Second Fix Alignment development which will allow for a more meaningful comparison on resilience.

It should also be noted that SO6, avoidance of environmental impacts, is covered under the STAG environmental criteria.

Table 4.1 summarises the SO appraisal outlining the scoring assigned under each criterion.

Table 4.1 – First Fix Alignment Appraisal against Scheme Objectives

Corridor Option	First Fix Alignment	Scheme Objectives													
		SO1: To improve the operation of the A96 and inter-urban connectivity through:						SO2: To improve safety for motorised and Non-Motorised Users through:			SO3: To provide opportunities to grow the regional economies on the corridor through:		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:
		i	ii	iii	iv	v	vi	i	ii	iii	i	ii			Covered in STAG
D+01	D+01-001	Blue	Green	Green	Light Green	Green	Light Green	Green	Green	Blue	Light Green	Light Green	Blue	Light Green	
	D+01-001A	Blue	Green	Green	Light Green	Green	Light Green	Green	Green	Blue	Light Green	Light Green	Blue	Light Green	
	D+01-002	Blue	Green	Green	Light Green	Green	Light Green	Green	Green	Blue	Light Green	Light Green	Blue	Light Green	
	D+01-003	Blue	Green	Green	Light Green	Green	Light Green	Green	Green	Blue	Light Green	Light Green	Blue	Light Green	
	D+01-003A	Blue	Green	Green	Light Green	Green	Light Green	Green	Green	Blue	Light Green	Light Green	Blue	Light Green	
	D+01-004	Blue	Green	Green	Light Green	Green	Light Green	Green	Green	Blue	Light Green	Light Green	Blue	Light Green	
D+ 02	D+02-001	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Blue	Light Green	Light Green	Blue	Light Green	
	D+02-002	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Blue	Light Green	Light Green	Blue	Light Green	
	D+02-003	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Blue	Light Green	Light Green	Blue	Light Green	
	D+02-004	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Blue	Light Green	Light Green	Blue	Light Green	
D01	D01-001	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
	D01-002	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
	D01-003	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
	D01-004	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
D02	D02-001	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
	D02-002	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
	D02-003	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
	D02-004	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
D03	D03-001	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
	D03-002	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
	D03-003	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
	D03-004	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
BN01	BN01-001	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
	BN01-002	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
	BN01-003	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
	BN01-003A	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
	BN01-003B	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
	BN01-003A+B	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
	BN01-004	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green	
BN01-004A	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Light Green	Light Green	Light Green	Light Green	Light Green		
BN+ 01	BN+01-001	Light Green	Green	Blue	Light Green	Green	Light Green	Light Green	Light Green	Blue	Light Green	Light Green	Light Green	Light Green	
	BN+01-002	Light Green	Green	Blue	Light Green	Green	Light Green	Light Green	Light Green	Blue	Light Green	Light Green	Light Green	Light Green	
	BN+01-003	Light Green	Green	Blue	Light Green	Green	Light Green	Light Green	Light Green	Blue	Light Green	Light Green	Light Green	Light Green	
	BN+01-004	Light Green	Green	Blue	Light Green	Green	Light Green	Light Green	Light Green	Blue	Light Green	Light Green	Light Green	Light Green	
CN 01	CN01-001	Blue	Green	Green	Light Green	Green	Light Green	Green	Green	Yellow	Light Green	Light Green	Light Green	Light Green	
	CN01-002	Light Green	Green	Green	Light Green	Green	Light Green	Green	Green	Blue	Light Green	Light Green	Light Green	Light Green	

Corridor Option	First Fix Alignment	Scheme Objectives														Covered in STAG
		SO1: To improve the operation of the A96 and inter-urban connectivity through:						SO2: To improve safety for motorised and Non-Motorised Users through:			SO3: To provide opportunities to grow the regional economies on the corridor through:		SO4: To facilitate active travel in the corridor.	SO5: To facilitate integration with Public Transport Facilities		
		i	ii	iii	iv	v	vi	i	ii	iii	i	ii				
	CN01-003															
	CN01-004															
CN 02	CN02-001															
	CN02-002															
	CN02-003															
	CN02-004															
CN 03	CN03-001															
	CN03-002															
	CN03-003															
CS 02	CS02-001															
	CS02-002															
	CS02-003															
	CS02-004															
BS 01	BS01-001															
	BS01-002															
	BS01-003															
	BS01-004															
	BS01-005															
OLS	OLS-001															
	OLS-002															
	OLS-003															
	OLS-004															
	OLS-005															
	OLS-006															
	OLS-007															
OLI	OLI-001															
	OLI-002															
	OLI-003															
OLC	OLC-001															
	OLC-002															
	OLC-002b															
	OLC-003															
	OLC-004															
	OLC-005															
	OLC-006															
	OLC-006b															
OLC-007																
OLN	OLN-001															

		Scheme Objectives													
		SO1: To improve the operation of the A96 and inter-urban connectivity through:						SO2: To improve safety for motorised and Non-Motorised Users through:			SO3: To provide opportunities to grow the regional economies on the corridor through:		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:
Corridor Option	First Fix Alignment	i	ii	iii	iv	v	vi	i	ii	iii	i	ii			Covered in STAG
	OLN-002														
	OLN-003														
	OLN-004														
	OLN-005														
	OLN-006														
	OLN-007														
	OLN-008														

SO 1 i Reduced journey time; ii Improved journey time reliability; iii Increased overtaking opportunities; iv Improved efficiency of freight movements along the transport corridor; v Reduced conflicts between local traffic and strategic journeys; vi Improved network resilience  
 SO 2 i Reduced accident rates and severity; ii Reduced driver stress; iii Reduced potential conflicts between Motorised and Non-Motorised Users  
 SO 3 i Improved access to the wider strategic transport network; ii Enhanced access to jobs and services  
 SO 6 is covered under the STAG criteria

## 4.2 Appraisal against STAG Criteria

The First Fix Alignment appraisal was also conducted against STAG criteria and sub criteria which are described in Table 4.2 below. Table 4.2 details criteria that are covered by both the STAG and SO appraisals with details of which will be used to avoid double counting.

It was considered that the most appropriate way to split this appraisal was by discipline, namely, engineering, environmental and traffic and transportation.

Table 4.2 Stag Criteria

STAG Criteria	STAG Sub-criteria	Duplication between Scheme Objectives and STAG Criteria
1. ENVIRONMENT	<ul style="list-style-type: none"> <li>- Air quality</li> <li>- Noise and vibration</li> <li>- People &amp; communities</li> <li>- Policies and plans</li> <li>- Materials</li> <li>- Cultural heritage</li> <li>- Landscape and visual</li> <li>- Nature conservation</li> <li>- Geology, soils &amp; contaminated land and groundwater</li> <li>- Road drainage and the water environment</li> </ul>	<p>SO6 is 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 the natural and cultural heritage assets”.</p> <p>This objective is duplicated in the STAG criteria. For avoidance of double counting, it will be considered under the Environmental STAG criteria, as the sub-criteria within STAG give more granularity than the Scheme Objective for the appraisal.</p>
2. SAFETY	<ul style="list-style-type: none"> <li>- Accidents</li> <li>- Security</li> </ul>	<p>The accidents STAG sub-criterion is duplicated under SO2 – “to improve safety for motorised and non-motorised users through reduced accident rates and severity”.</p> <p>For avoidance of double counting, accidents will only be considered under SO2.</p>
3. ECONOMY	<ul style="list-style-type: none"> <li>- Transport Economic Efficiency (TEE)</li> <li>- Wider impacts</li> </ul>	<p>For avoidance of double counting, a qualitative assessment of TEE will be considered under SO 1.</p> <p>Wider impacts will not be considered until appraisal of Second Fix end to end alignment options.</p>
4. INTEGRATION	<ul style="list-style-type: none"> <li>- Transport integration</li> <li>- Transport and land-use integration</li> <li>- Policy integration</li> </ul>	<p>For avoidance of double counting, transport integration will be considered under SO 5.</p>

STAG Criteria	STAG Sub-criteria	Duplication between Scheme Objectives and STAG Criteria
5. ACCESSIBILITY & SOCIAL INCLUSION	<ul style="list-style-type: none"> <li>- Community accessibility to services and public transport</li> <li>- Comparative accessibility by people group and location</li> </ul>	No duplication
6. FEASIBILITY	<ul style="list-style-type: none"> <li>- Alignment &amp; Buildability</li> <li>- Geotechnical</li> <li>- Hydrology (Flood Risk, Flood Plain, River Crossings, Morphology and Catchment Drainage)</li> <li>- Structures</li> <li>- Utilities</li> </ul>	No duplication
7. AFFORDABILITY	<ul style="list-style-type: none"> <li>- Qualitative assessment of cost including commentary on abnormals</li> </ul>	No duplication
8. PUBLIC ACCEPTABILITY	<ul style="list-style-type: none"> <li>- Likely response to option based on feedback from public and stakeholder consultation</li> </ul>	No duplication

It should be noted that the affordability criterion was not quantitatively assessed as part of the First Fix Alignment Appraisals. Affordability is reflected in each engineering discipline's appraisal of the First Fix Alignment options. The complexity and scale of the engineering works is considered to be broadly proportional to the cost and cost risk associated with the capital and maintenance costs. For example:

- Very large structures are identified within the Structures Appraisal
- Abnormal Works such as potential for work in shallow rock or other challenging ground conditions has been identified within the Geotechnical Appraisal
- Flooding and Drainage Appraisals have identified any potential for abnormal works associated with flood compensation and the like
- Potential for major utility diversions or interfaces is identified in the Utilities Appraisal.

#### 4.2.1 Engineering Appraisal

The five engineering disciplines (Alignment, Geotechnics, Hydrology, Structures and Utilities) completed an appraisal for each of the First Fix Alignments. The individual appraisals were then combined to create an overall engineering appraisal for each First Fix Alignment. This information was collated in a tabular format and presented in a graphical output to visually summarise (in 50m sections) the impact or benefit along each of the First Fix Alignments within a Corridor Option. The graphical output of the engineering appraisal of the First Fix Alignments within the D01 Corridor Option are shown in Figure 4.1 as an example.

All the graphical and tabular outputs of the engineering appraisals for the First Fix Alignments are included in Appendix E.

## 4.2.2 Environmental Appraisal

In a similar manner to engineering, the nine environmental disciplines (Landscape and Visual, Cultural Heritage, Policies and Plans, People and Communities, Water Environment, Geology and Soils, Air Quality, Noise and Vibration, and Ecology, with Materials scoped out at this stage) completed an appraisal of each of the First Fix Alignments. The appraisal was based on the impacts without any environmental mitigation measures being adopted. The individual appraisals were then collated to provide an overall environmental impact for each of the First Fix Alignments.

The appraisal was collated in a tabular format and the overall environmental impact was presented graphically on the First Fix Alignment appraisal drawings. Where multiple Major Adverse Impacts were identified in a single location, these were highlighted on the appraisal drawings as areas with significant environmental issues. Figure 4.2 shows the overall environmental appraisal drawing of the First Fix Alignments within the Corridor Option D01, as an example.

All the overall environmental appraisal tables and drawings for the First Fix Alignments are included in Appendix F. Each of the environmental disciplines hold the same weighting for the appraisal. However, certain disciplines where multiple Major Adverse Impacts exist over a number of the Corridor Options, produced individual summary drawings to highlight these constraints. The summary drawings from Landscape, Ecology and Water are included in Appendix G.

## 4.2.3 Traffic and Transportation Appraisal

The appraisal of the Scheme Objectives and five of the eight STAG objectives (Safety, Economy, Integration, Accessibility and Social Inclusion, Public Acceptability) was carried out by the traffic and transportation team. No traffic modelling was carried out at this stage and therefore the assessment was a largely qualitative appraisal of the likely impacts of each First Fix Alignment against baseline conditions. There was some high level quantitative assessment where possible, e.g. assessment of potential change in journey time compared to existing A96 using speed/distance/time assumptions.

Given the strategic nature of many of the Scheme Objectives and the scale of the First Fix Alignments being compared at this stage, there is often little to differentiate between alignments within the same Corridor Option from a traffic perspective. Therefore, the differentiating factors between First Fix Alignments, are largely determined by the alignment's potential to connect with settlements, existing and proposed development areas, the impact on existing NMU facilities and potential public response to the alignments.

It should be noted that both the junction and NMU strategies are still in development and therefore high-level assumptions have been made in relation to the level of provision.

The appraisal was captured in an assessment table with commentary detailing the justification for the scoring. The tabulated Traffic and Transportation appraisals are included in Appendix H.

## 4.3 Combined Appraisal (The Assessment)

The combined appraisals for engineering, environment and traffic and transportation for the First Fix Alignments within a Corridor Option were then considered together to determine which alignment, or combination of alignments (hybrid) best satisfied the Scheme Objectives and STAG criteria ('The Assessment'). The better performing First Fix Alignments or combination of First Fix Alignments (hybrid) within each Corridor Option were then identified.

A cross-discipline summary of the Assessment of each of the First Fix Alignments, including the chosen First Fix Alignment to be taken forward was completed for each Corridor Option. The Assessment summaries for each of the First Fix Alignments are included in Appendix I. The Assessment summary for the First Fix Alignments within Corridor Option D01 are included in Table 4.3, as an example.

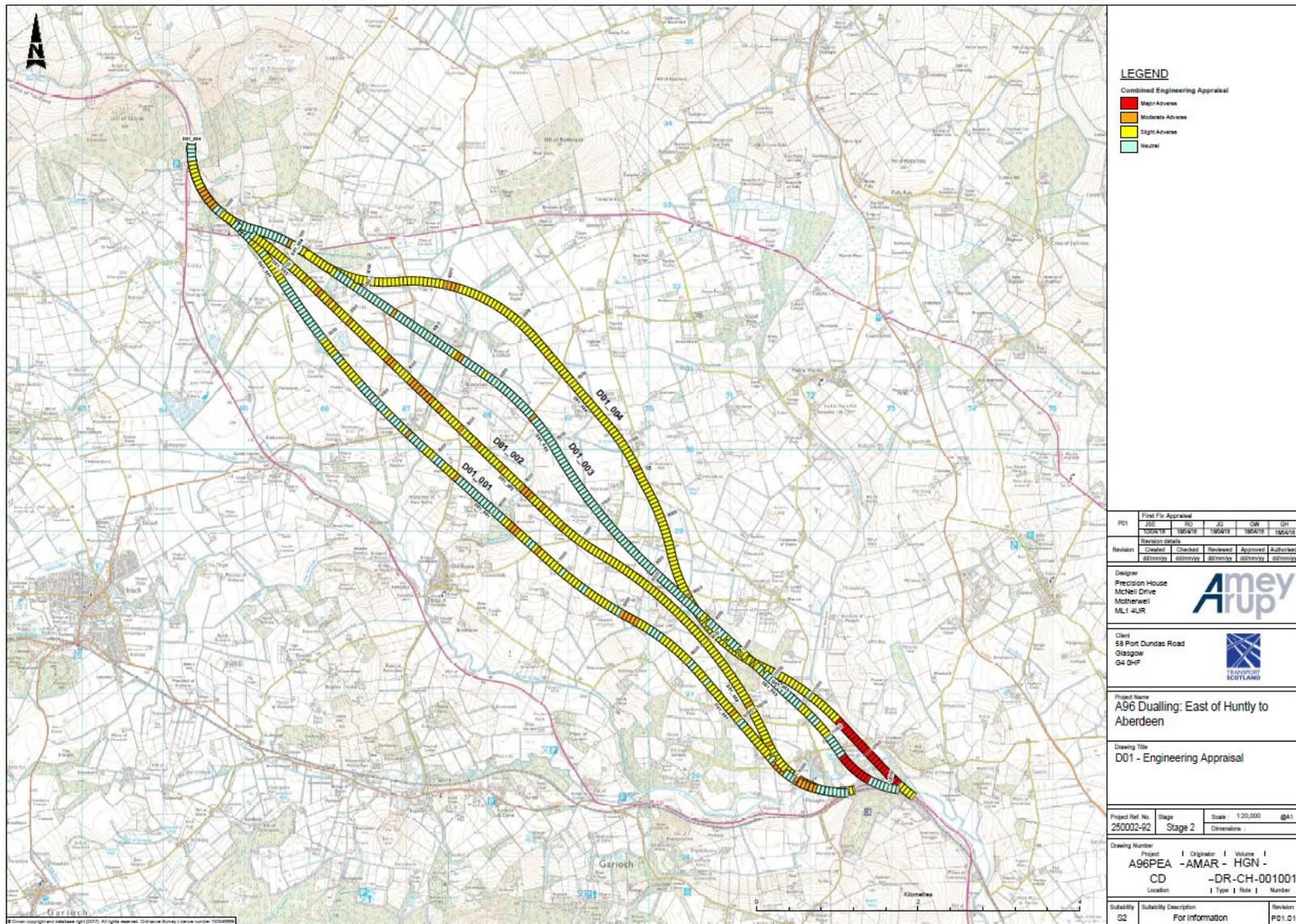


Figure 4.1 – Engineering Graphical Appraisal of First Fix Alignments within D01 Corridor Option

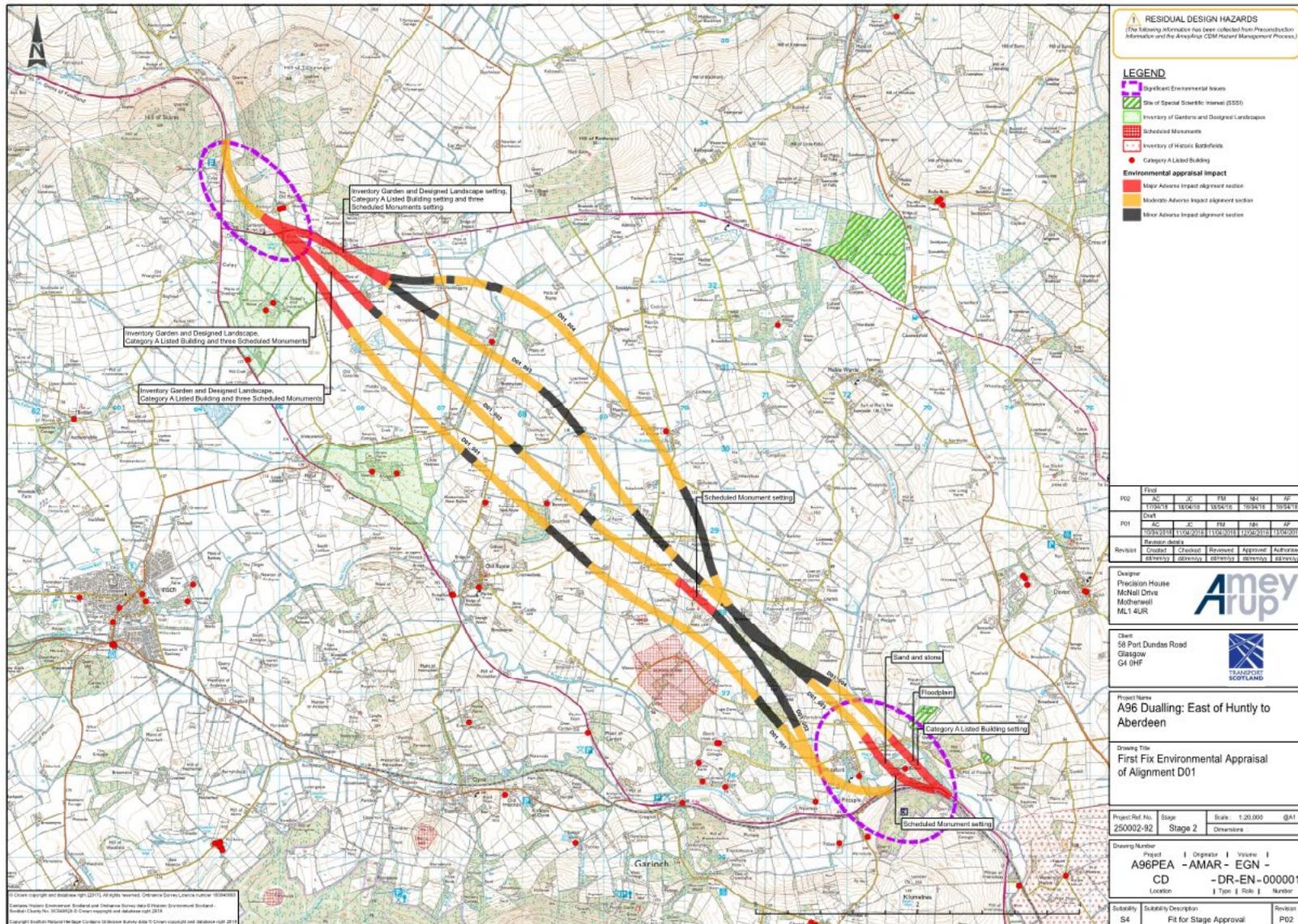


Figure 4.2 – Engineering Graphical Appraisal of First Fix Alignments within D01 Corridor Option

Table 4.3 Cross-Discipline Assessment Summary of First Fix Alignments within Corridor Option D01

Alignment	Environment		Engineering		Traffic		Discipline Review Assessment Commentary
D01-001	Landscape	The appraisal has identified 36% of the alignment as having Major adverse impacts on landscape character. These occur in sections of earthworks over 15m and where new structures will be introduced. To the north, these are caused by impacts on Williamston House Garden and Designed Landscape (GDL), and to the south by loss of ancient woodland and potential impacts on settlements. Moderate adverse impacts are expected for 28% of the alignments, due to earthworks of 5-15m. The overall assessment of the alignment is Moderate adverse.	Alignment	Approx. 11.7km in length	Operation and inter-urban connectivity	A high standard dual carriageway, combined with a shorter distance than the existing alignment, results in a journey time improvement of 3 minutes, better overtaking provision and incident management improving journey time reliability, and increased speed and efficiency of freight traffic.	<p>Traffic</p> <ul style="list-style-type: none"> <li>In traffic terms, all the alignments in D01 perform similarly however D01_001 is closest to the existing A96 and therefore may attract slightly more traffic from communities to the south west. Conversely, it is also the closest to communities to the north east of the existing A96 and may therefore have less community support.</li> </ul> <p>Engineering</p> <ul style="list-style-type: none"> <li>All alignments require a crossing of the River Urie at Colpy - the impact of a structure is very similar for all alignments.</li> <li>All alignments similar in overall length (approx. 1km overall difference between longest and shortest)</li> <li>Alignment D01-003 has the lowest earthworks quantities; whereas D01-002 has the highest earthworks quantities. D01-004 has the most advantageous earthworks balance.</li> <li>Similar number of structures associated with each alignment</li> <li>Larger structure associated with alignment option D01-004 at Pitcaple, alignments 001, 002 and 003 have smaller structures.</li> <li>D01-002 is influenced by the 275KV pylon running parallel for approx. 4.8km before crossing under the line. 001 has 3 crossings of the 275kv line, 003 and 004 has one crossing identified.</li> <li>The combination of engineering and environmental impacts in the vicinity of Pitcaple Castle associated with D01-003 and D01-004 suggests D01-001 and D01-002 would be preferable at the southern tie in.</li> </ul> <p>Environmental</p>
	Water	Route crosses the extensive floodplain of the River Urie (ch.11200m) and is perpendicular to flow (moderate adverse). Potential requirement for river realignment and potential active morphology at crossing of River Urie at ch.650m (moderate adverse). There may be limited scope for realignment at this location due to confined nature of the floodplain.	Earthworks	Bulk Cut – 1,284,569m <sup>3</sup> Bulk Fill - 1,086,986m <sup>3</sup> Surplus - 197,583m <sup>3</sup> *no allowance for structures	Safety for motorised and non-motorised users	Improving the quality and reducing the frequency of junctions removes conflicts. A high standard, more predictable dual carriageway alignment allows for overtaking opportunities which reduces accident risk and driver stress. The route severs core paths at Old Rayne, Logie Woods and Whiteford, but provision to maintain connectivity is assumed. Users of footpaths of the A96 in the villages of Colpy, Pitmachie and Pitcaple will experience improved safety due to reduced traffic levels.	
	Ecology	The very northern part of the alignments all incur a moderate adverse impact due to the northern end of all four cutting through a local designated site (Foudland Local Nature Conservation Site), however the remaining parts of all alignments are generally only slightly ecologically adverse and so, overall, each has only scored slight instead of moderate. All four alignments cut through an area of ancient woodland in the east and across a few watercourses, however, this area appears to be largely agricultural so many of the watercourses are actually field drains with only a few exceptions. It is assumed that no realignment of the watercourses is needed.	Geotechnical	Embankments >10m on potentially compressible soils Peat identified at ch 3050 – 3300	Promoting regional economic growth	Moderate improvement in access to jobs and wider strategic transport network due to journey time reduction.	
	People and communities	Prime and non-prime agricultural land is located along section and the alignment passes through large areas of class 3.1 land. There are no class 1 or 2 areas of land.	Structures	10no. Underbridges 4no. Overbridges New Underbridge crossing the River Urie and flood plain at Colpy - total Length is 250m New Underbridge crossing the River Urie and flood plain at Pitcaple - total Length is 250m	Facilitating active travel	Retention of the core paths must be accommodated in the design of this alignment. There are opportunities to improve existing NMU facilities such as surfacing and cycle/pedestrian segregation. Reduced traffic on the existing A96 will make the existing alignment more attractive to NMUs.	
	Noise and air quality	There is minor or negligible potential change to level of the existing noise climate, resulting from the introduction of new roads and/or rerouting of existing traffic. Minor changes to the noise climate around Old Rayne which is a community with a relative medium population count.  The baseline alignment between Huntly and Inverurie is sparsely populated. The new alignment moves the road to a similarly sparsely populated area. All of the alignments are distinct from inhabited areas with population seemingly <10ppl/km along much of their length. This alignment is <200m from	Hydrology	2 active flood plain crossings – River Urie at Colpy (150m) and River Urie at Pitcaple (200m) Bonnyton Burn crossing Numerous small crossings and tributary diversions	Integration with public transport facilities	The journey time reduction improves access to Inverurie and Huntly rail stations.	

Alignment	Environment		Engineering		Traffic		Discipline Review Assessment Commentary
		Whiteford settlement area so is classed as minor beneficial.					<ul style="list-style-type: none"> <li>At Pitcaple the crossing of the Urie with alignment D01-004 has a major adverse impact and is worse than the other 3 alignments as it does not take the shortest route impacting to a greater extent upon local environmental constraints.</li> </ul>
Cultural heritage		This alignment intersects with the north-eastern corner of Williamston House GDL (but moving the alignment during design iteration should enable a direct impact to be avoided). As discussed below, the group of heritage assets at this northern end of the alignment form a 'pinch-point', and leave little room for moving the alignment to avoid/ minimise impacts on setting. The alignment runs in close proximity to the end of the tree-lined avenue associated with Freefield House (Listed Building - LB16001), which forms an important part of its setting. This could be acceptable assuming the line of sight along this avenue (including the view towards the 'borrowed landscape' of Bennachie) was maintained, and not obscured by the road or associated landscaping. If this view was disrupted, the effect on the setting of Freefield House may be significant. The proximity of the alignment to The Law cairn (Scheduled Monument - SM12113) is a potential issue. The cairn is intentionally situated to be a prominent landscape feature and to have good views over the surrounding landscape. The current baseline includes a woodland plantation which screens views to the south-west from the cairn. If this was removed, and the views in this direction became more open, the impact of this alignment upon the setting of The Law cairn may be higher (and potentially significant).	Utilities	3no. crossing of SSE 275KV lines 6no.Pylons within 100m of edge of alignment	Integration	Faster journey times have the potential to improve access to the minor LDP allocations at Old Rayne. Improving journey times and reliability fits with policy. There should be no negative impact on local accessibility policy as long as appropriate junctions and crossing points are provided.	<ul style="list-style-type: none"> <li>Alignment D01-001 impacts on the Williamston GDL, however alignments 002, 003 and 004 avoid this.</li> <li>The impact on the setting of Freefield House would mean D01-001 and D01-004 would be more preferable from an environmental setting perspective than D01-002 and D01-003 through this central section of corridor.</li> <li>D01-002, 003 and 004 are in close proximity to the Law Cairn scheduled monument.</li> </ul> <p><b>D01_001 performed best across all disciplines and has been assessed as the better performing alignment however the following amendments are recommended for 2<sup>nd</sup> fix assessment:</b></p> <ul style="list-style-type: none"> <li><b>Shift alignment eastward to avoid encroaching on the Williamston House GDL (ch 1000 – 1500m)</b></li> </ul>
Plans and policies		Route entirely outwith settlement boundaries and Local Development Plan (LDP) allocations. The route does pass through a number of sites which are subject to planning permission for small numbers of houses.	Construction Access & Temporary Disruption/ Traffic Management	Predominately offline construction. Access is possible from the B992 at CH3500. The B992 does not pass through a settlement and links directly to the A96 and A920. Access possible from the C59S at CH 5800. Access from the C59S can either be taken from the B992 or through the settlement of Old Rayne. Access possible from the C82S at CH 10900 and the C76C at CH 11850 however access would be through Whiteford. Access also possible from Unclassified Road at CH 8250 (Access through Old Rayne). Some localised traffic management required.	Accessibility and social inclusion	There should be no negative impact on accessibility as long as appropriate junctions and crossing points are provided. Local road network severance could impact access to services in Inverurie and Insch, although these can be partially accommodated on the existing A96 and A920.	<ul style="list-style-type: none"> <li><b>Check clearances to SSE 275 Pylon Line (ch 1800m).</b></li> <li><b>Minor realignment at Newton Moss to avoid potential peat (ch 3100m).</b></li> <li><b>Further investigation required post first fix around Pitcaple involving discipline specialists from both environmental and engineering to determine potential to achieve an acceptable solution</b></li> </ul>
Soil and geology		Peat in 225m of alignment, large stretches of prime agricultural land, and mineral resources all present.			Public acceptability	There are public concerns for the loss of prime agricultural land and impact on properties in Old Rayne, Durno and Whiteford. Some people showed a preference for a Strategy D corridor option in preference to Strategy C as it is more remote from Bennachie.	

## 5 Workshop Outcomes

### 5.1 Appraisal Outcomes

The following sections summarise the key discussions held at the workshop on the feasibility (engineering), environmental and traffic and transportation appraisal for each of the 80 First Fix alignments within the remaining 16 Corridor Options. Further details of the First Fix Alignment Appraisals and Assessments are contained in Appendix I. The alignment appraisals are in the order that they were presented in the workshop.

It was generally accepted that, based on the level of appraisal conducted, the First Fix Alignments would achieve the Scheme Objectives, with the exception of SO6. This is the environmental objective which was appraised under STAG Criteria. All of the alignments induce environmental sensitivities in varying degrees. Most of the discussion in the following sections is therefore focussed on the engineering and environmental appraisals as opposed to the Scheme Objectives.

The better performing First Fix Alignments from each of the Corridor Options are shown in Figure 5.1.

#### 5.1.1 Health and Safety and CDM

Health and safety was considered throughout the First Fix Alignment development, with hazards being recorded on the project GIS platform. Prior to the completion of the First Fix Alignment assessment, AmeyArup undertook a hazard review to identify hazards that may affect the alignment development. Hazards identified include (but are not limited to) major cuttings, interface with utilities and existing infrastructure, and significant watercourse crossings. These hazards have been identified by the First Fix Alignment appraisal as detailed in the following sections.

#### 5.1.2 Corridor Option D01 Alignment Assessments

There are four First Fix Alignments spread geographically across the D01 Corridor Option (D01-001, D01-002, D01-003 and D01-004). The alignments all leave the existing A96 at Colpy and tie back in to the A96 at Pitcaple. All of the alignments run parallel to the existing A96.

##### Engineering

Generally, the topography is quite rolling for each of the four First Fix Alignments in the D01 Corridor Option. The D01-002 alignment follows the alignment of the SSE pylons which gives a baseline Minor Adverse Impact because of the interface complexities/diversions that could result.

Alignment D01-003 has the lowest earthworks quantities whereas D01-002 has the highest earthworks quantities. D01-004 has the best earthworks balance.

At Pitcaple, all the alignments would need to cross the Durno Burn and River Urie. Alignments D01-001 and D01-002 route to the south of Pitcaple and require an approximately 250m long structure across the River Urie. Alignment D01-003 requires an approximately 400m long structure over the River Urie and Alignment D01-004 requires the largest structure, an approximately 1050m long crossing of the Durno Burn and River Urie. All four First Fix Alignments must cross the floodplains associated with these water courses.

There is limited differentiation between the First Fix Alignments from a geotechnical perspective with all having similar ground conditions and size of earthworks.

## Environment

All First Fix Alignments within the D01 Corridor Option have a Moderate Adverse Impact on landscape and visual receptors, due to the impacts upon Williamston House Garden and Designed Landscape (GDL), and the significant earthworks required.

Alignments D01-001, D01-002 and D01-003 have Moderate Adverse Impacts upon the water environment as they cross the significant floodplain of the River Urie, and alignment D01-004 has a Major Adverse Impact as it crosses the floodplain of the River Urie at a location of active morphology.

All alignments have a Minor Adverse Impact upon ecological receptors due to the presence of the Foudland Local Nature Conservation Site and watercourse crossings.

All alignments have Moderate Adverse Impact upon people and community receptors, which are scattered residential properties (for D01-001 and D01-002) and prime agricultural land.

Alignment D01-001 has Moderate Adverse Impacts upon cultural heritage receptors, as it intersects with the corner of Williamston House GDL.

Alignments D01-002, D01-003 and D01-004 have Major Adverse Impacts due to the impact upon the setting of Scheduled Monuments, listed buildings and for D01-002 it intersects with the north-east corner of Williamston House.

D01-001, D01-002 and D01-004 have Moderate Adverse Impacts upon geology and soils receptors (including mineral resources and Prime Agricultural Land).

## Traffic and Transportation

There is limited differentiation between the First Fix Alignments from a traffic and transportation perspective, however alignment D01-001 is located closest to the existing A96 and could potentially provide the best connection to Inch and the railway station. All alignments contribute positively to the majority of the Scheme Objectives and STAG criteria. Under public acceptability there may be some concern over loss of Prime Agricultural Land.

## Deselected Alignments

D01-002 and D01-004 were assessed as being poorer performing as a result of the engineering and environmental appraisals described previously.

## Selected Alignments

There is limited difference between alignment D01-001 and D01-003 from the assessment in terms of which performs best within Corridor Option D01. However, alignment D01-003 impacts on the setting of a non-inventory GDL and is longer than D01-001. In this instance, a Hybrid solution of D01-001 and D01-003 was not considered.

Alignment D01-001 is the shortest alignment, does not require a crossing of the powerlines, and is closer to Inch. It was agreed that alignment D01-001 performs best across all disciplines within the D01 Corridor Option and will be progressed to Second Fix Alignment Development. The D01-001 alignment will be amended to avoid the Williamston House GDL, where possible.

### 5.1.3 Corridor Option OLN Alignment Assessments

There are eight First Fix Alignments within the OLN Corridor Option (OLN-001, OLN-002, OLN-003, OLN-004, OLN-005, OLN-006, OLN-007 and OLN-008) comprising both online options and offline options to the north and south of the existing A96. The alignments typically run from Huntly to Colpy.

#### Engineering

All alignment options within the OLN Corridor Option have challenging topography (Hill of Skares, Hill and Glens of Foudland and Hill of Bainshole), however the topography for the alignments to the south of the existing A96 is more favourable than those to the north of the A96. The northern alignments cross the Hill of Bainshole and require structures between approximate lengths of 400m and 500m to cross the Glen Water.

Three options (OLN-005, OLN-006 and OLN-008) cross the Glen Water twice to achieve compliant geometry. Alignment OLN-006 cuts through the Hill of Skares and has the largest earthworks in the Corridor Option. Options are likely to involve sections of dualling constructed alongside the de-trunked existing A96, which can be used for local traffic movements and access to properties.

#### Environment

All eight alignments are considered to have significant impacts on landscape character, particularly at the Hill of Skares area, where large scale earthworks are required.

Alignments OLN-001, OLN-002 and OLN-003 have Major Adverse Impacts on the water environment where they cross the River Urie and Glen Water.

Ecological impacts are expected to be significant for all alignments due to the presence of a Wildcat Priority Area covering the majority of this Corridor Option, along with the impacts associated with the watercourse crossings and loss of sensitive habitat.

There are scattered residential properties along all alignments with impacts expected at Colpy.

Two Scheduled Monuments and an A listed building could be indirectly affected by the southern extent of all alignments.

Alignments OLN-002, OLN-004 and OLN-007 pass through areas of small scale committed development.

#### Traffic and Transportation

All alignments perform similarly well against the Scheme Objectives and STAG criteria. There are several existing junctions located along this section of the A96 which provide access to the local road network and it is assumed that a similar level of access will be retained. Alignments which are predominantly offline offer opportunity to utilise the existing A96 as a local connector road to minimise the number of junctions required on the new route.

#### Deselected Alignments

OLN-002, OLN-003, OLN-004, OLN-005 and OLN-006 were assessed as being poorer performing as a result of the engineering and environmental appraisals described previously, particularly with regards to the structures involved and the impact on watercourses.

## Selected Alignments

Alignments OLN-001 and OLN-007 are to be progressed to Second Fix Alignment development, with the possibility of having a hybrid link between OLN-001 and OLN-007 at the Hill of Foudland.

Alignment OLN-008 is also to be progressed to Second Fix Alignment development, although this option would require significant structures at height. The possibility of a hybrid alignment of OLN-008 with the other alignments to the north of the A96 could be considered as part of Second Fix Alignment development to minimise impact on private properties.

### 5.1.4 Corridor Option CN01 Alignment Assessments

Corridor Option CN01 is the western most corridor in the northern section of the Option C Improvement Strategy and there are four First Fix Alignments within the Corridor Option (CN01-001, CN01-002, CN01-003 and CN01-004). The First Fix Alignments were developed to investigate the option of the new A96 passing through lower lying ground and more favourable topography, following the existing alignments of the Aberdeen to Inverness railway and the A97 through the Strathbogie Valley. The possibility of following the route of the railway line was raised by members of the public at the Meet the Team event of November 2017.

All alignments commence to the south of Huntly at the A96/A97 roundabout, running south through Strathbogie, south east past Leith Hall and its GDL, to Garioch at Bennachie and the tie-in point for alignments from CS02.

All CN01 First Fix Alignments could influence the choice of a potential bypass route at Huntly since they emerge to the south of Huntly.

#### Engineering

The CN01 First Fix Alignments are the longest in the northern section, with CN01-002, CN01-003 and CN01-004 circa 27km in length and CN01-001 the longest at approximately 30km.

The alignments commence at the A96/A97 roundabout at Huntly with the requirement to cross the railway line, River of Bogie floodplain and the A97 (Old Military Road) all within the first 1km.

The section through Strathbogie to Leith Hall is approximately 10km in length and presents significant engineering difficulty. The A97 and railway line lie to the immediate west and east of the River Bogie and floodplain. Coupled with the residential properties and farms sporadically located throughout there is limited scope to run adjacent to either the A97 or railway.

CN01-004 runs along the west side of Strathbogie and is located into higher ground with resulting significant earthworks along the full length. Alignments CN01-001 and CN01-002 run along the east of Strathbogie and result in significant earthworks, of up to 40-50 metres in sections and require significant structures to cross the floodplain, railway and A97 at Gartly. CN01-004 avoids the crossing at Gartly due to its position along the west side.

CN01-003 alignment follows the A97, railway and River Bogie route but results in major engineering impacts due to the multiple crossings affecting the floodplain, A97 and railway.

At the Leith Hall section, CN01-002 and CN01-003 run to the immediate north of Leith Hall along the steeper ground of Knockandy Hill and Hill of Corskie with resulting significant earthworks.

Both CN01-001 and CN01-004 track more favourable ground south of Leith Hall with the routing influenced by environmental constraints. CN01-004 runs alongside the railway but through the Leith Hall GDL while CN01-001 is located further to south west taking a wider route to avoid a

cluster of constraints that include properties, SSSI and woodland which positions the alignment out with the SEA boundary.

Beyond Leith Hall, all alignments track south east for circa 13kms over similar topography and constraints before converging at Bennachie. All alignments have sections up to 5km in length where road elevation is in the range of 200-230mAOD. Linkages between CN01 alignments and alignments to the north east (i.e. D Corridors) are not feasible due to High Impact Areas (to the immediate north), high ground and the settlement of Inch. As a result, all of the CN01 alignments route towards the base of Bennachie.

## **Environment**

All the CN01 First Fix Alignments have a Major Adverse Impact on landscape and visual receptors, as they are within the Bennachie Special Landscape Area (SLA) and require large scale earthworks (cuttings) and the introduction of a large structure crossing the water of Bogie, the A97 and the Aberdeen to Inverness railway at Gartly. Other notable issues include the setting of Leith Hall and numerous watercourse crossings.

All alignments with the exception of CN01-004 (Moderate) have a Major Adverse Impact upon the water environment due to the number of watercourse crossings and the potential for active river morphology in these locations.

All alignments have a Major Adverse Impact upon ecological receptors due to the presence of the Wildcat Priority Area, Local Nature Conservation Site, ancient woodland and protected species issues.

All alignments have Moderate Adverse Impact upon people and community receptors, which include scattered residential properties and Prime Agricultural Land. All alignments have Moderate Adverse Impacts for noise, because of the introduction of a road into an area of relatively high population count.

Alignments CN01-001, CN01-002 and CN01-003 have Moderate Adverse Impacts upon cultural heritage receptors, due to the impacts upon settings of various Scheduled Monuments. Alignment CN01-004 had Major Adverse Impacts upon cultural heritage receptors, due to the additional impact upon Leith Hall Garden and Designed Landscape (GDL).

All alignments perform similarly from an environmental perspective, with three Major Adverse Impacts identified.

## **Traffic and Transportation**

The First Fix Alignments in the CN01 Corridor Option are between 2 and 5km longer than the existing A96 between Huntly and Oyne. However, due to the increase in travel speeds and improved standard of road, it is likely that some journey time savings could be gained. However, the CN01 alignments are remote from the existing A96 corridor and therefore traffic may perceive the existing route to be more direct which could limit the level of re-assignment to the new A96.

CN01-001 is the longest of the alignments and is furthest from the settlements of Inch and Kennethmont and therefore offers the lowest potential benefits.

There is likely to be public concern for impact on landscape and wildlife in Strathbogie area and Major Adverse Impact on visual amenity, particularly around the Bennachie area, which is also popular for outdoor pursuits including walking, cycling and mountain biking. There may be a public perception that this Corridor Option could offer improved winter resilience, although it is understood that there are also winter resilience issues on the A97.

## Deselected/Selected Alignments

It was concluded that all First Fix Alignments within the CN01 Corridor Option have significant engineering and environmental challenges.

The environmental issues through Strathbogie resulted in four of the nine environmental disciplines rating the alignments as having a Major Adverse Impact. From an engineering perspective, none of the alignments perform particularly well, with only CN01-004 located to the west side of Strathbogie marginally preferred as it avoided the significant structure at Gartly.

At Leith Hall, the environmental discipline did not support alignments CN01-002 and CN01-003 due to the impact on the setting of Leith Hall and CN01-004 as this route directly through the GDL. Therefore, the only option is CN01-001 and although this avoids Leith Hall and the SSSI it is located out with the SEA boundary. The engineering preference would be for CN01-004 as it is shorter in comparison to the next best performing CN01-001.

For the remaining section of CN01, all alignments perform similarly from an environmental perspective with a Major Adverse Impact on the setting of Bennachie. From an Engineering perspective, all alignments perform similarly, with CN01-001 and CN01-004 being preferred.

No distinction can be made by section from a traffic perspective and overall it is not clear how much strategic or local traffic would redistribute to CN01 due to the length of route and remoteness from the existing A96.

It was concluded that additional work would need to be undertaken to confirm that no First Fix Alignment from the CN01 Corridor Option would be progressed to Second Fix Alignment development (see Appendix J).

### 5.1.5 Corridor Option CN02 Alignment Assessments

There are four First Fix Alignments within the CN02 Corridor Option (CN02-001, CN02-002, CN02-003, and CN02-004). The alignments start at Huntly and run parallel to the existing A96 in the northern section of the Corridor Option before passing south of Inch and terminating at Garioch.

#### Engineering

In the northern section of the CN02 Corridor Option as alignments CN02-002, CN02-003 and CN02-004 emerge from Huntly they cross the River Bogie, the associated floodplain and the Aberdeen to Inverness Railway requiring structures up to approximately 650m long.

All of the alignments within CN02 Corridor Option have challenging and steep sided topography which generate significant earthworks particularly in the middle section associated with Gartly Moor. Alignment CN02-004 has the smallest earthworks around Gartly Moor. All of the First Fix Alignments within CN02 Corridor Option have elevations that are higher than the existing A96.

There is a pinch point (600-700m wide) between Inch and a topography HIA (Hill of Dunnideer and Hill of Christ's Kirk) which forces all of the alignments together at this location.

#### Environment

All alignments have a Major Adverse Impact on landscape and visual receptors, as they are within the Bennachie Special Landscape Area (SLA), and require large scale earthworks.

All alignments have a Major Adverse Impact upon the water environment due to a number of watercourse crossings (Shevock Burn, Gadie Burn, River Bogie) and the potential for active river morphology in these locations.

All alignments have a Major Adverse Impact upon ecological receptors due to the presence of the Wildcat Priority Area, protected species issues, and watercourse crossings.

All alignments have a Moderate Adverse Impact upon people and community receptors, which includes scattered residential properties and Prime Agricultural Land.

All alignments have Moderate Adverse Impacts for noise, because of the introduction of a road into an area of moderate population count.

Alignments CN02-002, CN02-003 and CN03-004 have Moderate Adverse Impacts upon cultural heritage receptors, due to the impacts upon settings of various Scheduled Monuments. Alignment CN02-001 has Major Adverse Impacts upon cultural heritage receptors, as it intersects a Scheduled Monument.

All alignments perform similarly from an environmental perspective, with at least three Major Adverse Impacts identified for each alignment.

### **Traffic and Transportation**

All alignments could offer benefits across the Scheme Objectives and STAG criteria.

CN02-001 and CN02-002 pass closest to Inch and could provide the most direct access to the town and railway station from the trunk road.

At the southern end of the Corridor Option, all alignments pass close to Bennachie area which is popular for recreation with several established walking routes. Interaction between motorised and non-motorised users would need to be managed through appropriate NMU provision and crossing facilities. CN02-004 runs alongside approx. 1.2km of existing core path network (Old A'Deen Turnpike Back O' Bennachie - Essons route) and has the greatest impact on existing facilities. Users of this walking route are currently remote from any road network and therefore will be brought into more direct contact with traffic than at present.

There is likely to be public concern for all alignments regarding impact on landscape, wildlife and recreational use of the area (particularly at Bennachie and Gartly Moor).

### **Deselected Alignments**

Alignments CN02-002, CN02-003 and CN02-004 perform the most poorly due to the crossing of the River Bogie.

### **Selected Alignments**

Given the engineering and environmental constraints associated with the watercourse crossings, Gartly Moor and Inch, CN02-001 alignment is the preferred First Fix Alignment from Corridor Option CN02 to be taken forward to the Second Fix Alignment development.

## **5.1.6 Corridor Option CN03 Alignment Assessments**

There are three alignments within the CN03 Corridor Option (CN03-001, CN03-002 and CN03-003). The alignments run eastwards parallel to the existing A96, tie in to the west of the Glens of Foudland, which is to the north of Inch, and then terminate at Garioch.

## Engineering

All of the alignments within Corridor Option CN03 have challenging topography constraints associated with the Hill of Skares. This has resulted in significant cuttings on all First Fix Alignments within the CN03 Corridor Option. The largest cutting is on alignment CN03-001.

There are significant utilities constraints impacting all the First Fix Alignments within the CN03 Corridor Option including high pressure gas mains which alignments CN03-001 and CN03-002 cross several times.

All of the alignments have multiple water course crossings, requiring sizable structures.

## Environment

All alignments have a Major Adverse Impact on landscape and visual receptors, as they are within the Bennachie Special Landscape Area (SLA) and require large scale earthworks.

Alignments CN03-001 and CN03-003 have Major Adverse Impacts upon the water environment as they cross the significant floodplain of the Shevock Burn. Alignment CN03-002 is moderate adverse as it crosses a number of watercourses where the floodplain is smaller.

All alignments have a Moderate Adverse Impact upon ecological receptors due to the presence of the Local Nature Conservation Site and watercourse crossings.

All alignments have a Moderate Adverse Impact upon people and community receptors, which include scattered residential properties and Prime Agricultural Land.

Alignment CN03-001 has Major Adverse Impacts upon cultural heritage receptors, as it affects the setting of Scheduled Monuments and would be visible in key views from two GDLs at Williamston House and Newton House.

Alignments CN03-002 and CN03-003 have Moderate Adverse Impacts upon cultural heritage receptors, due to the impacts upon settings of various Scheduled Monuments and adjacent Gardens and Designed Landscapes (Williamston House and Newton House).

All alignments perform similarly from an environmental perspective, with Major Adverse Impacts identified on all three alignments.

## Traffic and Transportation

All alignments could offer benefits across the Scheme Objectives and STAG criteria.

Alignment CN03-002 and CN03-003 pass closest to Inch and could provide the most direct access to the town and the potential to provide direct access to existing and proposed employment areas to the north of the town.

CN03-001 offers the least impact on established NMU routes.

No specific comments were raised through previous public consultations, although there may be perceived issues over winter resilience as the alignment at the northern end has similar altitude as the existing alignment. There may also be some concerns over impact on properties and the proximity to Inch and Oyne. The southern end of the option is in close proximity to Bennachie which has been raised as a general concern.

## Deselected Alignments

Alignments CN03-001 and CN03-002 perform the most poorly due to the earthworks involved, the utilities affected and the impacts on the GDLs.

## Selected Alignments

As part of the Second Fix Alignment Development a hybrid alignment between the other CN Corridor Options and the OLC Corridor Option will be considered. Alignment CN03-003 was concluded to be the better performing First Fix Alignment from within the CN03 Corridor Option and will be progressed to Second Fix Alignment development.

### 5.1.7 Corridor Option OLC Alignment Assessments

There are seven First Fix Alignments within the OLC Corridor Option (OLC-001, OLC-002, OLC-003, OLC-004, OLC-005, OLC-006 and OLC-007) comprising both online options and offline options to the north and south of the existing A96. The alignments typically run from Colpy to Pitcaple. Additionally, there are two short First Fix Alignment Links within Corridor Option OLC (OLC-002b, OLC-006b), these alignment links are to test the feasibility of options around the challenging area of Pitcaple.

#### Engineering

A number of the First Fix Alignments within the OLC Corridor Option would have to cross the Aberdeen to Inverness Railway, the River Urie and Durno Burn Watercourse. A Major adverse impact on alignment OLC-002 is the significant structures that are required to cross the various watercourses and associated floodplains.

Alignment OLC-007 which runs parallel to the south of the existing A96 and the Aberdeen to Inverness Railway has a potential impact on properties.

Alignments OLC-005 and OLC-006 have significant earthworks in the southern section of the OLC Corridor Option associated with Gallows Hill, resulting in a Major Adverse Impact.

The First Fix Alignments are heavily constrained around Pitcaple due to the Aberdeen to Inverness railway, Pitcaple Castle, challenging topography, properties and the River Urie, resulting in Major Adverse Impacts.

#### Environment

Significant effects on landscape character are expected for all seven alignments with Major Adverse Impacts from alignments OLC-003, OLC-004, OLC-005, OLC-006 and OLC-007 associated with impacts on Newton House and Williamston House GDLs along with very large scale earthworks at Gallows Hill, Hill of Knockallochie, Croft of Nethererton and Pitcaple.

Major Adverse Impacts on the water environment are identified for all alignments where they cross the River Urie, Gadie Burn, Shevock Burn and The Kellock.

OLC-002, OLC-004, OLC-006 and OLC-007 have Moderate Adverse Impacts on ecology arising from the watercourse crossings and habitat fragmentation of large blocks of ancient woodland and woodland.

Large stretches of each alignment are within Prime Agricultural Land and numerous properties and businesses lie in close proximity to the alignments which could be significantly affected. OLC-002 and OLC-003 lead to potentially noticeable increases in the level of the current noise climate at communities with a relative high population count, including Old Rayne and Whiteford. Additionally, there are a number of areas allocated in the LDP with the potential to be affected.

All alignments are considered to have impacts on cultural heritage with Major Adverse Impacts from alignments OLC-002, OLC-003 and OLC-006 where there are direct effects on Newton

House GDL and the Inventory Historic Battlefield of the Battle of Harlaw, along with impacts on the setting of a number of Scheduled Monuments and Category A listed Pitcaple Castle.

OLC-002 passes directly through Pitcaple/Whiteford settlement and LDP allocated protected green space.

Additionally, Moderate Adverse Impacts are expected on soil and geology from alignments OLC-001, OLC-002, OLC-003, OLC-004 and OLC-005 due to the presence of areas of contaminated land, a geological SSSI (Pitcaple and Legatesden Quarries), mineral resources and large areas of Prime Agricultural Land.

### **Traffic and Transportation**

All alignments could offer benefits across the Scheme Objectives and STAG criteria.

OLC-002, OLC-002b and OLC-003 impact on established core paths and would require management of motorised/non-motorised user interaction.

OLC-001 and OLC-004 make use of the existing A96 which fits with local policy to make use of existing infrastructure and a public desire to use the existing route where possible. However, an offline alignment would also allow the existing A96 to be used as a local connector road or as a shared NMU facility.

There may be public concern for loss of Prime Agricultural Land impacted by offline options OLC-002, OLC-003, OLC-005, OLC-006, OLC-007) and proximity to the settlement at Whiteford (OLC-003, OLC-002).

### **Deselected Alignments**

Alignments OLC-001, OLC-002, OLC-003, OLC-005 and OLC-006 perform the most poorly due to a combination of the impacts described.

### **Selected Alignments**

Alignment OLC-004 to the north of Pitcaple and Alignment OLC-007 to the south of the Aberdeen to Inverness Railway were concluded to be the two better performing First Fix Alignments from within Corridor Option OLC to be progressed to Second Fix Alignment Development. However, at Second Fix Alignment development the OLC-007 alignment would need to be amended to avoid the private properties.

## **5.1.8 Corridor Option BS01 Alignment Assessments**

There are five First Fix Alignments within the BS01 Corridor Option (BS01-001, BS01-002, BS01-003, BS01-004 and BS01-005).

The alignments are a southern bypass of Inverurie and tie into the existing A96 to the north and south of the town. Due to constraints within the corridor, the alignments tie back into the existing A96 at multiple locations. At the northern end of the corridor three of the alignments (BS01-003, BS01-004 and BS01-005) tie into the A96 at Garioch and two of the alignments (BS01-001 and BS01-002) tie into the A96 at Inveramsay.

At the southern end of the corridor two alignments (BS01-001 and BS01-002) tie in at Port Elphinstone and three alignments (BS01-003, BS01-004 and BS01-005) tie in at Kintore.

## Engineering

Due to topographical and environmental constraints, two of the First Fix Alignments within the BS01 Corridor Option (BS01-001 and BS01-002) run directly through Local Development Plan (LDP) land. This land has a planning condition that allows approximately 300 houses to be built without a grade separated junction at Inverurie. This land is a constraint that will have to be reviewed and avoided where possible, whilst considering the impacts of the other constraints on the alignment at Second Fix Alignment development.

All of the First Fix Alignments within the BS01 Corridor Option require significant structures to cross the River Don and its associated flood plain. The largest structure is on alignment BS01-001 which requires an approximate 900m long structure crossing the River Don, the floodplain and side roads.

Two of the alignments within the BS01 Corridor Option (BS01-004 and BS01-005) perform similar functions to the alignments within the CS02 Corridor Option.

## Environmental

All alignments are considered to have Major Adverse Impacts on landscape character with particular sensitivities where the alignments cross through the River Don valley.

BS01-002, BS01-003, BS01-004 and BS01-005 alignments run through Bennachie SLA and will involve considerable earthworks and loss of woodland. Alignment BS01-003 performs the worst in relation to the water environment with Major Adverse Impacts expected from the extensive crossing of the River Don floodplain which is not perpendicular to the direction of flow. The other alignments do cross perpendicular to flow and are appraised to have Moderate Adverse Impacts on the water environment.

Moderate Adverse Impacts on ecology from fragmentation of ancient woodland blocks and woodland which form a habitat corridor from Bennachie to the west of Inverurie are expected from alignments BS01-002, BS01-004 and BS01-005.

The alignments closest to the population centre (BS01-001 and BS01-002) of Inverurie are considered to have Major Adverse Impacts on people and communities with the remaining three alignments having Moderate Adverse Impacts with areas of Prime Agricultural Land found within alignments BS01-003, BS01-004 and BS01-005.

Alignment BS01-003 would potentially lead to a large increase in the level of the current noise climate due to its proximity to communities with a relative high population count, including Inverurie.

All alignments are expected to have significant impacts on cultural heritage with impacts on the setting of a number of Scheduled Monuments expected.

Major Adverse Impacts are identified for areas of land allocated in the Aberdeenshire Local Development Plan (LDP), 2017 from alignments BS01-001, BS01-003 and BS01-004 and BS01-005. In particular, BS01-001 passes through an area of land at Crichton where plans for more than 700 homes, community facilities and industrial development have been recommended for approval in principal.

## Traffic and Transportation

All alignments could offer benefits across the Scheme Objectives and STAG criteria.

BS01-001 and BS01-003 may offer opportunity to directly connect with the proposed development sites at Thainstone and Crichton.

BS01-002, BS01-004 and BS01-005 are more remote from Inverurie and may attract lower volumes of traffic from the existing A96.

BS01-002 potentially impacts on a 1km section of the cycle route and a 600m section of the Old Kemnay Road (Kemnay - Inverurie) which is a proposed link core path.

All alignments offer opportunity to reduce congestion at Port Elphinstone and Blackhall Roundabouts by removing strategic trips but do not address the concerns relating to congestion within Inverurie associated with trips from areas to the north of Inverurie routing through the town to access the A96. These concerns are highlighted in local policy and through comments from public exhibitions to date. Potential impact on the setting of Bennachie could also make this option unacceptable to some.

### **Deselected Alignments**

Alignments BS01-003, BS01-004 and BS01-005 perform the most poorly due to the major impacts on Bennachie SLA.

### **Selected Alignments**

To manage the potential risk of going through the LDP land, it was concluded that two First Fix Alignments should be taken through from the BS01 Corridor Option. First Fix Alignment BS01-001, which would be a southern bypass close to Inverurie will be reviewed and amended where possible at Second Fix Alignment development to avoid the LDP land if possible. The second option is a hybrid alignment following BS01-001 at Hill of Ardtannes and linking to BS01-002 at Kintore, thereby avoiding the LDP land.

## **5.1.9 Corridor Option CS02 Alignment Assessments**

There are four First Fix Alignments within the CS02 Corridor Option (CS02-001, CS02-002, CS02-003 and CS02-004). All the First Fix Alignments start in the northern section of the CS02 Corridor Option at Garioch and tie back into the existing A96 at Kintore at the southern end of the Corridor Option.

### **Engineering**

All of the First Fix Alignments within the CS02 Corridor Option have substantial engineering challenges.

Within the northern section of the CS02 Corridor Option all of the First Fix alignments have significant earthworks around the Bennachie pinch point just south of Garioch.

All of the alignments require major structures between approximately 200m and 400m long to cross the River Don and its associated floodplain.

A number of the First Fix Alignments are affected by numerous utility constraints including high pressure gas mains, a major substation and SSE pylons, particularly in the southern section of the CS02 Corridor Option.

Due to the constraints (engineering and environmental) at Thainstone and Port Elphinstone the CS02 First Fix Alignments do not tie into the existing A96 until Kintore which results in a significant dualled section of the existing A96 not being utilised.

### **Environment**

All four alignments within CS02 are considered to have Major Adverse Impacts on landscape character with sections of each alignment running through Bennachie SLA. Loss of ancient

woodland, large scale earthworks and the new structure required over the River Don contribute to these impacts.

Similarly, all alignments are expected to have Major Adverse Impacts on the water environment from crossing the extensive floodplains of the River Don, Linn Burn and Tuach Burn.

Moderate Adverse Impacts on ecology are identified for all four alignments with areas of sensitive habitat affected throughout the corridor.

All four alignments are considered to have significant impacts on people and communities due to the proximity of residential properties close to the alignments. All alignments are expected to have significant impacts on cultural heritage with impacts on the setting of a number of Scheduled Monuments and one Category A listed building (Harthill castle) expected.

Alignments CS02-001 and CS02-002 pass within close proximity to a number of small scale committed developments and go through Tom's Forest and within the established boundary of Tom's Forest Quarry.

### **Traffic and Transportation**

All alignments could offer benefits across the Scheme Objectives and STAG criteria except Public Acceptability which could be considered as a Major Adverse Impact due to the potential impact on the Bennachie landscape and the associated recreational areas.

Alignments are strategically more direct than the existing A96 and offer potential journey time savings of up to 10 minutes during peak periods. However, the alignments are remote from the main population centres of Inverurie and Kintore and do not provide improved connections to employment, services or public transport in these towns and therefore may not attract significant volumes of trips from the existing A96

All alignments impact on the core path network. CS02-004 also directly impacts on Bennachie Visitor Centre.

### **Deselected Alignments**

It was concluded that no single First Fix Alignment from the CS02 Corridor Option would be taken forward to Second Fix Alignment development due to the major environmental impacts of all four alignments.

### **Selected Alignments**

A hybrid alignment from the CS02 Corridor Option combined with alignments BS01-004 and BS01-005 from the BS01 Corridor Option will be developed as part of the Second Fix Alignment Development.

## **5.1.10 Corridor Option OLI Alignment Assessments**

There is only one main First Fix Alignment within the OLI Corridor Option (OLI-001) since this is an online improvement of the existing A96 which runs from Inveramsay to Port Elphinstone through Inverurie (on the line of the existing A96). There are two short link sections to the west (OLI-002) and east (OLI-003) of Inverurie.

### **Engineering**

The main engineering challenge associated with the First Fix Alignment OLI-001 is the existing development and property constraints within Inverurie. Immediately south of the Blackhall Roundabout existing residential property is adjacent to the existing A96 boundary fence, giving

an available width between fence lines of approximately 21m. The minimum dual carriageway cross section required is 26.1m, resulting in a Major Adverse Impact on the properties adjacent to the existing A96.

A significant structure would be required on First Fix Alignment OLI-001 to cross the River Don and the Upperboat Bridge over the existing A96 if the existing Don Crossing could not be extended. This would require demolition of the existing structure.

Alignment OLI-002 requires a significant structure to cross the Aberdeen to Inverness Railway, River Urie, its flood plain and a local road. This structure would be approximately 650m total length.

## **Environment**

All alignments have significant effects on people and communities due to the proximity to properties, businesses and community facilities. In particular, all routes have a Major Adverse Impact upon properties bounding the existing A96. South of Blackhall roundabout, the proposed road is wider than the available corridor.

Alignment OLI-001 will widen the existing carriageway through Inverurie and is expected to have significant visual impacts on a large number of receptors within close proximity to the A96.

Alignment OLI-002 is also expected to have Major Adverse Impacts on landscape character from substantial earthworks, two crossings of the River Urie and direct impacts upon the Battle of Harlaw site.

Impacts on the water environment are considered to be Major Adverse Impact from alignment OLI-002 where it crosses extensive floodplain of the River Urie and moderate adverse for the crossing of the River Don floodplain by alignment OLI-001. Prime Agricultural Land is located along the route of both OLI-001 and OLI-002.

Alignments OLI-001 and OLI-003 are considered to have Major Adverse Impacts on noise and air quality due to the proximity of the widened road to a large number of receptors.

Major Adverse Impacts on cultural heritage are expected from alignment OLI-002 where it runs through the Inventory Historic Battlefield of the Battle of Harlaw.

Land allocated in the LDP is considered to be adversely affected from alignments OLI-001 and OLI-003 where they pass through the settlements of Inverurie and Port Elphinstone and the Crichton development.

## **Traffic and Transportation**

Automatic Number Plate Recognition (ANPR) data suggests that a significant volume of A96 traffic is generated from areas to the north of Inverurie and must route through the town to access the A96. This traffic joins the A96 at Blackhall and Port Elphinstone Roundabouts and generates peak period congestion and delay.

To maintain adequate access to and from Inverurie, these junctions would require to be replaced by Grade Separated Junctions if the First Fix Alignment option OLI- 001 is progressed to Second Fix Alignment development. However, due to the existing development constraints at Blackhall Roundabout a grade separated junction at the current location would have a Major Adverse Impact on surrounding properties.

## Deselected /Selected Alignments

It was concluded that additional work would need to be undertaken to determine the feasibility of progressing an online improvement (OLI-001) of the existing A96 through Inverurie prior to Second Fix Alignment development (see Appendix K).

### 5.1.11 Corridor Option OLS Alignment Assessments

There is one main First Fix Alignment within the OLS Corridor Option (OLS-001) which is the existing dualled section of the A96 from Port Elphinstone to Craibstone roundabout. There are multiple short First Fix Alignment links (OLS-002, OLS-003, OLS-004, OLS-005, OLS-006 and OLS-007) within the Corridor Option to test a series of offline options.

#### Engineering

The geometry of the existing dual carriageway has been assessed which has identified seven areas where the geometry is less than the Desirable Minimum Standard for a Category 7A dual carriageway (as outlined in DMRB TD 9/93).

Online realignments and localised offline alignments were developed for the areas where sub-standard geometry exists to test the feasibility of coming offline in these locations. The existing settlement constraints of Kintore and Blackburn, have limited the offline alignment options.

Oil pipelines at the eastern end of the OLS Corridor Option may limit the ability to address the existing vertical profile on First Fix Alignment OLS-001. One of the key issues on alignment OLS-001 is the number of accesses and central reserve openings that need closed and grade separation of existing junctions (particularly at Tyrebagger) which are space constrained.

#### Environment

OLS-001 is predominantly online and it is likely that junction improvements can be accommodated with minimal impacts to existing landscape and visual receptors.

The other six alignments are considered to have Major or Moderate Adverse Impacts on landscape character and visual receptors.

Alignments OLS-001, OLS-002, OLS-004 and OLS-005 are expected to have Moderate Adverse Impacts on the water environment where they cross the extensive floodplains of the Bridgealehouse Burn, Black Burn and Tuach Burn.

All alignments are considered to have Minor Adverse Impacts on ecological receptors with the exception of OLS-007 which may result in the loss of and fragmentation to a sensitive area which currently forms a habitat corridor across the A96, linking into ancient woodland mosaic.

Significant effects are expected for people and communities due to the large number of receptors and facilities at Kintore and Blackburn along with scattered properties along the alignments.

OLS-001 may lead to a very noticeable increase in the level of the current noise climate for communities with a relative high population count, such as Blackburn and Kintore. Similarly, alignments OLS-001, OLS-003, OLS-006 and OLS-007 are expected to adversely affect air quality for a large number of receptors.

The setting of a number of Scheduled Monuments are likely to be affected by alignments OLS-002, OLS-003 and OLS-004 with a direct impact on a Scheduled Monument expected from alignment OLS-001.

Areas allocated in the LDP could be adversely affected by alignment OLS-001 and alignments OLS-004, OLS-005, OLS-006 and OLS-007 passing through the Aberdeen City Council green belt and green network.

### **Traffic and Transportation**

The existing A96 along the OLS Corridor Option is dual carriageway with no significant operational issues. Impacts on junction provision are still to be determined through development of Junction Strategy.

The eastern section at Tyrebagger Hill has been highlighted as an Area Requiring Special Attention and it is understood that there may be some winter resilience issues at this location during snowy weather related to gradient, particularly for heavy vehicles. There is also an accident cluster site at Tyrebagger junction associated with turning movements through the gap in the central reservation which would be addressed through provision of the proposed improvements.

There is potential to improve existing NMU facilities along the corridor, including improved crossing facilities and connections to the bus stops which serve Thainstone and Kintore Business Parks. Offline alignments could also allow detrunked sections of existing A96 to be used as part of an improved NMU network (OLS-002, OLS-003, OLS-004, OLS-005, OLS-006). OLS-004 may impact on approximately 400m of existing core path.

Offline improvements may receive a negative response due to impact on properties and land and the costs involved in replicating an existing dual carriageway section.

### **Deselected Alignments**

It was concluded that no offline alignments or sections of alignment for OLS would be taken forward to Second Fix Alignment due to combined engineering and environmental impacts this would induce.

### **Selected Alignments**

Better performing options for the OLS Corridor Option are those that remain online as much as possible (OLS-001). The OLS-001 alignment will be reviewed and amended locally where required at the Second Fix Alignment development stage to accommodate junctions and address the sub-standard geometry.

## **5.1.12 Corridor Option BN01 Alignment Assessments**

There are four First Fix Alignments within the BN01 Corridor Option (BN01-001, BN01-002, BN01-003 and BN01-004). There are three additional alignment links (BN01-003A, BN01-003B and BN01-004A) to test different options in areas with significant constraints (i.e. Pitcaple).

The alignments within the BN01 Corridor Option are all northern bypasses of Inverurie. With the exception of BN01-004 all the First Fix Alignments start by leaving the existing A96 at Pitcaple and tie back into the A96 north of Kintore. Alignment BN01-004 leaves the existing A96 just north of Garioch and ties back into the existing A96 in the same location as the other three First Fix Alignments at Kintore.

### **Engineering**

There are significant constraints for three of the First Fix Alignments within the BN01 Corridor Option (BN01-001, BN01-002 and BN01-003) at Pitcaple which has dictated the location of the alignments. These three alignments then must cross the River Urie and its associated floodplain

which requires a structure between approximately 250m (BN01-002) and 850m (BN01-001) long (Moderate/Major Adverse Impact).

Alignment BN01-004 avoids the constraints at Pitcaple and the significant River Urie crossing but is approximately 8.5km longer than BN01-001 (the shortest alignment within the BN01 Corridor Option).

The existing development constraints of Inverurie and Kintore result in a significant structure (up to approximately 1000m long) being required to cross the River Don, its associated flood plain and the Aberdeen to Inverness Railway, resulting in a Major Adverse Impact.

## Environmental

All alignments apart from BN01-003 and the sub-sections at 003A and 004A have Major Adverse Impacts on landscape and visual due to the large structures required to cross the Rivers Urie and Don at the northern and southern end of the alignments.

Alignments BN01-001, BN01-002, BN01-003, BN01-003A and BN01-004A are expected to have Major Adverse Impacts on the water environment due to extensive crossings of the floodplain that are not perpendicular to the flow. Alignment BN01-003B which merges with alignment BN01-004 performs the best in relation to the water environment as the River Don crossing is perpendicular to the river and the River Urie crossing is where the floodplain is less than 100m wide.

Moderate Adverse Impacts are expected on ecology from alignments BN01-002, BN01-003, BN01-003A, BN01-004 and BN01-004A due to habitat fragmentation, including ancient woodland, effects on watercourses and loss of local nature conservation sites.

Major Adverse Impacts are expected for cultural heritage from alignments BN01-003 and BN01-003A, BN01-004 and BN01-004A due to effects upon the setting of Category A-listed Pitcaple Castle, the Inventory Historic Battlefield of Barra and a number of Scheduled Monuments.

Alignment BN01-004 passes through a number of sites which have planning permission for small numbers of houses. Alignment BN01-003A is close to the geological SSSI at Pitcaple.

All alignments affect Prime Agricultural Land to varying degrees.

All alignments have significant environmental sensitivities at the northern and southern ends. It is considered that BN01-004A performs best at the Pitcaple end by avoiding a number of constraints associated with this area.

## Traffic and Transportation

Within the BN01 Corridor Option, all alignments are likely to offer benefits across the Scheme Objectives and STAG criteria. It is expected that all alignments will attract traffic from the existing A96 and will have the potential to better distribute traffic within the town if a junction is provided with the B9710 to the north of Inverurie.

BN01-001 lies closest to Inverurie and is most likely to attract traffic from both Inverurie and the existing A96. The northernmost alignment (BN01-004) is less likely to be used by traffic from Inverurie but may attract more traffic from the A920. However it is considered that traffic from the A920 will use any of the BN01 alignments.

BN01-001 may also enable a direct connection from an A96 junction to the development areas on the north side of Inverurie.

BN01-001 and BN01-002 do not impact on any existing core paths, however BN01-003 and BN01-004 cross Oldmeldrum to Old Rayne cycle route which uses the local road network.

### **Deselected Alignments**

Alignments BN01-001, BN01-002, BN01-003 and BN01-003A are expected to have Major Adverse Impacts, particularly on the water environment due to extensive crossings of the floodplain and so these are therefore poorer performing.

### **Selected Alignments**

It was concluded that two of the First Fix Alignments performed better and will be taken forward to Second Fix Alignment development. Namely, a hybrid of BN01-004 which avoids Pitcapple and ties into all the D Corridor alignments, tying into BN01-003B at the River Don Crossing. Secondly, a hybrid of alignments BN01-001 and BN01-002 which is closer to Inverurie will also be taken forward.

## **5.1.13 Corridor Option BN+01 Alignment Assessments**

There are four First Fix Alignments within the BN+01 Corridor Option (BN+01-001, BN+01-002, BN+01-003 and BN+01-004). The BN+01 Corridor Option and subsequent First Fix Alignments were added to provide an alternative route between a northern bypass of Inverurie and the existing A96 dual carriageway in the event that a tie-in across the River Don at Port Elphinstone was not considered feasible (i.e. BN01 Corridor Option).

### **Engineering**

There are major utility constraints affecting all of the First Fix Alignments within the BN+01 Corridor option, which include oil pipeline crossings.

All four First Fix Alignments have significant structures associated with crossing the River Don, its floodplain and the Aberdeen to Inverness Railway. Also, there are SSE power lines to the south of the Aberdeen to Inverness railway. It is considered feasible to cross the River Don and the railway and pass under the power lines, although it is a significant risk which has resulted in a Major Adverse Impact.

All of the First Fix Alignments within the BN+01 Corridor Option result in duplication of the existing dualled section of the A96, with limited tangible benefits over the First Fix Alignments within the BN01 Corridor Option.

### **Environmental**

All First Fix Alignments within the BN+01 Corridor Option have Major Adverse Impacts on landscape and visual receptors due to the introduction of a large structure crossing the River Don within a landscape of high sensitivity to change. Similarly, all alignments cross extensive areas of floodplain and are likely to affect active morphology resulting in Moderate Adverse Impacts on the water environment. Alignment BN+01-001 has Major Adverse Impacts on the water environment as it encroaches onto extensive floodplain without taking the shortest route and introduces a potential requirement for river realignment.

Alignments BN+01-002 and BN+01-003 have Moderate Adverse Impacts on ecology due to loss of ancient woodland and the watercourse crossings. All alignments are considered to have a Major Adverse Impact on people and communities due to the impacts on residential properties and Prime Agricultural Land. Alignments BN+01-001, BN+01-002 and BN+003 directly affect

Aberdeenshire canal Scheduled Monument and also affect the setting of a number of other Scheduled Monuments.

The alignments perform similarly from an environmental perspective with Major Adverse Impacts expected from all four alignments. Overall, alignment BN+01-004 is preferred largely because it avoids the direct impact on Aberdeenshire Canal Scheduled Monument.

### **Traffic and Transportation**

The First Fix Alignments within the BN+01 Corridor Option provide limited traffic benefits to Kintore and do not offer more direct connectivity to the surrounding LDP allocations. The perceived benefit from the BN+01 First Fix Alignments are small compared to utilising the existing dualled section of the A96.

### **Deselected Alignments**

The First Fix assessment has demonstrated that there are feasible First Fix Alignments within the BN01 Corridor Option, that tie into the existing A96 between Inverurie and Kintore. An alternative option (BN+01) is no longer considered necessary. It is therefore not proposed to take any First Fix Alignments from the BN+01 Corridor Option through to Second Fix Alignment development.

## **5.1.14 Corridor Option D02 Alignment Assessments**

There are four First Fix Alignments spread geographically across the D02 Corridor Option (D02-001, D02-002, D02-003 and D02-004). The alignments all leave the existing A96 at Colpy and tie back in to the A96 at Inveramsay.

### **Engineering**

All of the First Fix Alignments within the D02 Corridor Option have been assessed to be comparable from an engineering perspective. All four alignments require a significant structure (approximately 650m long) as they leave the existing A96 at Colpy to cross the River Urie and its associated floodplain. Similarly, at the southern end of the First Fix Alignments within the D02 Corridor Option a significant structure of up to 700m in length (D02-002) is required to cross the River Urie and its associated floodplain before tying back into the existing A96 south of Pitcaple.

All of the alignments follow the topography relatively well throughout the D02 Corridor Option and, as a result, there are no significant earthworks.

All of the First Fix Alignment within the D02 Corridor Option would require drainage attenuation around Pitcaple, however, as there is limited area to provide the required storage this has resulted in a Major Adverse Impact.

### **Environmental**

Alignments D02-001, D02-002 and D02-003 have Moderate Adverse Impacts on landscape and visual receptors, due to the cuttings required and the loss of woodland. D02-004 has a Major Adverse Impact, due to the proximity to Meikle Wartle and a crossing of the River Urie.

All alignments have Major Adverse impact upon the water environment as they cross the floodplain of the River Urie, at an area of active morphology and with a non-perpendicular crossing.

D02-002, D02-003 and D02-004 have Moderate Adverse Impacts upon ecological receptors due to impacts upon the River Urie and Local Nature Conservation Sites. D02-001 has a Minor

Adverse Impact upon Foudland Local Nature Conservation Site. All other alignments have a Moderate Adverse Impact upon ecological receptors due to the presence of Local Nature Conservation Sites (Cairnhill, Pitscurry Moss and Foudland) and watercourse crossings.

All alignments have Moderate Adverse Impact upon people and community receptors, which include scattered residential properties and Prime Agricultural Land.

All alignments have a Moderate Adverse Impact upon cultural heritage receptors, as they intersect the northwest corner of the Battle of Harlaw Inventory Historic Battlefield, causing a direct impact and run in close proximity to Williamston House GDL.

D02-002, D02-003 and D02-004 have Moderate Adverse Impacts upon planning and policies as they are immediately adjacent to small scale committed housing development.

### **Traffic and Transportation**

All alignments within D02 perform similarly against the Scheme Objectives and STAG criteria.

Without modelling it is unclear whether trips from south of the existing A96 would travel to an alignment within D02 and may instead choose to continue using the existing A96. Similarly, trips from north of the A920 may also continue to use the A920 rather than travelling the additional distance to the new A96.

### **Deselected Alignments**

D02-002, D02-003 and D02-004 are poorer performing due to their combined engineering and environmental impacts described previously.

### **Selected Alignments**

It was concluded that the better performing First Fix Alignment from the D02 Corridor Option to be taken forward to Second Fix Alignment development is D02-001 with a hybrid at the western end of the alignment to reduce the length and impacts of structures required.

## **5.1.15 Corridor Option D03 Alignment Assessments**

There are four First Fix Alignments within the D03 Corridor Option (D03-001, D03-002, D03-003, D03-004). The alignments generally follow the existing A920 with alignment D03-003 being an online dualling of the A920. All of the First Fix Alignments in the D03 Corridor Option leave the existing A96 at Colpy and terminate at the interface with Corridor Option BN01.

### **Engineering**

As with the First Fix Alignments in the other D Corridor Options, all of the alignments in Corridor Option D03 require a significant structure (approximately 650m long) as they leave the existing A96 at Colpy to cross the River Urie and its associated floodplain. Alignment D03-002 has a significant floodplain crossing associated with Bonnyton Burn watercourse resulting in a Major Adverse Impact.

All of the D03 First Fix Alignments follow the topography relatively well throughout the corridor, as a result there are no significant earthworks.

In the central section of the D03 Corridor Option three of the First Fix Alignments (D03-001, D03-002 and D03-003) route through an area of peat resulting in a Moderate Adverse Impact.

Alignment D03-003 which follows the existing A920 will have an impact on local access along the length of the alignment.

## Environmental

At the northern end of the First Fix Alignments within the D03 Corridor Option, all alignments impact on the setting of Williamston House GDL as they leave the existing A96 at Colpy.

In the central section alignments D03-001, D03-002 and D03-003 have an impact on the Biological SSSI of Wartle Moss.

All of the D03 First Fix Alignments have an impact on the existing settlements and high-quality landscape around Meikle Wartle and Daviot, alignment D03-001 has the greatest impact as it is located closest to the settlements.

Alignment D03-004 has a Major Adverse Impact on the Inventory Battlefield.

All alignments have Moderate Adverse Impacts on landscape and visual receptors, due to the earthworks required and the introduction of a new structure.

D03-001, D03-003, and D03-004 have Moderate Adverse Impacts upon the water environment as they cross the floodplain (<100m) of watercourses, with D03-002 having a major adverse impact as it crosses the extensive floodplain of the Bonnyton Burn.

D03-002, D03-003 and D03-004 have Moderate Adverse Impacts upon ecological receptors as they cut through Local Nature Conservation Sites and ancient woodland mosaic.

All alignments have a Moderate Adverse Impact upon people and community receptors, which include scattered residential properties and Prime Agricultural Land.

D03-001, D03-002 and D03-004 have Moderate Adverse Impacts upon cultural heritage receptors, as they will impact the settings of Scheduled Monuments and Category A listed buildings (Culsalmond Old Parish Church). D03-003 has a Major Adverse Impact upon cultural heritage receptors, as there is one Scheduled Monument (Mummer's Reive cairn) located within the alignment and would cut through the remnants of the non-inventory GDL which forms the setting for Mounie Castle. The proximity of the alignment to the Inventory Historic Battlefield of the Battle of Barra means that there may be a significant effect upon the setting of the battlefield.

All alignments have Moderate Adverse Impacts upon planning and policies as they are immediately adjacent to small scale committed housing developments.

Alignments D03-003 and D03-004 have a Moderate Adverse Impact upon soils and geology, as peat is found in long lengths of the alignment, large areas of Prime Agricultural Land and localised contaminated land (railway, spoil heap) and small areas of mineral resources are also present.

## Traffic and Transportation

All First Fix Alignments within the D03 Corridor Option perform similarly well against the Scheme Objectives and STAG criteria. It is unlikely that trips from south of the existing A96 will use an alignment through D03 and are likely to continue using the existing A96. However, the D03 alignments are likely to attract trips currently using the A920 for travel between Huntly and Inverurie and may also attract new trips from settlements north of the A920.

D03-003 utilises the existing A920 and therefore may be perceived as the alignment which best minimises land take. There is likely to be some concern for loss of Prime Agricultural Land and for impact on properties and local communities such as Durno, Daviot and Whiteford.

An offline alignment would also allow the existing A96 to be used as a local connector road or as a shared NMU facility.

## Deselected Alignments

D03-004 is poorer performing due to the Major Adverse Impact on the inventory battlefield.

## Selected Alignments

It was concluded that a hybrid option of First Fix Alignments D03-001 linking to D03-002 to avoid Meikle Wartle and then switching to D03-003 to avoid the floodplain in the southern section was the preferred First Fix alignment option from Corridor Option D03 to be taken forward to Second Fix Alignment development.

### 5.1.16 Corridor Options D+01 & D+02 Alignment Assessments

Corridor Option D+02 had initially been developed to tie the First Fix Alignments from D+01 Corridor Option into the alignments from the OLN Corridor Option. However, all of the alignments within the D+02 Corridor Option require significant structures and earthworks. There are therefore four main First Fix alignments (D+01-001, D+01-002, D+01-003 and D+01-004) and two First Fix Alignment linkages within the D+01 Corridor Option.

The First Fix Alignments start to the east of Huntly and pass to the north of Tillymorgan and Bainshole. These alignments were developed for the potential to access lower ground for the new A96 compared to the existing A96.

#### Engineering

All of the First Fix Alignments within D+01 Corridor Option have challenging and steep sided topography which generate significant cuttings and valley structures/large embankments. Alignment D+01-004 has significantly less earthworks than the other First Fix Alignments within the D+01 Corridor Option.

In terms of elevation the First Fix Alignments within the D+01 Corridor Option are comparable to the existing A96.

#### Environmental

All alignments have Major Adverse Impacts on landscape and visual receptors due to the large scale earthworks and the introduction of a large structure.

Alignments D+01-001 and D+01-001A have Major Adverse Impacts due to the presence of the Wildcat Priority Area and the number of watercourse crossings, and there are two Local Nature Conservation Sites on D+01-001.

All alignments have a Minor Adverse Impact upon the water environment due to the number of watercourse crossings of the floodplain (of less than 100m).

Alignments D+01-001, D+01-001A, D+01-003, D+01-003A, and D+01-004 have a Moderate Adverse Impact upon people and community receptors, which include scattered residential properties or Prime Agricultural Land.

All alignments have Moderate Adverse Impacts upon cultural heritage receptors, specifically the setting of Scheduled Monuments.

All alignments perform similarly from an environmental perspective, with Major Adverse Impacts for landscape and visual receptors at the western end, and a number of other Moderate Adverse Impacts anticipated.

## Traffic and Transportation

All alignments within D+01 perform similarly well against the Scheme Objectives and STAG criteria. Although alignments are longer than the equivalent section of the existing A96, the improved standard of road and higher travel speeds mean journey times are likely to be comparable with the existing route and will be more reliable.

There is little to differentiate between alignments in transportation terms.

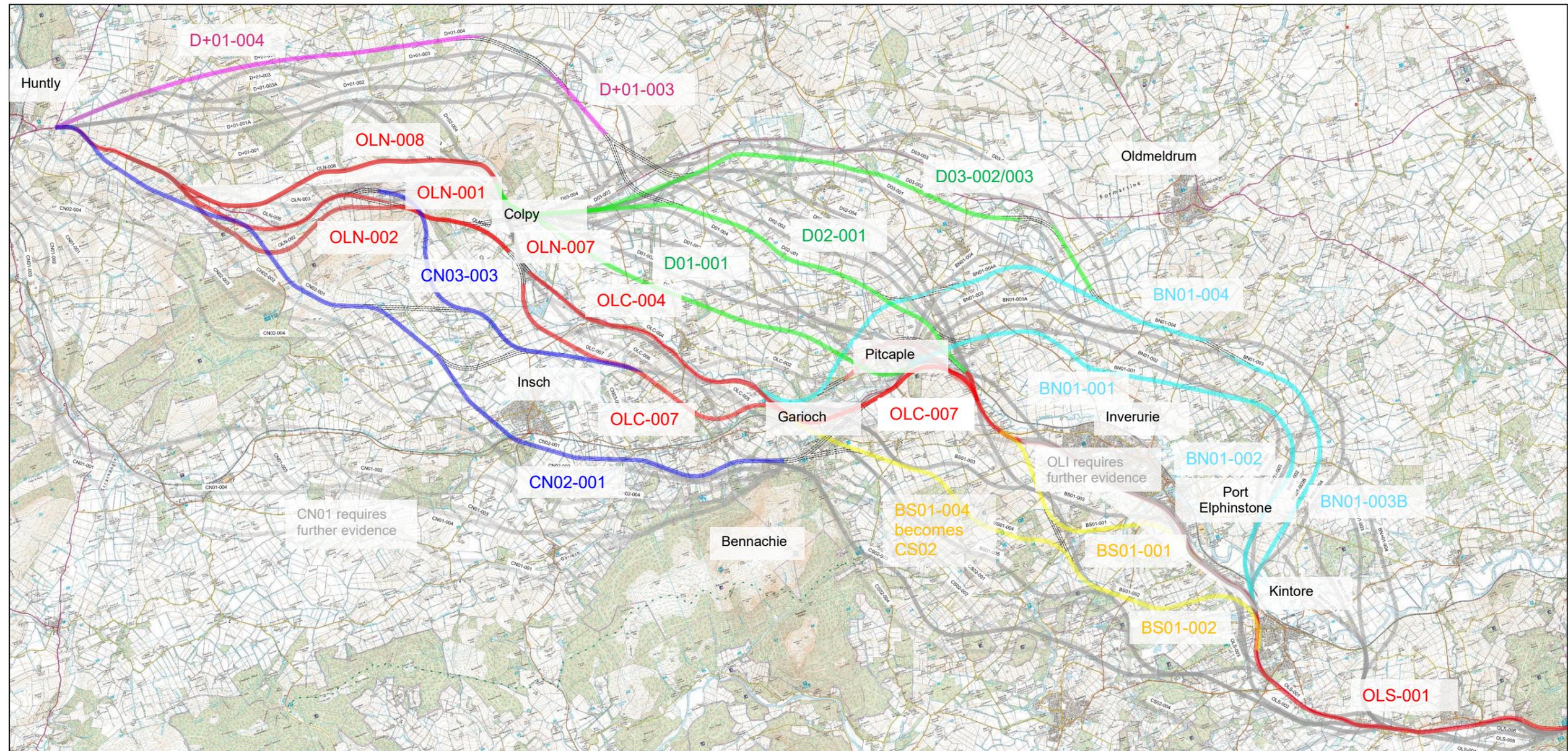
## Deselected Alignments

Alignments D+01-001, D+01-001A and D+01-003A are poorer performing due to the extensive structures and earthworks involved.

The better performing alignment within Corridor Option D+01 is situated furthest from all D+02 alignments. A tie-in to D+02 would require crossing the same challenging terrain as the poorer performing D+01 alignments. There are significant difficulties in achieving a tie-in at Glens of Foudland and there appears to be no real benefit to pursuing this option further as it does not offer any additional advantage in terms of winter resilience. Corridor Option D+02 is not being progressed to Second Fix.

## Selected Alignments

It was concluded that from the D+01 Corridor Option, the preferred First Fix Alignment Option to progress to Second Fix Alignment development is a hybrid option of D+01-004 linking to D+01-003 at Fisherford to allow for a more direct link to the D Corridor Options.



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Figure 5.1 – Selected First Fix Alignments

## 5.2 Post-workshop Actions

A number of actions arose as a result of the discussion during the workshop. The actions are outlined below.

- The First Fix Alignments BS01-001 and BS01-003 from within the BS01 Corridor Option go through the proposed LDP land to the south of Inverurie as discussed under Section 5.1. AmeyArup to review the proposals currently available to the developer and consider the implications of any planning permission conditions. Further information to be obtained on the requirement for a grade separated junction at the existing junction location. As part of the Second Fix Alignment development AmeyArup should also look at alternative options which avoids the LDP land, where possible
- In relation to the First Fix Alignment options within the OLI Corridor Option, AmeyArup to complete further works to further test the feasibility of an online option (OLI-001) through Inverurie including the impacts of a grade separated junction at Blackhall roundabout. Appendix K includes the results of the additional work.
- AmeyArup are to undertake separate study to provide further evidence to support the decision of not taking First Fix Alignments from Corridor Option CN01 forward (Appendix J).
- All existing First Fix Alignments from Corridor Option CS02 are to be dropped and alignment BS01-004 to be moved from the BS01 Corridor Option to the CS02 Corridor Option.
- It was agreed that the OLS First Fix Alignment options for localised offline dual carriageway sections do not merit abandoning the existing dual carriageway. The gradient at Tyrebagger is to be looked at in more detail by AmeyArup to try and resolve gradient issues, which are currently below desirable minimum standards. Access to properties and local roads is also to be reviewed in more detail.

## 6 Overall Workshop Outcomes

The better performing (engineering, environmental and traffic) First Fix Alignments from each of the Corridor Options have been identified through the appraisal and assessment process. These alignments will be progressed to Second Fix Alignment development, where linkages between Corridor Options will be introduced to develop end to end alignments. It was concluded that no First Fix Alignment from Corridor Options CN01, OLI, BN+01, CS02 or D+02 would be taken through to the Second Fix stage.

Table 6.1 summaries the better performing First Fix Alignments from the Corridor Options that have been selected and will be taken through to Second Fix Alignment development.

Table 6.1 – First Fix Alignments Status

Corridor Option	Selected First Fix Alignment(s)
D01	<b>D01-001</b>
OLN	<b>OLN-001</b> , <b>OLN-007</b> and <b>OLN-008</b> with the possibility of having a hybrid link between <b>OLN-001</b> and <b>OLN-007</b> at the Hill of Foudland.
CN01	No First Fix Alignments progressed to Second Fix. Separate study to provide further evidence to support this decision (Refer to Appendix J).
CN02	<b>CN02-001</b>
CN03	<b>CN03-003</b> Hybrid alignments between the other CN Corridor Options and OLN Corridor Options will also be considered.
OLC	Hybrid Alignment of <b>OLC-003</b> , <b>OLC-004</b> and <b>OLC-007</b> . Alignment <b>OLC-007</b> also to be refined.
BS01	<b>BS01-001</b> and a Hybrid alignment of <b>BS01-002</b> and <b>BS01-001</b>
CS02	No First Fix Alignments progressed to Second Fix. However, a hybrid alignment from the <b>CS02 Corridor</b> Option combined with <b>BS01-004</b> and <b>BS01-005</b> will be developed at Second Fix.
OLI	No First Fix Alignment to be progressed to Second Fix Alignment development. Feasibility of an online option through Inverurie to be considered as a separate study. (Refer to Appendix K)
OLS	<b>OLS-001</b>
BN01	Hybrid alignments of <b>BN01-004</b> and <b>BN01-003B</b> and <b>BN01-001</b> and <b>BN01-002</b>
BN+01	No First Fix Alignments progressed to Second Fix.
D02	<b>D02-001</b>
D03	Hybrid alignment of <b>D03-001</b> , <b>D03-002</b> and <b>D03-003</b>
D+01	Hybrid alignment of <b>D+01-004</b> and <b>D+01-003</b>
D+02	No First Fix Alignments progressed to Second Fix.

## 7 Design Development Following First Fix Alignment Assessment

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Following the First Fix Alignment Workshop further design work was undertaken on the better performing First Fix Alignments identified in Section 6 with a view to developing end to end Second Fix Alignments. This included:

- Design development and refinement of the better performing First Fix Alignments to address some of the impacts identified as part of the First Fix Alignment Assessment.
- Developing links (in three dimensions) to connect the better performing First Fix Alignments and to create a series of end to end alignments. These links were rationalised through design development and discipline review.
- Alignments that serve similar functions across discrete sections and are similar in nature were subject to an assessment in line with the “Pairing” methodology described in DMRB TA 30/82. The poorer performing sections were then sifted out along with any associated end to end alignment passing through this section. Checks were undertaken to ensure the sifting out end to end alignments containing these poorly performing sections did not create any gaps in the remaining end to ends at another location.
- The remaining full end to end alignments resulting from the pairing assessments are to be assessed as part of the Second Fix Alignment Appraisal.

Further to the above design development work, there are 52 end to end alignments to be progressed to the Second Fix Alignment Appraisal. The drawing included in Appendix L summarises the reasons for an alignment developed at First Fix not being progressed to the Second Fix Alignment Appraisal.

## Appendix A

### First Fix Alignments Plan and Profile Drawings

Note: The first fix alignments will be subject to further development as the scheme progresses as will the location and form of junctions. Connections to local accesses and Non-Motorised User routes will be developed following the identification of the preferred route option.

## Appendix B

### First Fix Alignments Appraisal Metrics

## Appendix C

### First Fix Alignment Workshop Agenda and Presentation Material

## Appendix D

### First Fix Alignments Workshop Minutes

## Appendix E

### First Fix Alignments - Engineering Appraisal

Note: The first fix alignments will be subject to further development as the scheme progresses as will the location and form of junctions. Connections to local accesses and Non-Motorised User routes will be developed following the identification of the preferred route option.

## Appendix F

### First Fix Alignments - Environmental Appraisal

Note: The first fix alignments will be subject to further development as the scheme progresses as will the location and form of junctions. Connections to local accesses and Non-Motorised User routes will be developed following the identification of the preferred route option.

## Appendix G

### First Fix Alignments - Landscape, Ecology and Water Appraisal Summary Drawings

Note: The first fix alignments will be subject to further development as the scheme progresses as will the location and form of junctions. Connections to local accesses and Non-Motorised User routes will be developed following the identification of the preferred route option.

## Appendix H

### First Fix Alignments - Traffic and Transportation Appraisal

## Appendix I

### First Fix Alignments - Assessment Summaries

## Appendix J

### CN01 Further Investigation – Technical Note

## Appendix K

Online at Inverurie – Dualling  
Feasibility and Appraisal

## Appendix L

### First Fix Alignments to Second Fix Alignment Development

Note: The alignments will be subject to further development as the scheme progresses as will the location and form of junctions. Connections to local accesses and Non-Motorised User routes will be developed following the identification of the preferred route option.



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SCOTLAND**  
CÒMHDHAIL ALBA

**A96**

**DUALLING**

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