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A96 DUALLING
EAST OF HUNTLY TO ABERDEEN

A96 Dualling

East of Huntly to Aberdeen scheme

DMRB Stage 2 Scheme Assessment Report

Volume 4b – Part 6

Appendices (Environmental Assessment)

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A96 Dualling East of Huntly to Aberdeen

DMRB Stage 2 Scheme Assessment Report
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Appendix A9.1 **Local Development Plan Policy Baseline and Assessment**

Appendix A9.1 **Local Development Plan Policy Baseline and Assessment**

Introduction

This appendix supports Chapter 9 Policies and Plans and provides further information on how the route options are predicted to impact the Aberdeenshire Local Development Plan[1](LDP).

All LDP policies were initially assessed to determine their relevance to this DMRB Stage 2 assessment. Not all policies are relevant due to their geographical location or due to the nature of the Scheme e.g. policies relating specifically to other development types such as renewable energy are not relevant.

Some policies are relevant at a scheme wide level as they are not geographically specific to any area and apply equally to all route options e.g. policies on sustainable economic growth and climate change.

Other policies are specifically applicable to certain route options by virtue of their geographical location.

The performance of each route option has been assessed against each of the relevant policies with reference to the criteria set out in Table 1.1 below.

Table 1.1 Local Development Plan Policy Assessment Criteria

Compliance with Policy	Definition
Complies	Route option complies with policy.
Potential non-compliance	Route option would potentially conflict with policy or hinder the achievement of the policy, pending detailed environmental assessment, consideration of mitigation and further consultation. Full assessment appropriate during DMRB Stage 3.
Non-compliance	Route option clearly does not comply with policy.
Uncertain	Information is not yet available to consider performance against policy.
Not relevant	Policy not relevant to route option.

Baseline

Table 1.2 below includes all Aberdeenshire LDP policies, with the relevance of each policy to this assessment stated. Full details of the policies can be found in the Aberdeenshire LDP.

[1] Aberdeenshire Council (2017) *Aberdeenshire Local Development Plan 2017*. Aberdeenshire Council. Available at https://www.aberdeenshire.gov.uk/planning/plans-and-policies/aberdeenshire-local-development-plan-2017/

Table 1.2 Aberdeenshire Local Development Plan Policies

Policy Category	Policy Number	Policy Name	Scheme Wide/Route Options/Not Relevant
Shaping Business Development	Policy B1	Employment and business land	Route options
	Policy B2	Town centres and office development	Not relevant
	Policy B3	Tourist facilities	Not relevant
	Policy B4	Special development areas	Not relevant
Shaping Development in the Countryside	Policy R1	Special rural areas	Route options
	Policy R2	Housing and employment development elsewhere in the countryside	Not relevant
	Policy R3	Minerals and hill tracks	Not relevant
Shaping Homes and Housing	Policy H1	Housing land	Route options
	Policy H2	Affordable housing	Not relevant
	Policy H3	Special needs housing	Not relevant
	Policy H4	Residential caravans	Not relevant
	Policy H5	Gypsies and travellers	Not relevant
Shaping Places – Layout, Siting and the Design of New Development	Policy P1	Layout, siting and design	Not relevant
	Policy P2	Open space and access in new development	Route options
	Policy P3	Infill and householder developments within settlements (including home and work proposals)	Not relevant
	Policy P4	Hazardous and potentially polluting developments and contaminated land	Route options
	Policy P5	Digital infrastructure	Not relevant
	Policy P6	Community infrastructure	Not relevant
Natural Heritage and Landscape	Policy E1	Natural heritage	Route options
	Policy E2	Landscape	Route options
The Historic Environment	Policy HE1	Protecting historic buildings, sites, and monuments	Route options
	Policy HE2	Protecting historic and cultural areas	Route options
	Policy HE3	Helping to re-use listed buildings at risk	Not relevant
Protecting Resources	Policy PR1	Protecting important resources	Route options
	Policy PR2	Protecting important development sites	Route options

Policy Category	Policy Number	Policy Name	Scheme Wide/Route Options/Not Relevant
	Policy PR3	Waste facilities	Route options
Climate Change	Policy C1	Using resources in buildings	Not relevant
	Policy C2	Renewable energy	Not relevant
	Policy C3	Carbon sinks and stores	Route options
	Policy C4	Flooding	Route options
The Responsibilities of Developers	Policy RD1	Providing suitable services	Scheme wide
	Policy RD2	Developers' obligations	Not relevant

Policy Assessment of Route Options

The policy assessment was undertaken with input from the wider environmental team in the DMRB Stage 2 assessment. When considering each of the policies professional judgement was used to balance inputs from the environmental team to form a view as to the overall performance of each route option against each policy.

Each option was assessed with reference to the criteria set out in Table 1.1 of Appendix A9.1 above; the performance of each route option against the relevant policies is presented in Tables 1.3 to 1.4.

Table 1.3 Local Development Plan Scheme Wide Policy Assessment

Topic	Policy Number	Policy Name	Huntly to Colpy		Colpy to Pitcaple		Pitcaple to Kintore	
			Cyan	Red	Pink	Brown	Violet	Orange
The Responsibilities of Developers	RD1	Providing suitable services	Uncertain	Uncertain	Uncertain	Uncertain	Uncertain	Uncertain

Table 1.4 Local Development Plan Policy Assessment

Topic	Policy Number	Policy Name	Huntly to Colpy		Colpy to Pitcaple		Pitcaple to Kintore	
			Cyan	Red	Pink	Brown	Violet	Orange
Shaping Business Development	Policy B1	Employment and business land	Complies	Complies	Complies	Complies	Non-compliance	Non-compliance
Shaping Development in the Countryside	Policy R1	Special rural areas	Complies	Complies	Complies	Complies	Complies	Complies
	Policy H1	Housing land	Complies	Complies	Complies	Complies	Potential non-compliance	Potential non-compliance

Topic	Policy Number	Policy Name	Huntly to Colpy		Colpy to Pitcaple		Pitcaple to Kintore	
			Cyan	Red	Pink	Brown	Violet	Orange
Shaping Homes and Housing	Policy P2	Open space and access in new development	Uncertain	Uncertain	Potential non-compliance	Potential non-compliance	Potential non-compliance	Potential non-compliance
Shaping Places – Layout, Siting and the Design of New Development	Policy P4	Hazardous and potentially polluting developments and contaminated land	Potential non-compliance	Potential non-compliance	Potential non-compliance	Potential non-compliance	Potential non-compliance	Potential non-compliance
	Policy E1	Natural Heritage	Potential non-compliance	Potential non-compliance	Uncertain	Uncertain	Non-compliance	Non-compliance
Natural Heritage and Landscape	Policy E2	Landscape	Potential non-compliance	Potential non-compliance	Potential non-compliance	Potential non-compliance	Potential non-compliance	Potential non-compliance
	Policy HE1	Protecting historic buildings, sites, and monuments	Non-compliance	Potential non-compliance	Potential non-compliance	Potential non-compliance	Potential non-compliance	Non-compliance
The Historic Environment	Policy HE2	Protecting historic and cultural areas	Complies	Complies	Complies	Complies	Complies	Complies
	Policy PR1	Protecting important resources	Potential non-compliance	Potential non-compliance	Potential non-compliance	Potential non-compliance	Potential non-compliance	Potential non-compliance
Protecting Resources	Policy PR2	Protecting important development sites	Complies	Complies	Complies	Complies	Potential non-compliance	Complies
	Policy PR3	Waste facilities	Complies	Complies	Complies	Complies	Complies	Complies
	Policy C3	Carbon sinks and stores	Uncertain	Uncertain	Uncertain	Uncertain	Uncertain	Uncertain

Topic	Policy Number	Policy Name	Huntly to Colpy		Colpy to Pitcaple		Pitcaple to Kintore	
			Cyan	Red	Pink	Brown	Violet	Orange
Climate Change	Policy C4	Flooding	Potential non-compliance	Potential non-compliance	Potential non-compliance	Potential non-compliance	Potential non-compliance	Potential non-compliance

Appendix A9.2 **Local Development Plan Designated Sites Baseline and Assessment**

Appendix A9.2 **Local Development Plan Designated Sites Baseline and Assessment**

Introduction

This Appendix supports Chapter 9 Policies and Plans and presents further information on how the route options perform against Aberdeenshire LDP designated land use sites.

Aberdeenshire Council designates sites for future development/development opportunities, and for safeguarding or protection, generally under the following categories:

- Residential;
- Employment/business/industrial;
- Mixed use;
- Landscape enhancements;
- Amenity areas;
- Environmental areas; and
- Greenbelt.

The impact of each route option on the LDP designations was informed by an assessment of the approximate area of potential land take from each designation with reference to that land take as a percentage of the overall area of designation. Table 1.1 sets out the assessment criteria used. A buffer of 500m was used to identify LDP designations that lie close to the route options. The buffer for the assessment on LDP designations is defined as 500m from the outermost edge of the route options, including the maintenance strip.

Table 1.1 Local Development Plan Assessment Criteria

Impact	Definition
Major	>50% land take resulting in a fundamental reduction in the development capacity of the designated site.
Moderate	10% - 50% land take having a material impact on the capacity of the designated site.
Minor	<10% land take representing a relatively small reduction in capacity of the designated site.

Baseline

This section sets out which Aberdeenshire LDP sites have been considered by the assessment. The designated sites affected by the route options are derived from the LDP Settlement Statements.

Tables 1.2 to 1.7 and Figures 9.1 to 9.11 present the full list of designated sites listed by settlement that are located within the 500m buffer from the outermost edge of each route

option, including the maintenance strip. These include the site reference numbers and site description/location details.

Table 1.2 LDP Designated Sites Within 500m - East of Huntly to Colpy Cyan Route Option

Settlement	Site Reference	Site Description/Location	Designation Category
N/A	N/A	N/A	N/A

Table 1.3 LDP Designated Sites Within 500m - East of Huntly to Colpy Red Route Option

Settlement	Site Reference	Site Description/Location	Designation Category
N/A	N/A	N/A	N/A

Table 1.4 LDP Designated Sites Within 500m - Colpy to Pitcaple Pink Route Option

Settlement	Site Reference	Site Description/Location	Designation Category
N/A	N/A	N/A	N/A

Table 1.5 LDP Designated Sites Within 500m - Colpy to Pitcaple Brown Route Option

Settlement	Site Reference	Site Description/Location	Designation Category
Old Rayne	P1	Old Rayne – site to conserve the playing field as an important local amenity	Protected Areas
Old Rayne	P2	Old Rayne – site to conserve the area of open space, woodland and the river	Protected Areas
Whiteford	P1	Whiteford – site to conserve setting of village	Protected Areas
Old Rayne	OP2	Old Rayne - Barreldykes Allocation: 30 homes, business use and retail use	Opportunity Site

Table 1.6 LDP Designated Sites Within 500m - Pitcaple to Kintore Violet Route Option

Settlement	Site Reference	Site Description/Location	Designation Category
Kintore and Business Park	BUS1	Kintore – site safeguarded for employment use	Existing Employment Land (BUS)
Kintore and Business Park	BUS2	Kintore – site safeguarded for employment uses, a transport interchange & subject to masterplan	Existing Employment Land (BUS)
Kintore and Business Park	Kintore	Kintore - Green Network	Green Network

Settlement	Site Reference	Site Description/Location	Designation Category
Kintore and Business Park	Kintore West	Kintore - Green Network	Green Network
Kintore and Business Park	Kintore	Kintore - Green Network	Green Network
Inverurie & Port Elphinstone	OP8	North of Inverurie - Uryside Phase 2, North Allocation: 465 homes	Opportunity Site
Inverurie & Port Elphinstone	OP9	North of Inverurie - Phase 1 Portstown Allocation: 175 homes	Opportunity Site
Inverurie & Port Elphinstone	OP7	North of Inverurie - Uryside Phase 2, North Allocation: 150 homes	Opportunity Site
Inverurie & Port Elphinstone	OP3	North of Inverurie - Phase 2 Portstown Allocation: 250 homes	Opportunity Site
Kintore and Business Park	OP4	Kintore – Housing land	Opportunity Site
Kintore and Business Park	P2	Kintore – site to conserve Tuach Hill and surrounding area, which contributes to the green network	Protected Areas
Kintore and Business Park	P3	Kintore – site to conserve the playing field, which contributes to the green network	Protected Areas
Kintore and Business Park	P4	Kintore – site to conserve Rollo Mire and Torryburn Wood, which contribute to the green network	Protected Areas
Kintore and Business Park	P5	Kintore – site to conserve Springie Mire, which contributes to the green network	Protected Areas
Kintore and Business Park	R2	Kintore – area for transport interchange and Kintore railway station	Transport Safeguard
Keith Hall	P2	Keith Hall – site to conserve landscape and setting	Protected Areas
Inverurie & Port Elphinstone	R1	North of Inverurie – site for a northern link road and landscaping improvements	Reserved Land
Inverurie & Port Elphinstone	R2	North of Inverurie – site for a Uryside Park and points of access to Uryside	Reserved Land

Table 1.7 LDP Designated Sites Within 500m - Pitcaple to Kintore Orange Route Option

Settlement	Site Reference	Site Description/Location	Designation Category
Inverurie & Port Elphinstone	BUS5	Port Elphinstone – site safeguarded for employment use	Existing Employment Land (BUS)
Inverurie & Port Elphinstone	BUS6	Port Elphinstone – site safeguarded for employment use	Existing Employment Land (BUS)
Inverurie & Port Elphinstone	BUS7	Port Elphinstone – site safeguarded for employment use	Existing Employment Land (BUS)
Inverurie & Port Elphinstone	BUS8	Port Elphinstone – site safeguarded for employment use	Existing Employment Land (BUS)
Inverurie & Port Elphinstone	BUS9	Port Elphinstone – site safeguarded for employment use	Existing Employment Land (BUS)
Inverurie & Port Elphinstone	BUS10	Port Elphinstone – site safeguarded for employment use	Existing Employment Land (BUS)
Inverurie & Port Elphinstone	Dee west	Inverurie	Green Network
Inverurie & Port Elphinstone	Thainstone House	Inverurie	Green Network
Inverurie & Port Elphinstone	Inverurie Mill	Inverurie	Green Network
Inverurie & Port Elphinstone	OP4	Inverurie - Crichie Allocation: 737 homes, including community facilities and a primary school	Opportunity Site
Inverurie & Port Elphinstone	OP11	Inverurie - Crichie Allocation: 23.7 ha of employment land	Opportunity Site
Inverurie & Port Elphinstone	OP12	Inverurie - Adjacent to Axis Business Centre Allocation: 1.5 ha of employment land	Opportunity Site
Inverurie & Port Elphinstone	P1	Inverurie – Site to conserve the landscape setting	Protected Areas
Inverurie & Port Elphinstone	P13	Port Elphinstone – Site to conserve the historic setting, which contributes to the green network	Protected Areas
Inverurie & Port Elphinstone	P15	Inverurie – Site to conserve the landscape setting	Protected Areas
Inverurie & Port Elphinstone	SR1	Inverurie – 9.4 ha of strategic reserve employment land (2027-2035)	Strategic Reserve

Settlement	Site Reference	Site Description/Location	Designation Category
Daviot	P1	Daviot – Land to conserve the landscape setting of Daviot Estate.	Protected Areas

Assessment

This section presents the findings of the designated sites assessment for the route options. Tables 1.8 to 1.10 set out the magnitude of the predicted impacts for each of the route options.

Table 1.8 LDP Designated Site Assessment – East of Huntly to Colpy

Settlement	Site Reference	Site Description/Location	Designation Category	Predicted Impact	Magnitude
Cyan					
N/A	N/A	N/A	N/A	N/A	N/A
Red					
N/A	N/A	N/A	N/A	N/A	N/A

Table 1.9 LDP Designated Site Assessment - Colpy to Pitcaple

Settlement	Site Reference	Site Description / Location	Designation Category	Predicted Impact	Magnitude
Pink					
N/A	N/A	N/A	N/A	N/A	N/A
Brown					
N/A	N/A	N/A	N/A	N/A	N/A

Table 1.10 LDP Designated Site Assessment - Pitcaple to Kintore

Settlement	Site Reference	Site Description/Location	Designation Category	Predicted Impact	Magnitude
Violet					
Kintore	BUS1	Garioch –Safeguarded for employment use	Existing Employment Land (BUS)	0.7% - Clips edge of site	Minor
Kintore	BUS2	Safeguarded for employment use - Garioch	Existing Employment Land (BUS)	13.1% - Impacts on edge of site and approach road passes into centre of site	Moderate
Inverurie & Port Elphinstone	BUS9	Garioch - Safeguarded for employment use	Existing Employment Land (BUS)	<0.1% - clips edge of site	Minor
Kintore West Kintore	Kintore West	Green Network Garioch	Green Space Network	4.9% - Impacts on western edge of designated site	Minor
Inverurie & Port Elphinstone	OP7	North of Inverurie - Uryside Phase 2, North Allocation: 150 homes	Opportunity Site	1.2% - clips edge of site	Minor
Inverurie & Port Elphinstone	R1	North of Inverurie – site for a northern link road and landscaping improvements	Reserved Land	6.9% - clips edge of site	Minor
Kintore and Business Park	R2	Garioch - Transport Safeguard Areas	Protected areas and reserved land	6.7% - clips edge of site	Minor
Orange					
Kintore	BUS1	Garioch –Safeguarded for employment use	Existing Employment Land (BUS)	1.5% - Clips edge of site	Minor
Kintore	BUS2	Safeguarded for employment use - Garioch	Existing Employment Land (BUS)	0.4% - Clips edge of site	Minor
Inverurie	BUS10	Garioch –Safeguarded for employment use	Existing Employment Land (BUS)	<0.1% - Clips edge of site	Minor

Settlement	Site Reference	Site Description/Location	Designation Category	Predicted Impact	Magnitude
Inverurie & Port Elphinstone	BUS5	Garioch –Safeguarded for employment use	Existing Employment Land (BUS)	0.6% - clips edge of site	Minor
Inverurie & Port Elphinstone	BUS6	Garioch –Safeguarded for employment use	Existing Employment Land (BUS)	22% - Impacts on site SuDS basins and landscaping	Moderate
Inverurie & Port Elphinstone	BUS7	Garioch –Safeguarded for employment use	Existing Employment Land (BUS)	<0.1% - Clips edge pf site	Minor
Inverurie & Port Elphinstone	BUS9	Garioch –Safeguarded for employment use	Existing Employment Land (BUS)	3.2% - Clips edge pf site	Minor
Inverurie Mill Inverurie & Port Elphinstone	Inverurie Mill	Green Space Network - Inverurie & Port Elphinstone	Green Network	7% - Impacts on eastern edge of designated site	Minor
Inverurie & Port Elphinstone	OP11	Garioch – Employment land	Opportunity Site	45.6% - Occupies whole southern section of the site	Moderate
Inverurie & Port Elphinstone	OP4	Inverurie - Crichie Allocation: 737 homes, including community facilities and a primary school	Opportunity Site	0.9% - clips edge of site	Minor
Inverurie & Port Elphinstone	SR1	Inverurie – 9.4 ha of strategic reserve employment land (2027-2035)	Strategic Reserve	56.9% - Impacts on centre of site	Major
Thainstone House Inverurie & Port Elphinstone	Thainstone House	Green Space Network – Garioch/Thainstone House	Green Network	8.8% - Impacts on northern edge of designated site	Minor

Appendix A9.3 **Planning Applications Baseline and Assessment**

Appendix A9.3 **Planning Applications Baseline and Assessment**

Introduction

This appendix supports Chapter 9, Policies and Plans, and presents additional information on each route option impact on planning applications in the Aberdeenshire Council area.

The planning applications baseline was established using data provided by Aberdeenshire Council in September 2020.

Planning application data provided by Aberdeenshire Council was initially sifted to discount the following types of applications which were not considered to be material to this assessment:

- Applications more than 500m from a route option;
- Applications submitted to, but not yet validated by, the planning authority for consideration;
- Applications consented more than three years ago except major applications, e.g. mineral applications;
- Applications now built or where construction or operation has started (these developments were considered to form part of the land use baseline);
- Applications on a site that is designated in a Local Development Plan;
- Advertisement consents, Listed Building consents and Certificate of Lawful Development applications;
- Minor applications for building extensions or internal alterations;
- Applications for EIA screening or scoping opinions;
- Applications that have been withdrawn or refused and the appeal period has passed; and
- Applications relating to other projects within the A96 Dualling Programme.

Following a sift of the planning application data provided by Aberdeenshire Council, the assessment was undertaken with respect to valid and consented applications for full planning consent and planning permission in principle.

The performance of each route option has been assessed against the relevant planning applications with reference to the criteria set out in Table 1.1 below.

Table 1.1 Planning Application Assessment Criteria

Impact	Definition
Major	>50% land take resulting in a fundamental reduction in the development capacity of the development site.
Moderate	10% - 50% land take having a material impact on the capacity of the development site.

Impact	Definition
Minor	<10% land take representing a relatively small reduction in capacity of the development site.

Baseline

This section sets out the planning applications which have been considered in the assessment. Tables 1.2 to 1.7 provide details of the planning applications within the 500m buffer from the outermost edge of the route options, including the maintenance strip. These tables set out the application numbers, the application types and status (e.g. awaiting decision or approved), the application address and details of the proposed development.

Table 1.2 Planning Application Sites Within 500m – East of Huntly to Colpy Cyan Route Option

Application Number	Application Type and Status	Development Proposal	Application Address
APP/2016/1903	Local – Approved	Alterations and Extension to Architectural Design Studio	Midtown Glens of Foudland Huntly Aberdeenshire AB54 6AR
APP/2017/1063	Local – Approved	Erection of Eco Bothy (Class 10 Non-residential Institutions)	Greenmyres Drumblade Huntly Aberdeenshire AB54 6AG
APP/2018/1595	Local – Approved	Erection of Dwellinghouse (Change of House Type of Planning Permission APP/2015/0045)	Site to the west of 3 Jericho Road Colpy Insch AB52 6XA
APP/2016/0852	Hydro Electric Notification – No Objection	Erection of 33,000 Volt Line	Land at Greenmyres Wind Farm Drumblade Huntly
APP/2017/0322	Local – Approved	Formation of Path	Land at Greenmyres Farm Huntly
APP/2017/2179	Local – Approved	Erection of Dwellinghouse Including Change of Use of Land from Agricultural to Domestic Garden Ground	Land at Broomhill Bainshole Glens of Foudland Huntly Aberdeenshire
APP/2018/1150	Local – Approved	Formation of Path, Associated Drainage and Fencing	Path route from Bothwellseat Plantation to Greenmyres Huntly
APP/2018/1318	Local – Approved	Change of Use from Class 9 (Dwellinghouse) to Class 10 (Non-Residential Institution) including Alterations and Erection of Bike Shed	Greenmyres Drumblade Huntly Aberdeenshire AB54 6AG

Table 1.3 Planning Application Sites Within 500m – East of Huntly to Colpy Red Route Option

Application Number	Application Type and Status	Development Proposal	Application Address
APP/2020/0980	Local – Approved	Change of use of Agricultural Land to Garden Ground, Alterations and Extension to Dwellinghouse and Installation of Decking	Midtown Glens Of Foudland Huntly Aberdeenshire AB54 6AR
APP/2020/1072	Local – Approved	Part Change of Use and Alterations of Domestic Garage to Hairdressing Salon (Class 1)	Overton Bainshole Glens Of Foudland Huntly Aberdeenshire AB54 6AR
APP/2018/1595	Local – Approved	Erection of Dwellinghouse (Change of House Type of Planning Permission APP/2015/0045)	Site to the West of 3 Jericho Road Colpy Insch AB52 6XA
APP/2016/1903	Local – Approved	Alterations and Extension to Architectural Design Studio	Midtown Glens of Foudland Huntly Aberdeenshire AB54 6AR
APP/2016/0423	Local – Approved	Erection of Electrical Housing Building and Associated Access Pad	Land at Greenmyres Drumblade Huntly Aberdeenshire
APP/2016/0852	Hydro Electric Notification – No Objection	Erection of 33,000 Volt Line	Land at Greenmyres Wind Farm Drumblade Huntly
APP/2017/0322	Local – Approved	Formation of Path	Land at Greenmyres Farm Huntly
APP/2017/1063	Local – Approved	Erection of Eco Bothy (Class 10 Non-residential Institutions)	Greenmyres Drumblade Huntly Aberdeenshire AB54 6AG
APP/2017/2179	Local – Approved	Erection of Dwellinghouse Including Change of Use of Land from Agricultural to Domestic Garden Ground	Land at Broomhill Bainshole Glens of Foudland Huntly Aberdeenshire
APP/2018/1150	Local – Approved	Formation of Path, Associated Drainage and Fencing	Path route from Bothwellseat Plantation to Greenmyres Huntly
APP/2018/1318	Local – Approved	Change of Use from Class 9 (Dwellinghouse) to Class 10 (Non-Residential Institution) Including Alterations and Erection of Bike Shed	Greenmyres Drumblade Huntly Aberdeenshire AB54 6AG

Table 1.4 Planning Application Sites Within 500m – Colpy to Pitcaple Pink Route Option

Application Number	Application Type and Status	Development Proposal	Application Address
APP/2018/0921	Local – Approved	Erection of Dwellinghouse	Site at Old Inn Farm Colpy Aberdeenshire
APP/2019/0506	S37 Consent – Granted	Reinforcement of 400kV Overhead Line	Overhead Lines between Blackhillock Peterhead Substation and Kintore Substation
APP/2019/0476	Local – Approved	Retention of Dwellinghouse without Compliance of Condition 6 (Occupancy) of Planning Permission Reference 99/4327/01 and Condition 3 (Occupancy) of Planning Permission Reference 99/6319/01	Darcy Lodge Culsalmond Insch Aberdeenshire AB52 6TS
APP/2017/1739	Local – Approved	Erection of Dwellinghouse: Non-Compliance with Condition 1 of Planning Permission in Principle Ref. APP/2014/2293	Land near Wahroonga Durno Inverurie Aberdeenshire AB51 5ER
APP/2017/2396	Local – Approved	Erection of Agricultural Shed	Newton Farmhouse Insch AB52 6SL
APP/2016/2621	Local – Approved	Demolition of Dwellinghouse and Erection of Replacement Dwellinghouse	Longside Old Rayne Insch Aberdeenshire AB52 6SU
APP/2016/2369	Local – Approved	Erection of Dwellinghouse	Land adjacent to Newton Cottages Newton Insch Aberdeenshire
APP/2017/1496	Local – Approved	Erection of Dwellinghouse and garage	Land adjacent to Westerton of New Rayne Old Rayne Insch
APP/2017/1158	Local – Approved	Demolition of Agricultural Buildings and Erection of 2No. Dwellinghouses and Detached Domestic Garage/Storage Building	Mains of New Rayne Old Rayne Insch Aberdeenshire AB52 6SD
APP/2017/2488	Local – Approved	Erection of 3No. Dwellinghouses	Land at Mellenside Culsalmond Insch Aberdeenshire
APP/2017/2248	Local – Approved	Erection of General-Purpose Agricultural Storage Building	Newton of Lewesk Old Rayne Insch Aberdeenshire AB52 6SW
APP/2017/2607	Local – Approved	Change of Use from Agricultural to Office, Workshop and Yard Space	Land adjacent to A96 Kellockbank Insch Aberdeenshire

Application Number	Application Type and Status	Development Proposal	Application Address
APP/2018/1354	Local – Approved	Change of Use and Alterations to Steading to Form Residential Extension to Existing Dwellinghouse	Mains of Williamston Farm Culsalmond Insch Aberdeenshire AB52 6TX
APP/2018/3091	Local – Approved	Condition 1 (Layout and Siting, External Appearance and Finishing, Landscaping and Tree Protection, Levels and Cross Sections, Drainage, Access, Parking and Turning) of Erection of Planning Permission Ref. APP/2015/3600 For Erection of 3 Dwellinghouses	Logie Durno Farm Pitcaple Inverurie Aberdeenshire
APP/2016/3258	Local – Approved	Erection of Ancillary Accommodation (Change of Design to Previously Approved; APP/2014/1899)	Ferniebrae Steading West Whiteford Inverurie Aberdeenshire AB51 5EL
APP/2017/1564	Local – Approved	Erection of Ancillary Accommodation (Change of Design)	Ferniebrae Steading West Whiteford Inverurie Aberdeenshire AB51 5EL

Table 1.5 Planning Application Sites Within 500m – Colpy to Pitcaple Brown Route Option

Application Number	Application Type and Status	Development Proposal	Application Address
APP/2019/0506	S37 Consent – Granted	Reinforcement of 400kV Overhead Line	Overhead Lines between Blackhillock Peterhead Substation and Kintore Substation
APP/2019/0476	Local – Approved	Retention of Dwellinghouse without Compliance of Condition 6 (Occupancy) of Planning Permission Reference 99/4327/01 and Condition 3 (Occupancy) of Planning Permission Reference 99/6319/01	Darcy Lodge Culsalmond Insch Aberdeenshire AB52 6TS
APP/2018/0949	Local – Approved	Erection of Garage	Anvil Cottage Lawrence Road Old Rayne Insch Aberdeenshire AB52 6RY
APP/2018/1094	Local – Approved	Erection of Garage	Home Farm of Logie Pitcaple Inverurie Aberdeenshire AB51 5EE

Application Number	Application Type and Status	Development Proposal	Application Address
APP/2018/3091	Local – Approved	Condition 1 (Layout and Siting, External Appearance and Finishing, Landscaping and Tree Protection, Levels and Cross Sections, Drainage, Access, Parking and Turning) of Erection of Planning Permission Ref. APP/2015/3600 For Erection of 3 Dwellinghouses	Logie Durno Farm Pitcaple Inverurie Aberdeenshire
APP/2016/0975	Local – Approved	Formation of Yard and Siting of 10 No. Storage Containers	The House Old Rayne Sales Centre Pitmachie Old Rayne Insch Aberdeenshire AB52 6RX
APP/2016/0283	Local – Approved	Erection of Domestic Stable Building and Formation of Domestic Sand School	Rohan Fields Logie Pitcaple Inverurie Aberdeenshire AB51 5EE
APP/2015/3542	Local – Approved	Erection of Dwellinghouse (Amendment to Siting of Dwellinghouse, Garage and Foul Drainage) and Change of Use of Land to Domestic	Site to north of Logie Home Farm Pitcaple
APP/2016/2262	Local – Approved	Erection of Agricultural Shed	East Lediken Farm Insch Aberdeenshire AB52 6SH
APP/2016/2371	Local – Approved	Extension to Existing Stables to Form Indoor Riding School	Strathorn Farm Old Rayne Insch Aberdeenshire AB51 5EJ
APP/2016/3258	Local – Approved	Erection of Ancillary Accommodation (Change of Design to Previously Approved; APP/2014/1899)	Ferniebrae Steading West Whiteford Inverurie Aberdeenshire AB51 5EL
APP/2016/2974	Local – Prior approval not required	Erection of Forestry Related Store	Land to south of Auld Logie Cottage Pitcaple Inverurie Aberdeenshire AB51 5EE
APP/2016/2180	Local – Approved	Erection of Agricultural Shed	East Lediken Farm Old Rayne Insch Aberdeenshire AB52 6SH
APP/2016/1962	Local – Approved	Demolition of Buildings and Erection of Dwellinghouse	Strathorn Farm Old Rayne Insch Aberdeenshire AB51 5EJ
APP/2016/1959	Local – Approved	Erection of Agricultural Shed	East Lediken Farm Old Rayne Insch Aberdeenshire AB52 6SH

Application Number	Application Type and Status	Development Proposal	Application Address
APP/2017/0746	Local – Approved	Formation of Yard and Siting of 18 Storage Containers	The House Old Rayne Sales Centre Pitmachie Old Rayne Insch Aberdeenshire AB52 6RX
APP/2017/0898	Local – Approved	Extension to Existing Stables to Form Indoor Riding School	D A Skinner & Son Strathorn Farm Old Rayne Insch Aberdeenshire AB51 5EJ
APP/2016/3433	Local – Approved	Formation of Outdoor Riding School (Commercial Use) and Associated Lighting and Landscaping	D A Skinner & Son Strathorn Farm Old Rayne Insch Aberdeenshire AB51 5EJ
APP/2017/1012	Local – Prior approval not required	Erection of Agricultural Building	Land to the south-east of North Lodge Logie Pitcaple Inverurie AB51 5EH
APP/2017/1564	Local – Approved	Erection of Ancillary Accommodation (Change of Design)	Ferniebrae Steading West Whiteford Inverurie Aberdeenshire AB51 5EL
APP/2018/0921	Local – Approved	Erection of Dwellinghouse	Site at Old Inn Farm Colpy Aberdeenshire
APP/2018/1701	Local – Approved	Extension to School	Old Rayne School Lawrence Road Old Rayne Insch Aberdeenshire AB52 6RY
APP/2018/1507	Local – Approved	Alterations, Extension and Change of Use from Office (Class 4) to Dwellinghouse (Class 9)	Annie Kenyon Architects South Lediken Old Rayne Insch Aberdeenshire AB52 6SH
APP/2017/2607	Local – Approved	Change of Use from Agricultural to Office, Workshop and Yard Space	Land adjacent to A96 Kellockbank Insch Aberdeenshire
APP/2018/1354	Local – Approved	Change of Use and Alterations to Steading to Form Residential Extension to Existing Dwellinghouse	Mains of Williamston Farm Culsalmond Insch Aberdeenshire AB52 6TX

Table 1.6 Planning Application Sites Within 500m – Pitcaple to Kintore Violet Route Option

Application Number	Application Type and Status	Development Proposal	Application Address
APP/2020/1166	Local – Approved	Alterations and Extension to Existing Buildings to Form Workshop and Store and Change of Use of Warehouse to Workshop	Broadward Daviot Inverurie Aberdeenshire AB51 0JL
APP/2017/2192	Local – Approved	Continued Operation of Sunday Market, Hardstanding and Overspill Car Parking and Flood Lighting: Non-Compliance with Condition 4 (Operating Hours) of Planning Permission Ref. APP/2005/3216	A N M Group Ltd Auction Mart Thainstone Agricultural Centre Thainstone Inverurie Aberdeenshire AB51 5XZ
APP/2019/0257	Prior Approval Required	Formation of Agricultural Private Way	Land at Thainstone Inverurie Aberdeenshire AB51 5XZ
APP/2019/0506	S37 Consent – Granted	Reinforcement of 400kV Overhead Line	Overhead Lines between Blackhillock Peterhead Substation and Kintore Substation
APP/2019/1649	Awaiting decision	Erection of 25 Dwellinghouses (Change of House Types to 18 Units, 7 Additional Units, and Amended Layout of Planning Permission ref. APP/2017/1367)	Plots 120-134 and 139-141 Portstown Inverurie
APP/2019/1585	Awaiting decision	Erection of Dwellinghouse	Site at Densyburn Farm land adjacent to West Balbithan Kintore
APP/2019/1232	Local – Approved	Alterations to Access Road	Kirkwood Commercial Park Ltd Kirkwood Commercial Park Inverurie AB51 5NR
APP/2019/0117	Local – Approved	Change of Use of Land, Removal of Redundant Railway Bridge and Earthworks	Bridge Adjacent to Milton of Thainstone Inverurie
APP/2019/0305	Local - Approved	Alterations to Existing Bridge	Railway Bridge UB293/062 Bridgeale House Kintore
APP/2019/0232	Major – Approved	Erection of 40 Dwellinghouses with Associated Parking and Infrastructure	Boynds Farm Uryside Inverurie Aberdeenshire
APP/2019/0283	Local – Approved	Alterations to Existing Bridge	Railway Bridge UB293/060 Bleachgreen Kintore Aberdeenshire
APP/2019/0279	Local – Approved	Alterations to Existing Bridge	Railway Bridge UB293/059 Loch Burn 2 Kintore
APP/2018/1180	Local – Approved	Erection of Shed	3 Smithfield Northern Road Kintore Aberdeenshire AB51 0YN

Application Number	Application Type and Status	Development Proposal	Application Address
APP/2018/1390	Local – Approved	Demolition of Steading and Erection of 2 Dwellinghouses	Mains of Inveramsay Inverurie Aberdeenshire AB51 5DS
APP/2019/0696	Local – Approved	Installation of Testing Rig	Development at Bourtie Business Park Inverurie
APP/2018/3005	Awaiting decision	Erection of Industrial Unit (Use Class 5) with Associated Parking, Yard and Access Road	Land at Kintore Business Park Kintore Aberdeenshire
APP/2018/1223	Local Approved	Erection of 24 Residential Flats (4 Blocks) and Formation of Vehicular Access	Site east of Lower Townhead Forest Road Kintore Aberdeenshire
APP/2018/0456	Local – Approved	Erection of 9 Dwellinghouses, 2 Garages, Alterations to Existing Farmhouse and Erection of Garage	Boynds Farm Uryside Inverurie
APP/2016/3367	Local – Approved	Erection of 5 Dwellinghouses (Change of House Type & Road Layout of Planning Permission Reference APP/2015/1213)	Site to south of Boynds Farm Uryside Phase 2B-1 Inverurie Aberdeenshire
APP/2017/1481	Local – Approved	Erection of Ancillary Accommodation to Existing Dwellinghouse	Gardeners Cottage Legatesden Pitcaple Inverurie Aberdeenshire AB51 5DT
APP/2014/3609	Local – Approved	Erection of 5No. Dwellinghouses	Land to rear of 20 Wyness Way Kintore Inverurie
APP/2016/0977	Local – Approved	Demolition of Building and Erection of 3No. Dwellinghouses and Associated Works	Falcon Coach Hire Ltd. Farr Holdings Lethenty Inverurie Aberdeenshire AB51 0HU
APP/2016/1625	Local – Approved	Erection of Replacement Dwellinghouse and Change of Use of Land to Form Access and Private Garden Ground	Hillhead Kintore Aberdeenshire AB51 0YX
APP/2016/1106	Prior Approval not required	Erection of Agricultural Shed	Heatherwick Farm Kintore Aberdeenshire AB51 0UQ
APP/2015/3599	Local – Approved	Erection of Dwellinghouse	Land east of Collyhill Cottage Collyhill Farm Inverurie AB51 0HQ
APP/2016/2630	Local – Approved	Change of Use from Machinery Sales and Repair (sui generis) to Office with Ancillary Store (Class 4) (Ground Floor Only) and Alterations to Building	Cinecosse Ltd Lethenty Mill Inverurie Aberdeenshire AB51 0HQ
APP/2016/2106	Local – Approved	Erection of Dwellinghouse	Land at Windyfold Croft Keith Hall Inverurie Aberdeenshire AB51 0LX

Application Number	Application Type and Status	Development Proposal	Application Address
APP/2016/2806	Local – Approved	Demolition of Existing Vehicle Repair Workshop (Annexe Building) and Erection of Replacement Vehicle Repair Workshop	Jim King Autotune Lethenty Garage Inverurie Aberdeenshire AB51 0HQ
APP/2017/1069	Local - Approved	Demolition of Summerhouse	Bridgend Farm Northern Road Kintore Aberdeenshire AB51 0YF
APP/2017/0755	Local - Approved	Conversion and Alterations and Extension to Dwellinghouse to form Office	Bridgend Farm Northern Road Kintore Aberdeenshire AB51 0YP
APP/2017/0757	Local - Approved	Conversion and Alterations and Extension to Dwellinghouse to form Office	Bridgend Farm Northern Road Kintore Aberdeenshire AB51 0YP
APP/2017/0242	Local - Approved	Erection of Dwellinghouse	Site to east of Burnside Lethenty Inverurie Aberdeenshire AB51 0HQ
APP/2017/0852	Local - Approved	Display of Signage	The Co-operative Northern Road Kintore Aberdeenshire AB51 0YL
APP/2017/1381	Major - Approved	Erection of 125No. Dwellinghouses (Change of House Types) and Associated Infrastructure and Landscaping	Site to north-east of Boynds Farm Uryside Phase 2B2-2B4 Inverurie Aberdeenshire
APP/2017/1367	Major - Approved	Erection of 416 No, Dwellinghouses and 4 No. Commercial Units	Phases 1 and 2 Portstown Inverurie Aberdeenshire
APP/2017/1652	Local - Approved	Change of Use and Conversion of Business Unit to Dwellinghouse	Site at Hillbrae Farm Inverurie Aberdeenshire AB51 0HG
APP/2017/1868	Local - Approved	Erection of Signage	Site at Portstown Inverurie Aberdeenshire
APP/2017/3217	Local - Approved	Alterations and Extension to Building to Form Warehouse	Broadward Daviot Inverurie Aberdeenshire AB51 0JL
APP/2017/1895	Local - Approved	Erection of Dwellinghouse	Land at 10 Gauchhill Kintore Aberdeenshire AB51 0XQ

Application Number	Application Type and Status	Development Proposal	Application Address
APP/2017/2004	Prior approval not required	Erection of General-Purpose Agricultural Shed	4 Heatherwick Farm Cottages Kintore Aberdeenshire AB51 0UQ
APP/2018/2111	Local - Approved	Erection of Dwellinghouse and Garage (Renewal of Planning Permission Reference APP/2015/2014)	Site to West Of 18 Price Drive Kintore Aberdeenshire
APP/2018/0308	Local - Approved	Modification of Planning Obligation (to Allow the Sale of 6 Acres of Land) of Planning Permission 96/0886/01 Erection of Dwellinghouse and Garage	Deers Den Kintore Aberdeenshire AB51 0YX
APP/2018/0731	Local - Approved	Formation of Access and Car Park (Serving Proposed Railway Station) with Associated Landscaping and Infrastructure	Site adjacent to Northern Road Kintore Aberdeenshire AB51 0YF
APP/2018/0778	Local - Approved	Erection of Railway Station	Site at Northern Road Kintore Aberdeenshire
APP/2018/1644	Local - Approved	Change of use of Hard Standing and Grassed Area to Display Area	Broadward Daviot Inverurie Aberdeenshire AB51 0JL
APP/2018/0968	Local - Approved	Erection of Replacement Dwellinghouse and Garage (Change of House Type)	Hillhead Farmhouse Kintore Aberdeenshire AB51 0YX
APP/2018/1173	Local - Approved	Erection of Dwellinghouse	Site at Elm Cottage 30 Forest Road Kintore Aberdeenshire AB51 0XG
APP/2018/1677	Local -Prior approval not required	Erection of General-Purpose Agricultural Building	Land adjacent to Oakleycraig Craigforthie Farm Inverurie AB51 0LT
APP/2018/1767	Local - Approved	Condition 1(a) Layout, Siting; (b) External Appearance, finishes; (c) Detailed Levels Survey; (d) Access and Visibility Splays; (e) Car Parking/Vehicle Turning Areas; (f) Boundary Enclosures, Condition 4 Tree Survey; Condition 6 Landscaping; Condition 7 Maintenance of Open Space and Landscaping; Condition 12 Pedestrian link of Planning Permission in Principle APP/2014/3609 Erection of 5 No. Dwellinghouses	Land to rear of 20 Wyness Way Kintore Aberdeenshire
APP/2018/1631	Local - Approved	Erection of Dwellinghouse (Change of House Type to Planning Permission Reference APP/2015/3148)	Site to the north-east of Mossfield Mackstead Road Daviot Aberdeenshire
APP/2018/1562	Local - Approved	Erection of Agricultural Building	Heatherwick Farm Kintore Aberdeenshire AB51 0UQ

Application Number	Application Type and Status	Development Proposal	Application Address
APP/2018/2894	Local - Approved	Demolition of Existing Cottage and Erection of Dwellinghouse	Sunnydene Cairnhall Kintore Aberdeenshire AB51 0YQ
APP/2015/3363	Local - Approved	Erection of Welfare Facilities for Haulage Company (Retrospective)	Land south of Thainstone Centre Inverurie AB51 5XZ
APP/2017/1398	Local - Approved	Redevelopment of Site and Erection of Buildings (Use Classes 4, 5 and 6)	Kirkwood Commercial Park Inverurie Aberdeenshire AB51 5NR
APP/2016/1027	Local - Approved	Erection of 25 No. Dwellinghouses (Change of House Types and Layout)	Uryside Phase 2A-4 Inverurie

Table 1.7 Planning Application Sites Within 50–m - Pitcaple to Kintore Orange Route Option

Application Number	Application Type and Status	Development Proposal	Application Address
APP/2020/1034	Major – Awaiting decision	Erection of 6 Business Units (Class 4) and Associated Car Parking and Roads	Land Adjacent To Averon Engineering Thainstone Inverurie
APP/2020/0393	Local - Approved	Demolition of Existing Farm Buildings and Erection of 3 Dwellinghouses	Site At Alton Farm Steading Inverurie Aberdeenshire
APP/2018/0308	Approved	Modification of Planning Obligation (to allow the Sale of 6 Acres of Land) of Planning Permission 96/0886/01 Erection of Dwellinghouse and Garage	Deers Den, Kintore, Aberdeenshire, AB51 0YX
APP/2019/0257	Prior Approval Required	Formation of Agricultural Private Way	Land at Thainstone Inverurie Aberdeenshire AB51 5XZ
APP/2019/0506	S37 Consent - Granted	Reinforcement of 400kV Overhead Line	Overhead Lines between Blackhillock Peterhead Substation and Kintore Substation
APP/2019/1794	Local - Approved	Erection of Storage Shed for Nursery Business	Kirkdale Nursery Daviot Inverurie Aberdeenshire AB51 0JL
APP/2019/1232	Local - Approved	Alterations to Access Road	Kirkwood Commercial Park Ltd Kirkwood Commercial Park Inverurie AB51 5NR
APP/2019/0117	Local – Approved	Change of Use of Land, Removal of Redundant Railway Bridge and Earthworks	Bridge adjacent to Milton of Thainstone Inverurie

Application Number	Application Type and Status	Development Proposal	Application Address
APP/2019/0305	Local - Approved	Alterations to Existing Bridge	Railway Bridge UB293/062 Bridgeale House Kintore
APP/2019/0934	Awaiting decision	Erection of 2 Storage Buildings (Use Class 6)	Plot 16 Mill Road Kirkwood Commercial Park Inverurie Aberdeenshire AB51 5NR
APP/2018/1573	Local - Approved	Demolition of Agricultural Buildings and Erection of 3 Dwellinghouses	Land at Ardtannes Inverurie Aberdeenshire
APP/2018/0140	A–C - Approved	Approval of Matters Specified in Conditions 1 (a Phasing, b Levels, c Strategic Landscaping, d Drainage Connection, e Public Access Plan, f Travel Plan), 3 (Archaeological WSI), 5 (Ca'ie's Stone Method Statement), 13 (Public Transport Accessibility) of Planning Permission in Principle Ref. APP/2015/3793	Land to the west of Thainstone Business Park Inverurie AB51 5NT
APP/2018/0833	Local - Approved	Erection of 2 Holiday Lodges (Amended Design Planning Permission Reference APP/2005/4251)	Plot 2 Clovenstone Kintore Inverurie
APP/2017/2225	Local - Approved	Change of Use from Guest House (Class 7) to Residential (Class 9) (Retrospective)	Strath Cottage 39 Elphinstone Road Port Elphinstone Inverurie Aberdeenshire AB51 3UX
APP/2017/1699	Local - Approved	Conditions 1(a) Layout and Siting, (b) External Appearance, (c) Landscaping, (d) Level€(e) Foul and Surface Water, (f) Access, (g) Car Parking/Turning Area of Planning Permission in Principle APP/2014/1371 for Demolition of Buildings and Erection of 3 Dwellinghouses	Land at Clovenstone Croft Kintore Aberdeenshire
APP/2017/1481	Local - Approved	Erection of Ancillary Accommodation to Existing Dwellinghouse	Gardeners Cottage Legatesden Pitcaple Inverurie Aberdeenshire AB51 5DT
APP/2017/0857	Local - Approved	Change of Use of Business Unit to Dwellinghouse	Netherton of Balquhain Pitcaple Inverurie Aberdeenshire AB51 5HA
APP/2017/1398	Local - Approved	Redevelopment of Site and Erection of Buildings (Use Classes 4, 5 and 6)	Kirkwood Commercial Park Inverurie

Application Number	Application Type and Status	Development Proposal	Application Address
			Aberdeenshire AB51 5NR
APP/2018/2894	Local - Approved	Demolition of Existing Cottage and Erection of Dwellinghouse	Sunnydene Cairnhall Kintore Aberdeenshire AB51 0YQ
APP/2018/1631	Local - Approved	Erection of Dwellinghouse (Change of House Type to Planning Permission Reference APP/2015/3148)	Site to the north-east of Mossfield Mackstead Road Daviot Aberdeenshire
APP/2017/0757	Local - Approved	Conversion and Alterations and Extension to Dwellinghouse to form Office	Bridgend Farm Northern Road Kintore Aberdeenshire AB51 0YP
APP/2016/0010	Local - Approved	Erection of Dwellinghouse and Formation of Vehicular Access	Land at Gunhill Farm Pitcaple Inverurie
APP/2017/1069	Local - Approved	Demolition of Summerhouse	Bridgend Farm Northern Road Kintore Aberdeenshire AB51 0YF
APP/2017/0755	Local - Approved	Conversion and Alterations and Extension to Dwellinghouse to form Office	Bridgend Farm Northern Road Kintore Aberdeenshire AB51 0YP
APP/2015/3363	Local - Approved	Erection of Welfare Facilities for Haulage Company (Retrospective)	Land south of Thainstone Centre Inverurie AB51 5XZ
APP/2016/1086	Local - Approved	Erection of Dwellinghouse	Land adjacent to Dillyhill Dubston Inverurie
APP/2016/0244	Local - Approved	Condition 1 (Siting, Design, External Appearance, Landscaping, Levels Survey, Foul and Surface Water disposal, Means of Access and Parking) of Planning Permission in Principle APP/2015/1790 Erection of Dwellinghouse and Garage	Alton Inverurie Aberdeenshire
APP/2017/1593	Local - Approved	Erection of 3No. Dwellinghouses	Dubston Inverurie Aberdeenshire AB51 5EX
APP/2017/2192	Local - Approved	Continued Operation of Sunday Market, Hardstanding and Overspill Car Parking and Flood Lighting: Non-Compliance with Condition 4 (Operating Hours) of	A N M Group Ltd Auction Mart Thainstone Agricultural Centre Thainstone Inverurie

Application Number	Application Type and Status	Development Proposal	Application Address
		Planning Permission Ref. APP/2005/3216 Status Decided	Aberdeenshire AB51 5XZ
APP/2017/3154	Local - Approved	Erection of Replacement Dwellinghouse	West Mains of Harlaw Inverurie Aberdeenshire
APP/2017/2896	Local - Approved	Erection of 3No. Dwellinghouses; Non-Compliance with Condition 3 of Full Planning Permission Ref. APP/2017/1593	Dubston Inverurie Aberdeenshire
APP/2018/1181	Local - Approved	Erection of Replacement Dwellinghouse	West Mains of Harlaw Inverurie Aberdeenshire AB51 5DR
APP/2018/0731	Local - Approved	Formation of Access and Car Park (Serving Proposed Railway Station) with Associated Landscaping and Infrastructure	Site adjacent to Northern Road Kintore Aberdeenshire AB51 0YF
APP/2018/0778	Local - Approved	Erection of Railway Station	Site at Northern Road Kintore Aberdeenshire
APP/2013/0267 (APP/2019/1489 – AMC application)	Major – Approved in principle	Erection of 737No. Dwellinghouses, Business and Industrial Development, Community Facilities including Primary School and Associated Infrastructure	Site at Crichie Inverurie Aberdeenshire

Assessment

This section presents the findings of the planning application assessment for the route options. Tables 1.8 to 1.13 set out the predicted impacts of the route options on planning applications.

Table 1.8 Planning Application Assessment – East of Huntly to Colpy Cyan Route Option

Application Number	Application Type and Status	Development Proposal	Application Address	Impact	Magnitude
N/A	N/A	N/A	N/A	N/A	N/A

Table 1.9 Planning Application Assessment – - East of Huntly to Colpy Red Route Option

Application Number	Application Type and Status	Development Proposal	Application Address	Impact	Magnitude
APP/2020/0980	Local - Approved	Change of use of Agricultural Land to Garden Ground, Alterations and Extension to Dwellinghouse and Installation of Decking	Midtown Glens Of Foudland Huntly Aberdeenshire AB54 6AR	26.6% - Impacts on site access	Moderate
APP/2020/1072	Local - Approved	Part Change of Use and Alterations of Domestic Garage to Hairdressing Salon (Class 1)	Overton Bainshole Glens Of Foudland Huntly Aberdeenshire AB54 6AR	13.6% - impacts on site access	Moderate
APP/2016/1903	Local - Approved	Alterations and Extension to Architectural Design Studio	Midtown, Glens of Foudland, Huntly Aberdeenshire, AB54 6AR	39.5% - passes through middle of site	Moderate
APP/2017/1063	Local - Approved	Erection of Eco Bothy (Class 10 Non-residential Institutions)	Greenmyres, Drumblade, Huntly, Aberdeenshire, AB54 6AG	27.5% - access/slip road impacts on site	Moderate

Table 1.10 Planning Application Assessment – Colpy to Pitcaple Pink Route Option

Application Number	Application Type and Status	Development Proposal	Application Address	Impact	Magnitude
APP/2016/2621	Local - Approved	Demolition of Dwellinghouse and Erection of Replacement Dwellinghouse	Longside, Old Rayne, Insch, Aberdeenshire, AB52 6SU	7% - clips edge of site	Minor
APP/2017/1496	Local - Approved	Erection of Dwellinghouse and Garage	Land adjacent to Westerton of New Rayne, Old Rayne, Insch	3% - clips edge of site	Minor
APP/2018/0921	Local - Approved	Erection of Dwellinghouse	Site at Old Inn Farm, Colpy, Aberdeenshire	21.6% - impacts on access road	Moderate
APP/2018/1354	Local - Approved	Change of Use and Alterations to Steading to Form Residential Extension to Existing Dwellinghouse	Mains of Williamston Farm Culsalmond Insch Aberdeenshire AB52 6TX	6.9% – impacts on site access	Minor
APP/2019/0506	S37 Consent - Granted	Reinforcement of 400kV Overhead Line	Overhead Lines between Blackhillock Peterhead Substation and Kintore Substation	0.1% – clips edge of site	Minor

Table 1.11 Planning Application Assessment – Colpy to Pitcaple Brown Route Option

Application number	Application type and Status	Development proposal	Application address	Impact	Magnitude
APP/2018/0921	Approved	Erection of Dwellinghouse	Site at Old Inn Farm, Colpy, Aberdeenshire	21.5% - impacts on access road	Moderate
APP/2018/1507	Approved	Alterations, Extension and Change of Use from Office (Class 4) to Dwellinghouse (Class 9)	Annie Kenyon Architects, South Lediken, Old Rayne, Insch, Aberdeenshire, AB52 6SH	6.6% - cuts across middle of access road	Minor

APP/2019/0506	S37 Consent - Granted	Reinforcement of 400kV Overhead Line	Overhead Lines between Blackhillock Peterhead Substation and Kintore Substation	0.2% - passes beneath existing overhead lines	Minor

Table 1.12 Planning Application Assessment – Pitcaple to Kintore Violet Route Option

Application Number	Application Type and Status	Development Proposal	Application Address	Impact	Magnitude
APP/2020/1166	Local - Approved	Alterations and Extension to Existing Buildings to Form Workshop and Store and Change of Use of Warehouse to Workshop	Broadward Daviot Inverurie Aberdeenshire AB51 0JL	6.5% - clips edge of site	Minor
APP/2017/1381	Major - Approved	Erection of 125 Dwellinghouses (Change of House Types) and Associated Infrastructure and Landscaping	Site to north-east of Boynds Farm, Uryside Phase 2B2-2B4, Inverurie, Aberdeenshire	1.2% - clips edge of site	Minor
APP/2017/3217	Local – Approved	Alterations and Extension to Building to Form Warehouse	Broadward, Daviot, Inverurie, Aberdeenshire, AB51 0JL	2.2% - clips edge of site	Minor
APP/2018/0308	Local – Approved	Modification of Planning Obligation (to Allow the Sale of 6 Acres of Land) of Planning Permission 96/0886/01 Erection of Dwellinghouse and Garage	Deers Den, Kintore, Aberdeenshire, AB51 0YX	10.3% - clips edge of site	Moderate
APP/2018/0731	Local - Approved	Formation of Access and Car Park (Serving Proposed Railway Station) with Associated Landscaping and Infrastructure	Site adjacent to Northern Road Kintore Aberdeenshire AB51 0YF	0.1% - clips edge of site	Minor
APP/2018/1644	Local - Approved	Change of use of Hard Standing and Grassed Area to Display Area	Broadward, Daviot, Inverurie, Aberdeenshire, AB51 0JL	5.2% - clips edge of site	Minor
APP/2019/0232	Major - Approved	Erection of 40 Dwellinghouses with Associated Parking and Infrastructure	Boynds Farm Uryside Inverurie Aberdeenshire	2% - clips edge of site	Minor
APP/2019/0506	S37 Consent - Granted	Reinforcement of 400kV Overhead Line	Overhead Lines between Blackhillock Peterhead Substation and Kintore Substation	< 0.1% - passes beneath existing overhead lines	Minor

Application Number	Application Type and Status	Development Proposal	Application Address	Impact	Magnitude
APP/2019/0696	Local – Approved	Installation of Testing Rig	Development at Bourtie Business Park Inverurie	14% - proposed junction impacts site	Moderate
APP/2019/1585	Local - Approved	Erection of Dwellinghouse	Site at Densyburn Farm Land adjacent to West Balbithan Kintore	35.4% - impacts site access	Moderate

Table 1.13 Planning Application Assessment – Pitcaple to Kintore Orange Route Option

Application Number	Application Type and Status	Development Proposal	Application Address	Impact	Magnitude
APP/2020/1034	Major – Awaiting decision	Erection of 6 Business Units (Class 4) and Associated Car Parking and Roads	Land Adjacent To Averon Engineering Thainstone Inverurie	13.9% - SUDS occupies part of site	Moderate
APP/2020/0393	Local - Approved	Demolition of Existing Farm Buildings and Erection of 3 Dwellinghouses	Site At Alton Farm Steading Inverurie Aberdeenshire	0.7% - clips edge of site	Minor
APP/2016/0244	Local - Approved	Condition 1 (Siting, Design, External Appearance, Landscaping, Levels Survey, Foul and Surface Water disposal, Means of Access and Parking) of Planning Permission in Principle APP/2015/1790 Erection of Dwellinghouse and Garage	Alton Inverurie Aberdeenshire	0.02% - clips edge of site	Minor
APP/2017/2192	Local - Approved	Continued Operation of Sunday Market, Hardstanding and Overspill Car Parking and Flood Lighting: Non-Compliance with Condition 4 (Operating Hours) of Planning Permission Ref. APP/2005/3216	A N M Group Ltd, Auction Mart, Thainstone Agricultural Centre, Thainstone, Inverurie, Aberdeenshire, AB51 5XZ	6% - clips edge of site	Minor
APP/2019/0257	Prior Approval Required	Formation of Agricultural Private Way	Land at Thainstone Inverurie Aberdeenshire AB51 5XZ	3% - approach road crosses	Minor

Application Number	Application Type and Status	Development Proposal	Application Address	Impact	Magnitude
				application site access road	
APP/2019/0506	S37 Consent - Granted	Reinforcement of 400kV Overhead Line	Overhead Lines between Blackhillock Peterhead Substation and Kintore Substation	0.8% - passes beneath existing overhead lines	Minor
APP/2013/0267 (APP/2019/ 1489 – AMC application)	Major - Approved in principle	Erection of 737 Dwellinghouses, Business and Industrial Development, Community Facilities including Primary School and Associated Infrastructure	Site at Crichie Inverurie Aberdeenshire	15.3% - impacts on south of proposal site	Moderate

Appendix A9.4 **Aberdeenshire Proposed Local Development Plan 2020 Designated Sites Assessment**

Appendix A9.4 **Aberdeenshire Proposed Local Development Plan 2020 Designated Sites Assessment**

Introduction

This Appendix supports Chapter 9 Policies and Plans and presents the assessment of how the Violet and Orange route options perform against Aberdeenshire Council's Proposed Local Development Plan 2020 sites. The Cyan, Red, Pink and Brown route options do not impact upon any Proposed Local Development Plan 2020 sites and as such are excluded from the assessment.

This Appendix should be read alongside Chapter 9 Policies and Plans and Appendix 9.2 Local Development Plan Designated Sites Baseline and Assessment.

Once every five years, Aberdeenshire Council are required to publish a new plan for the area. The Proposed LDP 2020 once adopted would supersede the Aberdeenshire LDP 2017.

The Proposed LDP 2020 was presented to Full Council on 5th March 2020 wherein local members agreed that the content of the Proposed LDP 2020 provides the settled view of the council on the plan they wish to see adopted in 2021.

The Proposed LDP 2020 is a material consideration in the determination of planning applications. As, however, the Proposed LDP 2020 is still to be subject to examination, it is considered that the level of weight that should be applied to the Proposed LDP 2020 is not significant. The Aberdeenshire LDP 2017 remains the up to date LDP for the area and the primary document against which planning applications should be determined until such time as a new LDP for the area is adopted.

For that reason, the plans review of the adopted LDP 2017 (Chapter 9 and Appendix 9.1) remains the primary options assessment.

As detailed in the Assessment section of this Appendix, a number of the Proposed LDP 2020 designations are the same or similar to current Aberdeenshire LDP 2017 designations, some sites have had their designation type changed and some sites are new.

Methodology

Table 1.1 sets out the criteria used to determine the potential impact of the options on the Proposed LDP 2020 Proposed Plan Sites.

As the adopted Aberdeenshire LDP 2017 remains of greater material consideration, only sites calculated to directly impact upon the route options have been assessed.

The impact of each route option on the proposed sites was informed by an assessment of the approximate area of potential land take from each designation with reference to that land take as a percentage of the overall area of designation.

Table 1.1 Local Development Plan Policy Assessment Criteria

Impact	Definition
Major	>50% land take resulting in a fundamental reduction in the development capacity of the designated site.
Moderate	10% - 50% land take having a material impact on the capacity of the designated site.
Minor	<10% land take representing a relatively small reduction in capacity of the designated site.

Assessment

This section presents the findings of the Proposed LDP 2020 designated sites assessment for the Violet and Orange route options.

Tables 1.2 and 1.3 present the designated sites which the route options directly impact upon. These include the site reference numbers, site description / location details and the magnitude of the predicted impacts for each of the route options.

Pitcaple to Kintore Violet Route Option

The Violet route option would have a major impact on site OP7 Kintore Opportunity Site which was formerly safeguarded for business uses under BUS2 in the adopted LDP 2017. The site is now recommended for housing, and in particular, could contribute towards affordable housing. The route option would have a predicted impact of 48.3%.

Aside from Kintore OP7, the route option impact on all other sites is predicted as minor. Kintore site BUS2, which the Violet route option intersects (6.9% predicted impact) is safeguarded for business uses. The Violet route option is predicted to have an impact of less than 1% on the remaining sites.

In comparison, the adopted LDP 2017 assessment identified the Violet route option to impact upon six minor sites and one moderate.

Table 1.2 Proposed Local Development Plan 2020 Designated Sites - Pitcaple to Kintore Violet Route Option

Settlement	Site reference	Site description / location	Designation category	Predicted Impact	Magnitude
Violet Route Option					
Kintore	BUS1	Garioch –Safeguarded for business uses.	Existing Employment Land (BUS)	0.7% - Clips edge of site	Minor
Kintore	BUS2	Safeguarded for business uses – Garioch. *Much of the site is occupied by the transport interchange serving Kintore Railway Station.*	Existing Employment Land (BUS)	6.9% - route intersects site.	Minor

Settlement	Site reference	Site description / location	Designation category	Predicted Impact	Magnitude
Kintore	OP7	South of Northern Road-A96. *This site was previously safeguarded for business uses (part of BUS2) in the adopted LDP 2017. Development should be designed to connect with site BUS2 to the south.* *It is expected that the site will contribute towards affordable housing.*	Opportunity Site	48.3% - occupies north portion of the site.	Major
Inverurie & Port Elphinstone	OP7	Garioch Uryside Phase 2. The site forms the final phase of the Uryside development. *This site was previously allocated as site OP7 and OP8 in the adopted LDP 2017.*	Opportunity Sites	0.3 – clips edge of the site	Minor
Inverurie & Port Elphinstone		Inverurie & Port Elphinstone	Settlement Boundary	<0.1% - clips edge of the site	Minor
Garioch Kintore & Kintore Business Park		Garioch Kintore & Kintore Business Park	Settlement Boundary	0.4% - Intersects site.	Minor

Pitcaple to Kintore Orange Route Option

The Orange route option is predicted to have a major impact (45.5%) on the Opportunity Site OP6 Inverurie and Port Elphinstone. This site was previously allocated as site OP11 in the adopted LDP 2017, although the site boundaries have since been amended. This route option is predicted to also have a major impact (56.8%) on the designated Inverurie strategic reserve of employment land which is some 9.4ha in total.

The Orange route option would also have a moderate impact on Opportunity Site 14, Land north-east of Thainstone Roundabout. This site was previously safeguarded for business uses BUS6 in the adopted LDP 2017. All other sites are predicted to be impacted to a minor extent by the Orange route option.

In comparison, the adopted LDP 2017 assessment identified the Orange route option to present nine minor impacts, two moderate and one major.

Table 1.3 Proposed Local Development Plan 2020 Designated Sites - Pitcaple to Kintore Orange Route Option

Settlement	Site reference	Site description / location	Designation category	Predicted Impact	Magnitude
Orange Route Option					
Kintore	BUS1	Garioch – Safeguarded for business uses.	Existing Employment Land (BUS)	1.5% - Clips edge of site	Minor
Kintore	BUS2	Safeguarded for business uses – Garioch. *Much of the site is occupied by the transport interchange serving Kintore Railway Station.*	Existing Employment Land (BUS)	0.5% - Clips edge of site	Minor
Bennachie		Bennachie (Hill Range) Special Landscape Area	Special Landscape Area	0.2% - Clips edge of site	Minor
Inverurie & Port Elphinstone	BUS6	Garioch – Safeguarded for business uses.	Existing Employment Land (BUS)	0.01% - Clips edge of site	Minor
Inverurie & Port Elphinstone	BUS8	Garioch – Safeguarded for business uses.	Existing Employment Land (BUS)	3.4% - clips eastern site boundary	Minor
Inverurie & Port Elphinstone	OP5	Inverurie – Crichie. *Mix of uses including 737 homes, community facilities and a primary school. Previously OP4 in the adopted LDP 2017.*	Opportunity Site	0.9% - clips edge of site	Minor
Inverurie & Port Elphinstone	OP14	Land north-east of Thainstone Roundabout. *This site was previously safeguarded for business uses (BUS6) in the adopted LDP 2017.*	Opportunity Site	22% - impacts on southern area of site.	Moderate
Garioch Inverurie & Port Elphinstone		Garioch Inverurie & Port Elphinstone	Settlement Boundary	2.4% - Boundary intersects route option.	Minor
Inverurie & Port Elphinstone	BUS5	Garioch – Safeguarded for employment use	Existing Employment Land (BUS)	0.6% - clips edge of site	Minor

Settlement	Site reference	Site description / location	Designation category	Predicted Impact	Magnitude
Inverurie & Port Elphinstone	OP6	Crichie Employment land. *This site was previously allocated as site OP11 in the adopted LDP 2017, although the site boundaries have since been amended.* *The development must make provision for 5ha of high quality business use.*	Opportunity Site	45.5% - Occupies whole southern section of the site	Major
Inverurie & Port Elphinstone	SR1	Inverurie – 9.4 ha of strategic reserve employment land (2027-2035)	Strategic Reserve	56.8% - Impacts on centre of site	Major

Summary

The findings of the assessment are presented in Table 1.4 which identifies the number of designated sites affected under each assessment category.

Table 1.4 Proposed Local Development Plan 2020 Sites Assessment Summary

Route Option	Major Impact	Moderate Impact	Minor Impact
Violet	1	-	5
Orange	2	1	9

The adopted LDP 2017 assessment identifies the Violet route option as being considered preferable. Due to the Proposed LDP 2020 designated sites assessment presenting a higher number of major and moderate impacts on the Orange route option compared to the Violet route option, it is considered the Violet route option remains preferable.

Next Steps

As proposed in the Council's new LDP timetable, the Proposed LDP 2020 will be submitted to Scottish Ministers for examination from January 2021, with the formal adoption of the Local Development Plan by 31 December 2021.

The Design Manual for Roads and Bridges (DMRB) Stage 3 Assessment will take account of the Proposed LDP 2020 as appropriate at the time of assessment and should the Proposed LDP 2020 be adopted it will supersede the currently adopted LDP 2017 in the DMRB Stage 3 assessment.

Appendix A10.1 **Air Quality Assessment Methodology**

Appendix A10.1 **Air Quality Assessment Methodology**

Introduction

Operational air quality effects have been considered in accordance with the guidance listed in Section 10.1 of Chapter 10, Air Quality. The full methodology for the air quality assessment adopted for the Design Manual for Roads and Bridges (DMRB) Stage 2 options assessment is outlined in this appendix.

Policy and Legislative Background

The Air Quality Standards (Scotland) Regulations 2010[1] came into force in June 2010; they implement EU Directive 2008/50/EC on ambient air quality, which sets out the air quality limit values. Part IV of the Environment Act 1995[2] requires that every local authority periodically carry out a review of air quality within its area, including likely future air quality. As part of this review, the local authority must assess whether Scottish Air Quality Objectives (SAQOs) detailed in Table 1.1 are being achieved or are likely to be achieved within the relevant periods. Any part of an authority's area where the objectives are not being achieved or are not likely to be achieved within the relevant period must be identified and declared as an Air Quality Management Area (AQMA). Once such a declaration has been made, local authorities are under a duty to prepare an Action Plan which sets out measures to pursue the achievement of the air quality objectives within the AQMA.

The Aberdeenshire Council area enjoys good air quality with no exceedances of the national air quality objectives. As such, there is no requirement for Aberdeenshire Council to declare any AQMAs or prepare an Air Quality Action Plan (AQAP).

The SAQOs are set out in the Air Quality (Scotland) Regulations[3] and the Air Quality (Scotland) (Amendment) Regulations 2002[4]. SAQOs generally correspond to EU Directives limit values, however, the compliance deadline dates are different. Scotland also has a more stringent objective for PM_{10}.

The DMRB Stage 2 air quality assessment has assessed air quality relevant to UK AQOs.

[1] 1 Statutory Instrument. (2010), 'Air Quality Standards (Scotland) Regulations 2007', No. 204. Queen's Printer of Acts of Parliament.
[2] Department for Environment Food and Rural Affairs. (2003), 'Part IV of the Environment Act 1995 Local Air Quality Management', Department for Environment Food and Rural Affairs.
[3] Statutory Instrument. (2000), 'Air Quality (Scotland) Regulations', No. 97. Queen's Printer of Acts of Parliament
[4] Statutory Instrument. (2002), 'Air Quality (Scotland) (Amendment) Regulations', No. 297. Queen's Printer of Acts of Parliament.

Table 1.1 Objectives of the UK Air Quality Strategy

Pollutant	Objective/ Limit Value	Measure as	Date to be achieved by and maintained thereafter		
			AQS	Regulations	2008/50/EC
PM_{10} (Scotland)	50 µg/m^3 Not to be exceeded more than 7 times a year	24-hour mean	31 Dec 2010	31 Dec 2010	1 Jan 2005
	18 µg/m^3	Annual mean	31 Dec 2010	31 Dec 2010	1 Jan 2005
NO_2	200 µg/m^3 Not to be exceeded more than 18 times a year	1-hour mean	31 Dec 2005	31 Dec 2005	1 Jan 2010
	40 µg/m^3	Annual mean	31 Dec 2005	31 Dec 2005	1 Jan 2010
NO_X	30 µg/m^3	Annual mean	31 Dec 2000	31 Dec 2000	19 Jul 2001

Road traffic emissions are composed primarily of nitrogen dioxide (NO_2), nitrous oxides (NO_X), particulate matter (PM), carbon monoxide (CO), carbon dioxide (CO_2), poly-aromatic hydrocarbons (PAH) and volatile organic compounds (VOC). Whilst excessive levels of these constituents can cause detrimental human health impacts, NO_2, NO_X and PM (2.5µm and 10µm) from traffic emissions are specifically linked to cardiovascular health issues and mortality in the general population and so are considered statutory pollutants and are assessed in detail as part of the DMRB Stage 2 assessment. The policy of the UK statutory consultation agencies is to apply the NO_X objective to internationally designated conservation sites and Sites of Special Scientific Interest (SSSI) on a precautionary basis.

There is no requirement in DMRB HA 207/07 to assess the impact of the route options against the $PM_{2.5}$ target values and so $PM_{2.5}$ is not considered further in this assessment. The potential impact of the Preferred Option in terms of $PM_{2.5}$ will be assessed in detailed during the Stage 3 DMRB assessment. However, the route options in DMRB Stage 2 have been assessed in terms of PM_{10}.

The SAQOs only apply where members of the public are likely to be present for the averaging time of the objective, i.e. where people will be exposed to the pollutants for long enough at a specified concentration to be impacted. The following describe the locations at which difference averaging period objectives apply:

- Annual mean objectives apply to all locations where people may be regularly exposed including façades of residential properties, schools, hospitals and care homes.
- 24-hour mean objective applies to all locations where the annual mean objective would apply, together with hotels and gardens of residential properties where relevant public exposure is likely i.e. buildings and façades as opposed to kerbside sites.
- 1-hour mean objective also applies to all locations as well as at any outdoor location where a member of the public might reasonably be expected to stay for one hour or more, such as shopping streets, parks and sports grounds. This also includes bus stations and

railway stations that are not fully enclosed, building façades and any kerbside locations where the general public might have regular access.

Measurements across the UK have shown that the 1-hour mean NO_2 objective is unlikely to be exceeded unless the annual mean NO_2 concentration is greater than 60µg/m^3.

Thus, exceedances of 60µg/m^3 as an annual mean NO_2 concentration are used as an indicator of potential exceedances of the 1-hour mean objective as stated in paragraph 7.91 of the Local Air Quality Management Technical Guidance document (LAQM.TG (16))[5].

Similarly, LAQM.TG (16) sets out the method by which the number of days in which the PM_{10} 24-hour objective is exceeded and can be obtained based on a relationship with the estimated annual mean.

Assessment Approach

The dualling of the A96 East of Huntly to Aberdeen will be designed, assessed and operated in accordance with the DMRB. As such, this review of local air quality and regional emissions follows the methodology and reporting requirements set out in DMRB HA 207/07[6]. DMRB HA 207/07 is accompanied by a series of Interim Advice Notes (IANs) which are intended to provide updated guidance to reflect improvements in the knowledge base surrounding the relationships between vehicle emissions, vehicle speeds and real-world monitoring data. The IANs used in the assessment are as follows:

- IAN 170/12 Updated air quality advice on the assessment of future NO_X and NO_2 projections for users of DMRB Volume 11, Section 3, Part 1 'Air Quality'[7]; and
- IAN 174/13 Updated advice for evaluating significant local air quality effects for users of DMRB Volume 11, Section 3, Part 1 'Air Quality'[8] .

Since there are no AQMAs within the study area, and following consultation with Transport Scotland, it was confirmed that IAN 185/15 will not be applied to this assessment.

Assessment Level

HA 207/07 describes four assessment levels: scoping, simple, detailed and mitigation/ enhancement and monitoring which for air quality has two components. The first is for local air quality i.e. an estimate of the pollutant concentrations change as a result of the proposal and the second component is for regional air quality which examines the change in emissions from a range of pollutants resulting from a scheme. The methodology used for this assessment is the simple assessment level described in HA 207/07, which allows a comparison of the impact of the eight end-to-end options.

Additional modelling steps are required to those listed in HA 207/07 for both local air quality modelling and modelling for designated sites. This is due to availability of improved observations on the ratios of primary (emitted) and secondary (reactionary) NO_2 to NO_X.

[5] Department for Environment Food and Rural Affairs, *Local Air Quality Management Technical Guidance* (LAQM.TG), 2016.
[6] Highways Agency, Design Manual for Roads and Bridges, *HA 207/07, Air Quality*, 2007.
[7] Highways Agency, *IAN 170/12 Updated air quality advice on the assessment of future NO_X and NO_2 projections for users of DMRB Volume 11, Section 3, Part 1 'Air Quality'*, 2012.
[8] IAN 174/13 Updated advice for evaluating significant local air quality effects for users of DMRB Volume 11, Section 3, Part 1 'Air Quality', 2013.

Generally, additional conversion factors must be applied to modelled data as stipulated in IAN 170/12 v3.

Affected Roads

The air quality assessment is undertaken for the affected road network (ARN). These are defined in HA 207/07 as meeting any of the following criteria:

- Road alignment will change by 5 m or more;
- Daily traffic flows will change by 1,000 AADT or more;
- Heavy Duty Vehicle (HDV) flows will change by 200 AADT or more;
- Daily average speed will change by 10 km/hr or more; or
- Peak hour speed will change by 20 km/hr or more.

In addition, a regional air quality assessment is performed using affected road links that meet the following criteria:

- A change of more than 10% in AADT;
- A change of more than 10% to the number of heavy-duty vehicles; or
- A change in daily average speed of more than 20 km/hr.

There are no Pollution Climate Mapping (PCM) links in the study area. As such, there is no risk of PCM non-compliance since none of the affected road network links are reported to the European Commission by the Scottish Government. As such, there is no requirement to report the permanent effects of the scheme on PCM links.

Temporary (Construction) Effects

HA 207/07 requires that any sensitive receptors within 200m of a construction site should be identified so that mitigation can be applied. Any such mitigation should be designed into the construction process to be included in the Construction Environmental Management Plan (CEMP) and be reflective and appropriate to the type and size of construction being undertaken.

At this stage of the project lifecycle, no information is available relating to the extent of any construction site or the construction methods to be applied. It is, therefore, not possible to assess any constraints that may be imposed by the scheme for the eight end-to-end options. Further assessment will be undertaken during the DMRB Stage 3 Assessment to determine the level of mitigation required to minimise and control any emissions once more information is available about the construction programme and methods to be applied for the Preferred Option.

It is considered that with appropriate implementation of mitigation, which is commensurate to the risk, the impacts of all the end-to-end options will be 'not significant'. Therefore, temporary (construction) effects are not assessed further as part of the DMRB Stage 2 air quality assessment.

In line with updated guidance LA105, if construction activities are programmed to last less than two years in any one location it is unlikely that the construction activities would constitute a significant air quality effect or impinge on the UK's reported ability to comply with the Air Quality

Directive given the short term duration of the construction activities as opposed to the long term operation of the project.

Once further details of the proposed construction programme are published the requirement for further air quality assessment will be reviewed, with the proposed approach to the assessment outlined in the Stage 3 Scoping Report.

Permanent (Operational) Effects

Defining the Study Area

The study area is defined according to DMRB HA 207/07 as encompassing all those receptors within 200m of the ARN. For the purposes of this assessment, affected roads include the existing A96 - and each of the eight end-to-end options and other local roads that were scoped in as per the criteria discussed in the 'Affected Roads' section above.

To assist in the determination of significance of effects on local air quality, AddressBase Plus data was used to identify receptors (residential, educational facilities and healthcare facilities) located within 200m of the ARN.

The receptors modelled for each scenario was further refined with a final 30m buffer applied from the centreline of the ARN. It was decided that receptors located beyond 30m from the ARN would likely experience an imperceptible (insignificant) change in air quality and so these receptors were scoped out of the DMRB Stage 2 assessment. Professional judgement was applied to include receptors within 30m of the ARN as those within 30m of the study area will experience highest pollutant concentrations and are representative of locations where the greatest change in concentration will occur. The 30m buffer was deemed appropriate given the rate at which emissions disperse as a distance from the source increases. Receptors located at a distance further than 30m will not experience as much of an effect as those located within 30m.

Further details of the number and type of receptors is provided in Chapter 10, Air Quality.

There are no European or nationally statutory designated sites within 200m of any end-to-end option ARN and, therefore, ecological impacts are not considered further in this assessment.

Determining the Baseline

Desk Study

A desk study was undertaken to review current background air quality and key receptors for the purposes of air quality modelling. Aberdeenshire Council diffusion tube data used in the assessment is presented in Chapter 10.

Identification of sensitive receptor locations were identified through GIS AddressBase Plus analysis. Receptors were identified using GIS analysis, with details of the total number of receptors up to a distance of 200m presented in Chapter 10.

Background Maps

Information on current background air quality has been taken from the Scottish Air Quality background maps archive for the modelled year 2017 (verification), and 2030 (model opening year) from a reference year of 2017 and is given in Table 1.2.

Table 1.2 Scottish Air Quality Background Concentrations

Coordinates		2017				2030		
x	y	NO_x	NO_2	PM_{10}		NO_x	NO_2	PM_{10}
377500	818500	6.3	4.5	10.7		4.1	2.9	10.1
377500	819500	6.9	4.9	10.1		4.3	3.1	9.5
375500	822500	6.7	4.8	11.4		4.2	3.0	10.8
376500	820500	5.6	4.0	8.9		3.6	2.6	8.3
375500	821500	5.5	3.9	10.7		3.7	2.6	10.1
376500	821500	7.7	5.4	9.2		4.9	3.5	8.6
377500	820500	8.1	5.7	9.4		5.1	3.6	8.8
363500	829500	3.5	2.5	11.4		2.4	1.7	10.9
352500	839500	6.5	4.6	9.6		4.4	3.2	9.0
357500	834500	3.0	2.1	8.8		2.0	1.4	8.3
355500	837500	3.6	2.6	11.1		2.2	1.6	10.5
356500	836500	3.7	2.6	10.0		2.2	1.6	9.4
364500	829500	3.7	2.6	11.8		2.4	1.7	11.2
363500	828500	4.2	3.0	10.8		2.8	2.0	10.1
363500	831500	3.3	2.4	10.3		2.2	1.6	9.7

Coordinates		2017				2030		
x	y	NO_x	NO_2	PM_{10}		NO_x	NO_2	PM_{10}
367500	828500	4.1	2.9	9.8		2.6	1.9	9.2
367500	825500	3.6	2.6	8.7		2.4	1.7	8.1
366500	826500	3.5	2.5	9.2		2.3	1.7	8.7
366500	829500	4.1	2.9	10.8		2.6	1.9	10.3
365500	826500	3.6	2.6	9.3		2.4	1.7	8.7
368500	825500	3.7	2.6	7.9		2.4	1.7	7.4
365500	829500	4.2	3.0	10.5		2.6	1.9	10.0
369500	825500	4.3	3.1	7.7		2.6	1.9	7.2
366500	825500	3.5	2.5	9.2		2.3	1.7	8.7
371500	825500	4.6	3.3	11.5		2.8	2.0	11.0
375500	817500	4.7	3.3	9.8		3.2	2.3	9.1
366500	830500	3.7	2.7	11.2		2.4	1.7	10.6
377500	821500	8.3	5.8	9.3		5.7	4.0	8.7
355500	838500	3.8	2.7	10.8		2.3	1.7	10.3
357500	835500	3.6	2.6	8.3		2.2	1.6	7.8
364500	831500	3.9	2.8	10.7		2.4	1.8	10.1

Coordinates		2017				2030		
x	y	NO_x	NO_2	PM_{10}		NO_x	NO_2	PM_{10}
367500	832500	3.6	2.6	10.5		2.3	1.7	9.9
374500	817500	4.6	3.3	12.4		3.0	2.2	11.6
372500	825500	4.8	3.5	10.5		2.9	2.1	9.9
373500	827500	3.8	2.8	11.9		2.6	1.9	11.3
373500	831500	3.9	2.8	11.3		2.5	1.8	10.8
372500	831500	3.8	2.7	11.4		2.5	1.8	10.8
371500	834500	3.5	2.5	10.1		2.3	1.7	9.5
372500	835500	3.9	2.8	9.6		2.6	1.8	9.0
377500	813500	4.8	3.4	9.4		3.2	2.3	8.9
377500	814500	5.0	3.5	9.8		3.3	2.4	9.3
376500	813500	4.5	3.2	10.7		3.1	2.2	10.2
378500	815500	6.8	4.8	9.8		4.3	3.1	9.2
379500	816500	6.4	4.5	11.0		4.3	3.1	10.4
376500	819500	5.3	3.8	9.1		3.5	2.5	8.5
378500	818500	6.8	4.8	12.3		4.8	3.4	11.6
376500	822500	7.4	5.2	9.2		5.0	3.6	8.6

Coordinates		2017				2030		
x	y	NO_x	NO_2	PM_{10}		NO_x	NO_2	PM_{10}
375500	829500	4.0	2.8	11.8		2.6	1.9	11.3
382500	816500	5.9	4.2	9.8		4.0	2.8	9.3
380500	816500	5.9	4.2	10.4		4.0	2.8	9.8
381500	816500	5.7	4.1	10.4		3.9	2.8	9.8
380500	820500	5.5	3.9	10.6		3.7	2.6	10.0
381500	821500	5.5	3.9	9.6		3.6	2.6	9.1
365500	832500	3.7	2.7	10.7		2.4	1.7	10.1
373500	823500	4.0	2.9	11.2		2.7	1.9	10.6
373500	829500	3.8	2.8	11.8		2.5	1.8	11.2
377500	827500	4.0	2.8	11.9		2.6	1.9	11.3
368500	826500	4.1	3.0	10.1		2.6	1.9	9.5
358500	834500	3.4	2.5	10.2		2.2	1.6	9.6
359500	834500	3.8	2.7	10.2		2.3	1.7	9.7
364500	833500	3.8	2.7	10.3		2.4	1.7	9.8
363500	832500	3.2	2.3	10.5		2.2	1.6	9.9
364500	832500	4.0	2.9	11.4		2.5	1.8	10.8

Coordinates		2017				2030		
x	y	NO_x	NO_2	PM_{10}		NO_x	NO_2	PM_{10}
364500	830500	3.7	2.7	11.8		2.4	1.7	11.2
360500	834500	3.9	2.8	9.8		2.4	1.7	9.2
362500	834500	4.0	2.9	9.9		2.4	1.7	9.3
363500	834500	4.0	2.9	8.9		2.4	1.8	8.3
361500	834500	4.0	2.9	9.4		2.4	1.7	8.8
360500	835500	3.1	2.2	9.0		2.1	1.5	8.5
368500	829500	3.5	2.5	11.0		2.4	1.7	10.5
365500	830500	3.8	2.8	11.6		2.4	1.8	11.0
373500	824500	4.6	3.3	11.9		2.9	2.1	11.4
374500	820500	4.0	2.9	10.1		2.7	2.0	9.5
374500	821500	4.1	3.0	11.0		2.8	2.0	10.4
373500	825500	4.9	3.5	11.4		3.0	2.1	10.9
371500	827500	3.6	2.6	9.9		2.4	1.8	9.4
371500	832500	3.7	2.6	10.3		2.4	1.7	9.7
370500	832500	3.6	2.6	11.8		2.4	1.7	11.2
377500	823500	4.8	3.4	9.4		3.2	2.3	8.8

Coordinates		2017				2030		
x	y	NO_x	NO_2	PM_{10}		NO_x	NO_2	PM_{10}
375500	825500	4.2	3.0	11.5		2.7	2.0	10.9
380500	821500	5.5	3.9	9.5		3.7	2.6	8.9
363500	833500	3.2	2.3	8.6		2.1	1.5	8.0
373500	826500	4.0	2.8	11.4		2.6	1.9	10.8
378500	814500	6.7	4.7	10.9		4.2	3.0	10.4
378500	816500	6.7	4.7	10.3		4.3	3.1	9.7
377500	824500	4.4	3.1	10.8		2.9	2.1	10.2
378500	824500	4.4	3.1	10.5		2.9	2.1	9.9
381500	820500	5.2	3.7	10.6		3.5	2.5	10.0
378500	817500	6.5	4.6	12.5		4.1	3.0	11.9
380500	818500	5.4	3.8	9.4		3.7	2.6	8.8
358500	835500	3.5	2.5	10.0		2.2	1.6	9.4
356500	837500	3.8	2.7	11.0		2.3	1.7	10.5
376500	824500	4.4	3.2	11.9		2.9	2.1	11.3
379500	827500	4.5	3.2	11.6		2.9	2.1	11.1
377500	828500	4.0	2.9	11.9		2.7	1.9	11.3

Sensitive Receptors

The number of receptors susceptible to permanent air quality effects as a result of the route options within 200m according to the guidance in HA 207/07, are shown in Chapter 10.

Existing receptors used for the modelling assessment have been identified using Ordnance Survey Mastermap and AddressBase Plus data. AddressBase Plus data does not include potential future receptors that may be introduced to the study area as a result of future local developments.

All receptors included in the modelling assessment are shown in Table 1.3 and Table 1.4, and Volume 5, Figures 10.1 to 10.24.

Table 1.3: Worst Case Receptor Locations

ID	x Coordinate	y Coordinate	Unique property reference number	ID	x Coordinate	y Coordinate	Unique property reference number	ID	x Coordinate	y Coordinate	Unique property reference number	ID	x Coordinate	y Coordinate	Unique property reference number
R1	377880	818593	151120849	R61	377118	821755	151551573	R121	376500	822575	151051076	R181	375986	825220	151107450
R2	377733	819585	151053378	R62	355318	838120	151130997	R122	377586	821421	151055278	R182	380472	821111	151128092
R3	377666	819916	151055403	R63	357722	835545	151131002	R123	376856	822096	151056079	R183	381005	821514	151107143
R4	375692	822195	151500123	R64	363348	828366	151031827	R124	377060	821839	151028705	R184	361149	834934	151103258
R5	376749	820997	151077591	R65	363313	828331	151056038	R125	377134	821732	151100206	R185	363218	833202	151119404
R6	375928	821910	151028641	R66	364258	831913	151130976	R126	377124	821406	151029758	R186	380755	821396	151107129
R7	376707	821046	151080626	R67	367330	825780	151107596	R127	377699	821006	151053923	R187	373956	823524	151113731
R8	376844	820908	151026957	R68	365535	829767	151130987	R128	377121	821779	151028833	R188	373656	826896	151119558
R9	375858	822030	151071296	R69	365973	826079	151107636	R129	377634	821202	151027875	R189	373603	826850	151119559
R10	375927	821785	151081167	R70	367286	825787	151107583	R130	375572	829333	151105192	R190	378750	814854	151107250
R11	377574	820109	151050080	R71	367033	832610	151105197	R131	375078	829863	151105166	R191	378747	816626	151054805
R12	375524	822440	151500368	R72	374676	817334	151107093	R132	382768	816671	151112439	R192	378423	815161	151129059
R13	376871	820885	151029044	R73	372962	825864	151103248	R133	380909	816244	151106647	R193	378771	816713	151080085
R14	377076	820686	151029535	R74	373874	827879	151131746	R134	381703	816555	151106669	R194	378496	815364	151078864
R15	375740	822273	151028509	R75	372275	825665	151103214	R135	380320	820948	151050806	R195	378611	816493	151030553
R16	375590	822349	151147225	R76	373060	831578	151105191	R136	381972	821917	151107130	R196	377399	823996	151109385
R17	375572	822514	151140923	R77	372941	831610	151105156	R137	363381	828702	151169592	R197	377664	824251	151109382
R18	376681	821077	151079224	R78	371979	834371	151107476	R138	365801	832429	151145578	R198	378456	824524	151119443
R19	376565	821184	151076455	R79	373276	831033	151131754	R139	373297	823489	151650295	R199	381167	820810	151112347
R20	376354	821295	151705466	R80	372105	835586	151149534	R140	373762	829809	151143067	R200	380969	820489	151112387
R21	375797	821974	151703443	R81	377059	813800	151106617	R141	377668	820343	151070946	R201	380987	821045	151112363
R22	363450	829032	151106803	R82	377056	813683	151106610	R142	363425	828797	151169621	R202	378880	814483	151128827
R23	352679	839278	151054088	R83	377566	814320	151106613	R143	375756	822887	151174330	R203	378561	816162	151141575

ID	x Coordinate	y Coordinate	Unique property reference number	ID	x Coordinate	y Coordinate	Unique property reference number	ID	x Coordinate	y Coordinate	Unique property reference number	ID	x Coordinate	y Coordinate	Unique property reference number
R24	357703	834603	151112327	R84	376999	813577	151106622	R144	377244	821633	151176101	R204	378681	816446	151056179
R25	355847	837616	151131001	R85	377141	813978	151106627	R145	377733	820924	151555116	R205	378486	817673	151147598
R26	356932	836483	151130993	R86	378291	815011	151142036	R146	377205	821581	151029575	R206	378448	815932	151146262
R27	364532	829623	151106811	R87	379533	816127	151030699	R147	376650	822267	151170513	R207	380256	818828	151112436
R28	363770	829429	151106810	R88	376248	819215	151107088	R148	377043	821436	151101698	R208	378480	817647	151703780
R29	363367	828773	151106809	R89	379031	816674	151030811	R149	377987	827134	151112602	R209	377824	819899	151070670
R30	363803	831953	151112454	R90	379288	816289	151101088	R150	377202	827017	151112607	R210	364414	832699	151105219
R31	367114	828222	151130984	R91	378158	818141	151128769	R151	368818	826619	151103256	R211	359589	834735	151103280
R32	367906	825829	151107599	R92	378368	815089	151129053	R152	358639	834229	151119422	R212	358094	835409	151103270
R33	366152	826042	151107621	R93	376643	822317	151028740	R153	359991	834622	151119419	R213	356719	837013	151131004
R34	366939	829942	151119101	R94	377422	821593	151101730	R154	364301	833002	151103277	R214	357786	835545	151103268
R35	365668	826128	151107634	R95	377699	821006	151054154	R155	363859	832270	151112450	R215	378889	817167	151128807
R36	368126	825699	151128288	R96	376917	822038	151028776	R156	364018	832719	151119406	R216	376559	824607	151119881
R37	367009	825741	151500047	R97	377720	820785	151030018	R157	364650	830948	151130963	R217	379255	827493	151105188
R38	366003	826047	151107638	R98	377041	821891	151100229	R158	360697	834617	151145512	R218	377014	828505	151105171
R39	367309	825775	151107595	R99	376368	822400	151029410	R159	364451	831262	151142747	R219	378455	815940	151146260
R40	365396	829774	151130964	R100	377624	821295	151029915	R160	362039	834529	151103279				
R41	369236	825868	151103225	R101	376231	822199	151029477	R161	363058	834289	151103276				
R42	367343	825801	151107581	R102	377322	821618	151029675	R162	363933	832772	151119401				
R43	368153	825714	151107593	R103	377193	821549	151029599	R163	361113	834998	151103267				
R44	367732	825822	151107611	R104	376399	821588	151028296	R164	360309	835015	151103272				
R45	365153	829747	151106807	R105	377086	821826	151028825	R165	368267	829347	151112074				
R46	369656	825641	151103221	R106	376840	822086	151028707	R166	365027	830357	151130960				
R47	365987	826074	151107637	R107	377733	820215	151030239	R167	373972	824549	151103224				

ID	x Coordinate	y Coordinate	Unique property reference number	ID	x Coordinate	y Coordinate	Unique property reference number	ID	x Coordinate	y Coordinate	Unique property reference number	ID	x Coordinate	y Coordinate	Unique property reference number
R48	366376	825898	151121536	R108	376231	821492	151129183	R168	374772	820978	151132125				
R49	365232	829738	151106799	R109	376284	821437	151129177	R169	373927	824884	151103210				
R50	368175	825682	151107591	R110	376720	822226	151129073	R170	374566	821523	151128403				
R51	367773	825824	151107576	R111	376250	821470	151129180	R171	373993	824723	151119826				
R52	371911	825507	151103213	R112	377540	820159	151051666	R172	373784	825825	151112578				
R53	375206	817982	151107077	R113	377011	821927	151028812	R173	373506	827140	151119560				
R54	377263	820052	151030271	R114	377742	820241	151128010	R174	371752	827445	151112801				
R55	367886	825850	151169132	R115	377663	821135	151029898	R175	373714	825227	151165047				
R56	366786	825764	151151438	R116	377359	821595	151029660	R176	371208	832524	151105230				
R57	367922	825850	151154781	R117	377720	820280	151076121	R177	370553	832774	151105223				
R58	366746	825782	151107639	R118	377646	821205	151029904	R178	377408	823733	151109396				
R59	366454	830238	151106819	R119	377702	820962	151027891	R179	375082	821691	151029802				
R60	367057	828341	151703364	R120	377745	820857	151029877	R180	375841	825218	151107449				

Assessment Methodology

Permanent (Operational) Assessment

Local Air Quality Assessment

To assess the impact of local emissions on sensitive receptors, representative receptors within 30m of the ARN were identified and results estimated at each location using dispersion modelling techniques. The receptor locations are shown in Volume 5, Figures 10.1 to 10.24.

Modelled pollutant predictions were made using the ADMS-Roads modelling software from Cambridge Environmental Research Consultants. ADMS-Roads was configured with vehicle emission estimates from the Emission Factor Toolkit (EFT) v 9.0[9] published by Defra and the Devolved Administrations in 2017. The ARN were represented by discrete 'links' in the model which are assigned a representative position using OS Mastermap data. The link configurations used in the assessment are shown in Volume 4, Appendix 10.2 and Volume 5, Figures 10.1 to 10.24. The model parameters applied are shown in Table 1.5.

Regional Air Quality

The Highways Agency DMRB screening tool spreadsheet (v1.03c, 2007) was used to estimate total NO_X, PM_{10} and CO_2 emissions for each of the affected road links and in combination for each end-to-end option. This is consistent with the simple level of assessment prescribed in HA 207/07.

The following scenarios were considered as part of the regional air quality assessment.

- Do-Minimum (2030);
- Do-Something (2030);
- Do-Minimum (2045); and
- Do-Something (2045).

Greenhouse Gases

The assessment of greenhouse gases will be performed according to the methodology in Annex 2 HA 207/07 which refers to the UK Government WebTAG[10] methodology during the DMRB Stage 3 Assessment.

[9] Department of Environment Food and Rural Affairs, Emission Factors Toolkit (Version 9.0), May 2019.
[10] Department for Transport, TAG Unit A3 Environmental Impact Appraisal – Air Quality Workbook, May 2019

Information used to Support the Assessment

Modelling Information

Table 1.4 Atmospheric Dispersion Modelling System (ADMS) Input Data Parameters

Parameter	Value	Units
Road type	Scotland (Rural)	--
Meteorology	Aberdeen Dyce	1 hour
Surface roughness (dispersion site)	0.3	m
Surface albedo (default)	0.23	--
Priestley-Taylor parameter	1	--
Monin-Obhukov length (small towns)	10	m

Modelled predictions of the road-NO_X contribution from ADMS and estimated background concentrations were used as inputs to the Defra NO_X to NO_2 calculator[11] version 7.1 to predict annual average NO_2 concentrations at all modelled receptor locations.

In accordance with LAQM.TG (16), empirical relationships between annual average concentrations of NO_2 and PM_{10} were used to determine the likelihood of exceedances of the 1-hour and 24-hour average NO_2 and PM_{10} objectives.

For the assessment of local air quality impacts, three scenarios were considered to assess different conditions on the road network as follows:

- Verification year (2017);
- Opening year Do-Minimum (2030); and
- Opening year Do-Something (2030).

The model for the verification year was limited to Inverurie only, as all three diffusion tubes used to verify the model are located in the town centre.

The modelled road contributions of NO_X and PM_{10} have been adjusted during the DMRB Stage 2 assessment using a verification factor of 2.2158. Further information on model verification is provided in Volume 4, Appendix 10.2.

Traffic Data

The traffic impact of the scheme is assessed using the A96 CRAM v1.4 Environmental Refined Core models (see Volume 3, Part 4, Traffic and Economic Assessment). This traffic model covers, in detail, the whole of the A96 from Inverness to Aberdeen and the surrounding local road network, with the North of Scotland in the buffer network. It is informed by Transport Scotland's national TMfS (Transport Model for Scotland) and TELMoS

[11] Department of Environment, Food and Rural Affairs (Defra), NO_x to NO_2 Calculator, v7.1, April 2019. https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html#NOxNO2calc

(Transport/Economic/Land-use Model of Scotland) models, in addition to a comprehensive database of traffic data collection undertaken specifically for this scheme.

The A96 CRAM v1.4 is comprised of four discrete models representing: Early AM peak hour (07:00 to 08:00), AM peak hour (08:00 to 09:00), PM peak hour (17:00 to 18:00), and Average Interpeak hour (an average of 10:00 to 16:00). Factors for converting these hourly flows to AAWT and AADT values have been calculated by comparing the ratio of observed flows over the modelled hours and longer periods.

For the purposes of this DMRB Stage 2 assessment, peak hour flows were not used within the air quality dispersion model. As the air quality of the region is good, AADT 24-hour traffic flows have been applied in line with proportionate assessment for predominately low risk schemes.

The A96 CRAM v1.4 forecasts traffic demands in the years 2030, 2037 and 2045 for use in the scheme assessment, in three scenarios: Do-Minimum, incorporating all land use and transport schemes which are classed as 'near certain' or 'more than likely', including the Aberdeen Western Peripheral Road (AWPR) and Aberdeen to Inverness Railway Improvements; Do-Something (Economic), incorporating the Do-Minimum scenario plus the East of Huntly to Aberdeen dualling scheme, and Do-Something (Environmental), incorporating a fully dualled A96 from Inverness to Kintore, inclusive of the preferred routes for the Inverness to Nairn and Hardmuir to Fochabers sections. As part of the Environmental scenario, induced demand is added to the model as a result of the full dualling scheme and, therefore, represents a maximum impact scenario for traffic capacity and environmental assessment. The level of induced demand is predicted by the national models and incorporated into the A96 CRAM v1.4.

For the A96 East of Huntly to Aberdeen section, the Environmental Assessment has been based on a modified version of the A96 CRAM v1.4 which has been amended to re-allocate forecast development trips in the Inverurie area to zones which better reflect the locations of Local Development Plan developments. This is referred to as the Environmental Refined Core model. The precise location of trips from these developments is important in the identification of a Preferred Option as trips to and from the Uryside and Portstown developments to the north of the town are closer to and, therefore, more likely to be attracted to the northern (Violet route option) bypass, whereas trips to and from the Crichie development to the south of the town are closer to and, therefore, more likely to be attracted to, the southern (Orange route option) bypass. Traffic volumes on both routes, and through central Inverurie, are sensitive to the locations of development traffic.

AmeyArup consider the Environmental Refined Core model to be equivalent to the 'Core' model but with a more realistic assignment of traffic growth and have adopted the

Environmental Refined Core model as the basis for providing traffic information for Environmental Assessment.

Emission Factors Toolkit

The Emissions Factors Toolkit (EFT) is published by Defra and the Devolved Administrations to assist in carrying out local air quality assessments as part of their duties under the Environment Act 1995.

The EFT allows users to calculate road vehicle pollutant emission rates for NO_x and PM_{10} for a specified year, road type, vehicle speed and vehicle fleet composition.

The EFT is updated periodically due to updates to underlying data including vehicle fleet composition and emissions factors. Users are, therefore, advised to check this data regularly to ensure they are using the most up to date version of the tool for their studies.

ETF v9.0 was used to calculate vehicle emission factors for this assessment.

Long term trend correction factors were not applied to final results. Fleet split applied was derived from the EFT v9.0 for the base year and for the proposed opening year (2030).

Meteorological data

Hourly sequential meteorological data (wind speed, direction etc.) for 2018 measured at the Aberdeen Dyce site was used for the modelling assessment. The meteorological measurement site is located approximately 10km east of the most eastern section of the study area.

Meteorological measurements are subject to their own uncertainty which will unavoidably carry forward into this assessment. A wind rose of the meteorological site is presented in Figure A1.1.

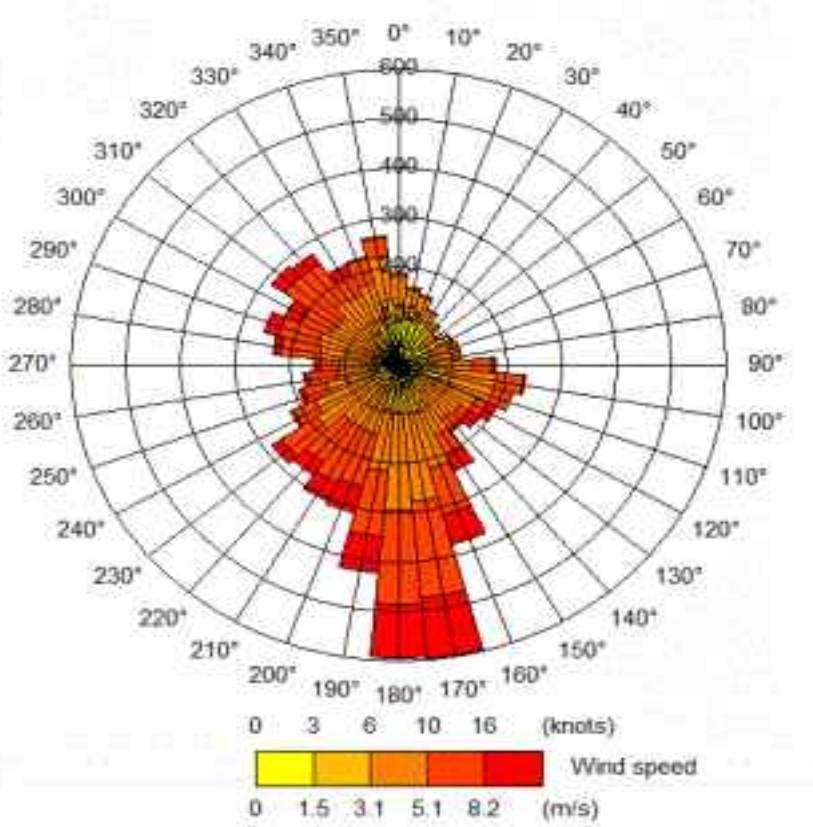


Figure A1.1 Aberdeen Dyce Windrose (2018)

NO_X to NO_2 Calculations

The Defra NO_X to NO_2 calculator v7.1[12] (was used to convert the road-NO_X contribution from road traffic to total NO_2.

The background concentrations were modified where required by the removal of the existing road contribution for Primary A roads to avoid double counting of the modelled road traffic contribution.

Since concentrations of NO_2 and PM_{10} are low throughout the modelled domain there is no requirement to predict 1-hour NO_2 or occasions where the 24-hour mean objective for PM_{10} may be exceeded.

Validation of ADMS-Roads

Validation of the model is the process by which the model outputs are tested against monitoring results at a range of locations and the model is judged to be suitable for use in specific applications; this is usually conducted by the model developer.

Cambridge Environmental Research Consultants (CERC) have carried out extensive validation of ADMS applications by comparing modelled results with standard field, laboratory and numerical data sets, participating in EU workshops on short range dispersion models, comparing data between UK M4 and M25 motorway field monitoring data, carrying out inter-comparison studies alongside other modelling solutions such as DMRB and CALINE4, and

[12] Department of Environment Food and Rural Affairs, *NO_x to NO_2 Calculator (Version 7.1)*, April 2019.

carrying out comparison studies with monitoring data collected in cities throughout the UK using the extensive number of studies carried out on behalf of local authorities and Defra.

Evaluation of Significance

The significance of the predicted permanent effects on air quality has been evaluated using IAN 174/13. The methodology requires the assessment of significance to consider 'residual' effects so that the judgement considers the effectiveness of the mitigation measures applied.

Whilst every endeavour is made to ensure that the assessment methodologies are reasonable, robust and representative there is always an element of residual measure of uncertainty (MoU). This is due to inherent uncertainty in the air quality monitoring, modelling, emission estimates and the traffic data used in the assessment.

Table 1.6 presents the different magnitude of change criteria for annual average NO_2 and PM_{10} concentrations which is described as a percentage of the relevant air quality threshold.

Table 1.5 Local Air Quality Receptors Informing Scheme Significance

IAN 174/13 Magnitude of change in NO_2 ($\mu g/m^3$)	Value of change in annual average NO_2	Equivalent magnitude of effect
Large (>4)	Greater than full MoU value of 10% of the air quality objective (4$\mu g/m^3$)	Major
Medium (>2 to 4)	Greater than half of the MoU (2 $\mu g/m^3$), but less than the full MoU (4$\mu g/m^3$) of 10% of the air quality objective	Moderate
Small (>0.4 to 2)	More than 1% of objective (0.4 $\mu g/m^3$) and less than half of the MoU i.e. 5% (2 $\mu g/m^3$). The full MoU is 10% of the air quality objective (4$\mu g/m^3$)	Minor
Imperceptible (≤ 0.4)	Less than or equal to 1% of the objective (0.4$\mu g/m^3$)	No change/ Negligible

The magnitude of change is focussed only on those receptors exceeding air quality thresholds in either the Do-Minimum or Do-Something scenarios. Where the difference in concentrations are less than 1% of the air quality objective then the change in these receptors is considered to be imperceptible and they can be scoped out of the judgement of significance.

Where the outcomes of the assessment indicate that either all modelled concentrations are less than the air quality thresholds or any changes above the air quality thresholds are imperceptible, then the overall scheme effect is likely to be insignificant.

IAN 174/13 highlights that change is generally always focused only on receptors that exceed the SAQOs in either the Do-Minimum and/or Do-Something scenarios. In this case, no

receptors throughout the study area were predicted to experience changes in air quality whereby any exceedances of any SAQOs would occur.

Professional judgement

Professional judgement was used to evaluate each end-to-end option based on the number of affected receptors, predicted concentrations and potential for exceedances of the NO_2 and PM_{10} objectives. The final conclusions presented in the assessment are based on analysis of scenarios using professional judgement, considering all assessed quantitative and qualitative information.

Appendix A10.2 **Air Quality Model Verification**

Appendix A10.2 **Air Quality Model Verification**

ADMS 4.1 is a software tool used to estimate concentrations of pollutants at specified points within a model domain. Discrepancies may occur between measured concentrations and those predicted using ADMS-Roads (v4.1) for several reasons including:

- Traffic data uncertainties, including estimates of speeds, total flows and proportions of vehicle types;
- Inaccurate emission estimates in the Emission Factors Toolkit;
- Estimates of background concentrations and future trends;
- NO_X:NO_2 conversion using the Defra conversion tool;
- Overall limitations in the ADMS-Roads (v4.1); and
- The precision and accuracy of monitoring methods (e.g. diffusion tubes ±25% error).

Disparities between modelling and monitoring results are likely to occur because of a combination of all these aspects. Verification is the process by which uncertainties such as those described above are investigated and minimised.

Annual mean roadside NO_X concentrations were predicted using the ADMS-Roads (v4.1). A comparison of modelled vs. monitored annual mean roadside NO_X concentrations was undertaken (Table 1.2) using data collected at diffusion tube locations in Inverurie during 2017 (See Table 1.1).

Table 1.1 Inverurie Diffusion Tubes for Verification

Site Name	Site Type	x Coordinate	y Coordinate	Dist. to nearest exposure (m)	Dist. to kerbside (m)	NO_2 Concentrations ($\mu g/m^3$)
						2017
Inverurie 1	Roadside	377403	821584	2	1.5	27.7
Inverurie MC	Roadside	377624	821295	0	1.5	24.3
Inverurie 21 High Street	Roadside	377602	821323	0	2.3	21.6

An adjustment factor was derived from the linear interpolation of the monitored NO_2 values and modelled NO_2 predictions according to the Defra guidance document Local Air Quality Management LAQM.TG (16). Road-NO_X verification and resulting adjustment was applied to all receptors to ensure that model under-prediction was minimised (see Table 1.3).

Figures 1.1 and 1.2 summarise the verification and adjustment factors applied to Road NO_X during post processing of model output data.

Results show the model under predicts Road- NO_X by a factor of **2.2158**. All modelled Road NO_X and PM_{10} results were adjusted using this factor.

Table 1.2 Non-Adjusted Verification Point Results - Modelled vs Monitored

Site ID	2017 Monitored Total NO_2	2017 Background NO_x	2017 Background NO_2	2017 Monitored Total NO_x	2017 Monitored Road Contribution NO_2 (total - background)	2017 Monitored Road Contribution NO_x (total - background)	2017 Modelled Road Contribution NO_x (excludes background)	Ratio
IV_1	27.7	8.28	5.83	50.9	21.9	42.6	14.7	2.9
IV_MC	24.3	7.69	5.43	43.9	18.9	36.2	16.3	2.2
IV_21HS	21.6	8.28	5.83	38.2	15.8	29.9	17.4	1.7

Table 1.3. Adjusted Verification Point Results – Modelled vs Monitored

Site ID	Ratio of monitored road Contribution NOx/ modelled road contribution NO_x	Adjustment factor for modelled road contribution	Adjusted modelled road contribution NO_x	Adjusted modelled total NO_x (incl. background NO_x)	Modelled total NO_2 (based on empirical NO_x/NO_2 relationship)	Monitored Total NO_2	% Difference [(modelled - monitored)/monitored] x100
IV_1	2.89	2.2158	32.64	40.92	22.94	27.7	-17.1841
IV_MC	2.22		36.10	43.79	24.25	24.3	-0.2058
IV_21HS	1.72		38.46	46.74	25.75	21.6	19.2130

Figure 1.1 Monitored NO_X vs modelled NO_X (before adjustment)

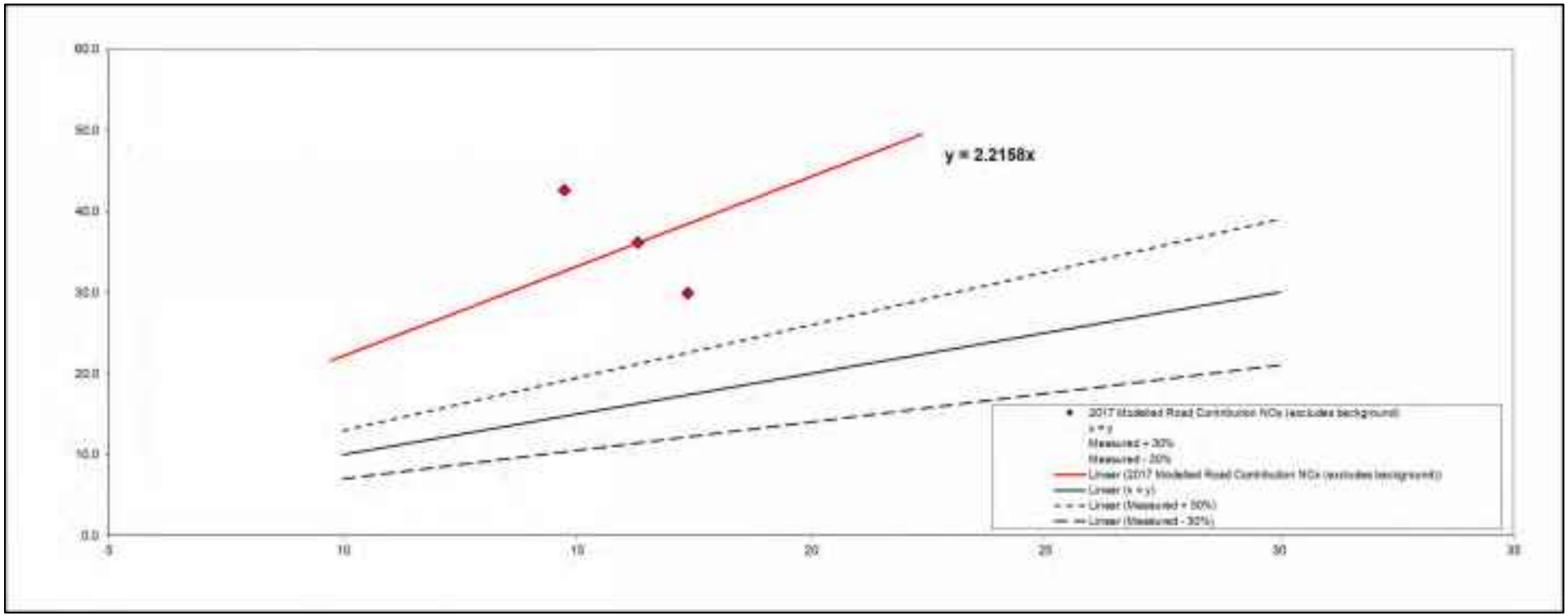
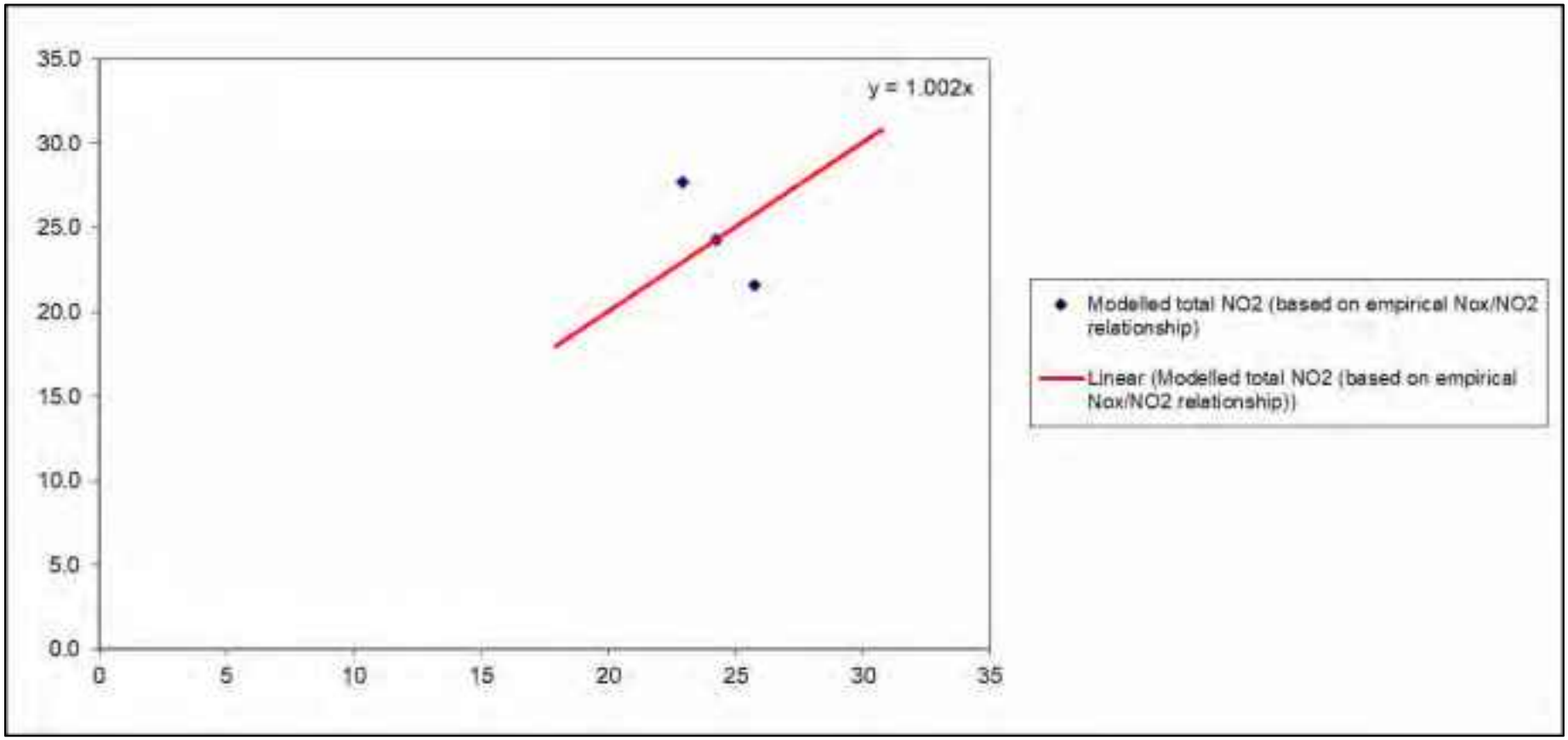


Figure 1.2 Monitored NO_2 against modelled NO_2 (after adjustment)



Model Uncertainty

It is desirable to evaluate the model performance, where possible, in order to establish confidence in model results. The total uncertainty associated with the model could be associated with a variety of factors including:

- Model uncertainty – due to model formulations;
- Data uncertainty – due to errors in input data, including emissions estimates, background estimates and meteorology; and
- Variability – randomness of measurements used.

A number of statistical procedures are available to evaluate model performance and assess the uncertainties. A detailed study estimating model uncertainty recommended that a subset of statistical parameters be used to describe the general uncertainties of dispersion models. The statistical parameters include:

- The correlation coefficient;
- Fractional bias; and
- Root Mean Square Error (RMSE).

These parameters estimate how the model results agree or diverge from the observations. These calculations can be carried out prior to, and after adjustment, or based on different options for adjustment, and can provide useful information on model improvement.

Table 1.4 provides information on the Correlation Coefficient, Root Mean Square Error (RMSE), and Fractional Bias derived from the monitoring data compared to modelled data.

Table 1.4 Root Mean Square Error (RMSE)

Site ID	Monitored Total NO_2	Modelled Total NO_2	(Observed – Predicted)^2
IV_1	27.70	22.94	22.658
IV_MC	24.30	24.25	0.003
IV_21HS	21.60	25.75	17.223
Sum (Obs - Pred)^2			39.88
1/No. of Comparisons			0.33
Mean Monitored - Mean Modelled			0.22
Mean Monitored + Mean Modelled			48.85
Correlation Co-efficient			**-0.99**
RMSE			**3.65**
Fractional Bias			**-0.55**

If the RMSE values are higher than ±25% of the objective being assessed, it is recommended that the model inputs and verification should be revisited in order to make improvements.

For example, if model predictions are for the annual mean NO_2 objective of 40µg/m^3, if an RMSE of 10µg/m^3 or above is determined for a model, then the assessor would be advised to revisit the model parameters and model verification. Ideally an RMSE within 10% of the air quality objective would be derived, which equates to 4µg/m^3 for the annual average NO_2 objective.

The fractional bias of the model may be used in order to identify if the model shows a systematic tendency to over or under predict. However, care should be taken when using this statistic particularly where assessors are concerned about the performance of the model at concentrations close to the AQO being assessed. The fractional bias provides the tendency of the whole model to under or over predict. Fractional Bias presented above related to the DMRB Stage 2 assessment show that the modelled results for the scheme tend to under predict monitored results used for this assessment.

The correlation coefficient could be applied particularly in cases where large datasets such as hourly observations and predictions are being compared but this is not recommended for smaller datasets. It is generally less useful for smaller datasets and can be controlled by single points at the upper or lower ranges of datasets.

Appendix A10.3 **Air Quality Predicted Effects Supporting Assessment**

Appendix A10.3 **Air Quality Predicted Effects Supporting Assessment**

Introduction

This appendix presents the results of the DMRB Stage 2 assessment with respect to:

- The potential air quality impacts of the end-to-end options;
- Provides a ranking of end-to-end options: and
- Provides a discussion on the performance of end-to-end options, from an air quality perspective.

The magnitude of predicted impacts has been considered in combination with resultant pollutant concentrations to determine the potential for significant effects.

Results of the air quality assessment conclude that there are no sensitive receptors where predicted concentrations of NO_2 or PM_{10}, exceed the relevant SAQOs in either the Do-Minimum (DM) or Do-Something (DS) scenarios for any of the end-to-end options.

In accordance with the significance criteria in IAN 174/13, there are no significant air quality effects predicted at any location for each end-to-end option.

Predicted Effects

Human Health Impacts Summary

Pollutant concentrations at a number of discrete receptor points were modelled for nine scenarios, including the Do-Minimum scenario. Each scenario has a distinct Affected Road Network (ARN) and number of discrete receptor locations.

Using GIS and professional judgement, a number of worst-case receptor locations were identified for each end-to-end option, with estimated concentrations of NO_2 and PM_{10} estimated at each receptor location. The receptor identifiers are shown in Appendix A10.1, with locations shown in Volume 5, Figures 10.1 to 10.24.

Table 1.1 presents the number of receptors for each modelled scenario that fall within each 'Magnitude of Change' range for NO_2. For example, for the C-Br-O end-to-end option, two worst-case receptor locations are predicted to experience a change in NO_2 concentrations of between -0.1µg/m^3 and 0.1µg/m^3, eight worst-case receptor locations where the magnitude of change is predicted to be between 0.1µg/m^3 and 0.4µg/m^3, 62 receptors where the magnitude

of change is anticipated to fall between 0.4µg/m^3 and 2.0µg/m^3, and five receptor locations where the change in concentration is estimated to be greater than 2.0 µg/m^3.

Table 1.1 Magnitude of Change: Annual Average NO_2 Concentrations – Do Minimum vs Do Something Scenarios

Magnitude of Change in Annual Average vs DM Scenario NO_2 (µg/m^3)		C-Br-O	C-Br-V	C-P-O	C-P-V	R-P-O	R-P-V	R-Br-O	R-Br-V
Large	> 4.01	2	0	2	0	2	0	2	0
Medium	> 2.01 to 4	3	3	3	4	4	6	4	4
Small	> 0.41 to 2	38	39	37	33	42	36	43	41
Imperceptible	>0.1 to 0.4	8	8	10	6	9	6	7	10
	0	2	4	2	2	3	2	2	3
	>-0.1 to -0.4	14	4	7	3	7	2	13	3
Small	< -0.41 to -2	62	56	52	59	48	53	59	53
Medium	< -2.01 to -4	40	20	39	22	41	26	43	23
Large	< -4.01	20	16	19	15	21	17	21	18

All end-to-end options experience similar levels of beneficial and adverse impacts.

It should also be noted that by focusing on receptors at worst case locations, the modelling results do not provide enough detail to show the true extent of beneficial impacts that may be realised throughout Inverurie town centre for the majority of the end-to-end options.

Overall, none of the end-to-end options will introduce significant air quality impacts related to NO_2 throughout the study area.

The above NO_2 results are based on analysis of modelling results, an extract of which is provided in Table 1.2 below for end-to-end option C-P-V.

Table 1.2 Extract of C-P-V Modelling Results Workbook NO_2

Receptor ID	Receptor UPRN	DM 2030	DS 2030	2030 Difference
R145	151555116	19.8	9.3	-10.6
R1	151120849	17.2	7.4	-9.7
R120	151029877	17.3	9.0	-8.3
R119	151027891	16.2	8.8	-7.4
R129	151027875	15.6	9.5	-6.1
R181	151107450	3.9	6.4	2.5
R201	151112363	2.9	5.2	2.4
R200	151112387	2.8	5.0	2.2
R199	151112347	2.7	4.6	1.9
R196	151109385	4.8	6.6	1.8

Table 1.2 shows the top five receptors that experience the greatest improvement in NO_2 concentrations on the C-P-V end-to-end option, whilst the bottom five rows show results for the top five receptors that may experience the greatest increase in NO_2 concentrations.

Table 1.3 presents the number of receptors for each modelled scenario that fall within each 'Magnitude of Change' range in relation to PM_{10} concentrations. For example, R-P-V end-to-end option has 70 worst-case receptor locations where an imperceptible change in PM_{10} concentrations is estimated, 13 locations where a small adverse impact may be expected, and 77 locations where a small beneficial impact is anticipated.

As discussed in the main chapter, the overall impact of pollution resulting from changes in traffic flow should not be considered at individual receptor locations as part of this comparative appraisal DMRB Stage 2 exercise. The impact of each end-to-end option should be considered across all receptors with focus on the overall benefit or disbenefit introduced.

With respect to PM_{10}, the impact at a small number of individual receptor locations (e.g., R91) show that concentrations are close to the annual mean SAQO (18µg/m^3). However, it should be noted that the average contribution of PM_{10} at all receptor locations is approximately 3% (0.3µg/m^3) of the average background concentration (10.1µg/m^3) throughout the study area.

Table 1.3 Magnitude of Change: Annual Average PM_{10} Concentrations – Do Minimium vs Do Something Scenarios

Magnitude of Change in Annual Average vs DM Scenario NO2 (µg/m³)		C-Br-O	C-Br-V	C-P-O	C-P-V	R-P-O	R-P-V	R-Br-O	R-Br-V
Large	> 4.01	0	0	0	0	0	0	0	0
Medium	> 2.01 to 4	0	0	0	0	0	0	0	0
Small	> 0.41 to 2	6	6	7	8	10	13	9	8
Imperceptible	>0.1 to 0.4	36	33	37	28	39	28	39	36
	0	16	16	12	19	13	25	15	15
	>-0.1 to -0.4	48	36	27	22	29	17	46	38
Small	< -0.41 to -2	81	57	87	73	85	77	84	56
Medium	< -2.01 to -4	1	2	1	2	1	2	1	2
Large	< -4.01	1	0	0	0	0	0	0	0

The above PM_{10} results are based on analysis of modelling results, an extract of which is provided below for the C-P-V end-to-end option.

Table 1.4 Extract of C-P-V Modelling Results Workbook PM_{10}

Receptor ID	Receptor UPRN	DM 2030	DS 2030	2030 Difference
R1	151120849	14.6	12.1	-2.4
R145	151555116	13.1	11.1	-2.0
R119	151027891	12.9	11.0	-1.9
R129	151027875	12.7	10.9	-1.8
R184	151103258	11.3	9.8	-1.6
R173	151119560	12.0	12.7	0.7
R181	151107450	12.1	12.7	0.6
R201	151112363	9.6	10.2	0.6
R200	151112387	10.6	11.2	0.6
R199	151112347	10.6	11.1	0.5

Table 1.4 shows the top five receptors that experience the greatest improvement in PM_{10} concentrations on the C-P-V end-to-end option, while the bottom five rows show results for the top five receptors that may experience the greatest increase in PM_{10} concentrations.

NO_2 and PM_{10} results are similar for all end-to-end options. The difference between the best performing and worst performing end-to-end option is not substantial enough to select one outstanding end-to-end option over all others. In line with DMRB HA 207/07 terms, none of the end-to-end options will lead to significant environmental impact as there are no exceedances of the NO_2 or PM_{10} objectives predicted throughout the study area, although PM_{10}

concentrations do come within 10% of the SAQO at a small number (<3) of locations for each end-to-end option.

Regional Impacts

Results from the regional impact assessment are presented in Chapter 10, Air Quality.

The differences between each end-to-end option for both the opening (2030) and future year (2045) are minor and may be a result of several factors, such as length of route, slower average speeds across the ARN, and more ARN road links included in those scenarios.

The difference between the best performing and worst performing end-to-end option, in terms of Regional Emissions, is not significant enough to recommend one outstanding end-to-end option over all others.

End-to-End Option Ranking

None of the end-to-end options assessed present any significant air quality impacts throughout the study area. The differences between the magnitude of change for each end-to-end option is very small, the regional emissions for each end-to-end option are comparable, and the number of receptors within 200m are also similar.

When comparing results between the Cyan and Red route options, Pink and Brown route options, and Violet and Orange route options, there are no substantial differentiators between the Cyan and Red route options or the Pink and Brown route options. When comparing the Violet and Orange route options, the Violet route option performs better based on the analysis carried out to date. End-to-end options that contain the Violet route option have significantly less receptors located within 200m of the ARN. However, this is likely as a result of end-to-end options that contain the Violet route option having a smaller modelled ARN.

While the tables above show that end-to-end options which include the Orange route option may result in a higher number of receptors experiencing an improvement in pollution, this is likely influenced by the higher number of receptors located within 200m of end-to-end options that include the Orange route option.

Considering the similarities between each end-to-end option, the limitations associated with the DMRB Stage 2 assessment, and the conclusion that there are no significant environmental impacts associated with any end-to-end option, there is no outstanding recommended end-to-end option from an air pollution perspective.

Appendix A11.1 Glossary of Acoustic Terminology

Appendix A11.1 Glossary of Acoustic Terminology

Decibel (dB)

The ratio of sound pressures which we can hear is a ratio of 10^6:1 (about one million to one). For convenience, therefore, a logarithmic measurement scale is used. The resulting parameter is called the 'sound pressure level' (Lp) and the associated measurement unit is the decibel (dB). As the decibel is a logarithmic ratio, the laws of logarithmic addition and subtraction apply.

dB(A)

The dB(A) is a unit used to define a weighted sound pressure level, which correlates well with the subjective response to sound. The 'A' weighting follows the frequency response of the human ear, which is less sensitive to low and very high frequencies than it is to those in the range 500Hz to 4kHz.

In some statistical descriptors, the 'A' weighting forms part of a subscript, such as L_{A10}, L_{A90}, and L_{Aeq}, for the 'A' weighted equivalent continuous noise level.

Equivalent continuous sound level

An index for assessment for overall noise exposure is the equivalent continuous sound level, L_{eq}. This is a notional steady level which would, over a given period of time, deliver the same sound energy as the actual time-varying sound over the same period. Hence, fluctuating levels can be described in terms of a single figure level.

Frequency

Frequency is the rate of repetition of a sound wave. The subjective equivalent in music is pitch. The unit of frequency is the hertz (Hz), which is identical to cycles per second. A 1000Hz is often denoted as 1kHz, e.g. 2kHz = 2000Hz. Human hearing ranges approximately from 20Hz to 20kHz. For design purposes, the octave bands between 63Hz to 8kHz are generally used. The most commonly used frequency bands are octave bands, in which the mid frequency of each band is twice that of the band below it. For more detailed analysis, each octave band may be split into three one-third octave bands or narrow frequency bands.

Maximum noise level

The maximum noise level identified during a measurement period. Experimental data has shown that the human ear does not generally register the full loudness of transient sound events of less than 125ms duration and fast time weighting (F) has an exponential time constant of 125ms which reflects the ear's response. Slow time weighting (S) has an exponential time constant of 1s and is used to allow more accurate estimation of the average sound level on a visual display.

The maximum level measured with fast time weighting is denoted as $L_{Amax,\,F}$. The maximum level measured with slow time weighting is denoted $L_{Amax,\,S}$.

Sound pressure level

The sound power emitted by a source results in pressure fluctuations in the air, which are heard as sound.

The sound pressure level (L) is ten times the logarithm of the ratio of the measured sound pressure (detected by a microphone) to the reference level of 2 x 10-5Pa (the threshold of hearing).

Thus, L (dB) = 10 log $(P1/P_{ref})^2$ where P_{ref}, the lowest pressure detectable by the ear, is 0.00002 pascals (i.e. 2x10-5 Pa).

The threshold of hearing is 0dB, while the threshold of pain is approximately 130dB. Normal speech is approximately 60dBLA and a change of 3dB is only just detectable. A change of 10dB is subjectively twice, or half, as loud.

Statistical noise levels

For levels of noise that vary widely with time, for example, road traffic noise, it is necessary to employ an index which allows for this variation. The L_{10} is the level exceeded for 10% of the time period under consideration and can be used for the assessment of road traffic noise (note that L_{Aeq} is used in BS 8233 for assessing traffic noise). The L_{90} is the level exceeded for 90% of the time, has been adopted to represent the background noise level. The L_1 is the level exceeded for 1% of the time, is representative of the maximum levels recorded during the sample period.

Weighted statistical noise levels are denoted as L_{A10} or dBL_{A90} etc. The reference time period (T) is normally included, for example, dBL_{A10}, 5min or dBL_{A90}, 8hr.

Typical levels

Table 1.1 describes typical noise levels with real life examples.

Table 1.1 Typical Noise Levels with Examples

Noise Level, dB(A)	Example
130	Threshold of pain
120	Jet aircraft take-off at 100m
110	Chain saw at 1m
100	Inside disco
90	Heavy lorries at 5m
80	Kerbside of busy street
70	Loud radio (in typical domestic room)
60	Office or restaurant
50	Domestic fan heater at 1m
40	Living room
30	Theatre
20	Remote countryside on still night

Appendix A11.2 DMRB Noise Reporting Tables

Appendix A11.2 DMRB Noise Reporting Tables

This appendix presents the noise reporting tables as per the Design Manual for Roads and Bridges (DMRB) (Highways Agency et al, 2011) (HD 213/11[1]). There are three geographical sections that divide the end-to-end options and two potential route options in each geographical section. Their combination makes up the eight potential end-to-end options. The noise reporting tables are presented in the following geographical sections:

- East of Huntly to Colpy: Cyan route option and Red route option. From Table 1.1 to Table 1.9;
- Colpy to Pitcaple: Pink route option and Brown route option. From Table 1.10 to Table 1.18; and
- Pitcaple to Kintore: Violet route option and Orange route option. From Table 1.19 to Table 1.27.

This appendix should be read in conjunction with the main noise and vibration assessment in Chapter 11 Noise and Vibration.

[1] Design Manual for Roads and Bridges, HD 213/11 (Highways Agency et al, 2011)

East of Huntly to Colpy

Table 1.1 Daytime Short-term Results for Residential Receptors – East of Huntly to Colpy

Section: East of Huntly to Colpy										
Scenario/Comparison: Do Something 2030 compared to Do Minimum 2030 (Short-term) - Daytime – Residential Receptors										
Change in noise level		**DMRB Impact category (short-term)**	**Number of Residential Receptors**							
			Cyan route option				**Red route option**			
			C-P-V	**C**-P-O	**C**-Br-V	**C**-Br-O	**R**-P-V	**R**-P-O	**R**-Br-V	**R**-Br-O
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 0.9	Negligible	132	230	69	138	158	244	115	229
	1 to 2.9	Minor adverse	13	18	19	20	17	19	14	17
	3 to 4.9	Moderate adverse	4	5	2	2	5	4	7	6
	5+	Major adverse	7	6	6	6	22	22	22	22
No change	0	Negligible	102	234	121	115	139	231	96	233
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 0.9	Negligible	757	515	797	728	675	496	763	509
	1 to 2.9	Minor beneficial	25	18	19	24	10	12	19	17
	3 to 4.9	Moderate beneficial	16	18	15	15	11	10	11	14
	5+	Major beneficial	17	22	19	19	35	34	25	25

Table 1.2 Daytime Short-term Results for Non-residential Receptors – East of Huntly to Colpy

Section: East of Huntly to Colpy										
Scenario/Comparison: Do Something 2030 compared to Do Minimum 2030 (Short-term) - Daytime - 'other' sensitive receptors (non-residential receptors)										
Change in noise level		**DMRB Impact category (short-term)**	**Number of 'other' sensitive receptors (non-residential receptors)**							
			Cyan route option				**Red route option**			
			C-P-V	**C**-P-O	**C**-Br-V	**C**-Br-O	**R**-P-V	**R**-P-O	**R**-Br-V	**R**-Br-O
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 0.9	Negligible	0	2	0	0	1	3	0	3
	1 to 2.9	Minor adverse	0	0	0	0	0	0	0	0
	3 to 4.9	Moderate adverse	0	0	0	0	0	0	0	0
	5+	Major adverse	0	0	0	0	0	0	0	0
No change	0	Negligible	1	5	2	3	3	4	1	3
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 0.9	Negligible	10	4	9	8	7	4	10	5
	1 to 2.9	Minor beneficial	0	0	0	0	0	0	0	0
	3 to 4.9	Moderate beneficial	0	0	0	0	0	0	1	1
	5+	Major beneficial	1	1	1	1	1	1	0	0

Table 1.3 Daytime Long-term Results for Residential Receptors – East of Huntly to Colpy

Section: East of Huntly to Colpy										
Scenario/Comparison: Do Something 2045 compared to Do Minimum 2030 (Long-term) - Daytime – Residential Receptors										
Change in noise level		**DMRB Impact category (long-term)**	**Number of Residential Receptors**							
			Cyan route option				**Red route option**			
			C-P-V	**C**-P-O	**C**-Br-V	**C**-Br-O	**R**-P-V	**R**-P-O	**R**-Br-V	**R**-Br-O
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	991	993	995	986	980	981	982	980
	3 to 4.9	Minor adverse	8	9	11	12	13	13	10	8
	5 to 9.9	Moderate adverse	8	7	8	8	8	8	9	13
	10+	Major adverse	0	1	0	0	15	15	14	14
No change	0	Negligible	3	0	3	4	0	0	1	1
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	31	27	25	32	17	18	29	22
	3 to 4.9	Minor beneficial	11	12	9	9	8	7	4	11
	5 to 9.9	Moderate beneficial	14	16	13	13	11	15	7	7
	10+	Major beneficial	1	1	3	3	20	15	16	16

Table 1.4 Daytime Long-term Results for Non-residential Receptors – East of Huntly to Colpy

Section: East of Huntly to Colpy										
Scenario/Comparison: Do Something 2045 compared to Do Minimum 2030 (Long-term) - Daytime - 'other' sensitive receptors (non-residential receptors)										
Change in noise level		**DMRB Impact category (long-term)**	**Number of 'other' sensitive receptors (non-residential receptors)**							
			Cyan route option				**Red route option**			
			C-P-V	**C**-P-O	**C**-Br-V	**C**-Br-O	**R**-P-V	**R**-P-O	**R**-Br-V	**R**-Br-O
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	11	11	11	11	11	11	11	11
	3 to 4.9	Minor adverse	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate adverse	0	0	0	0	0	0	0	0
	10+	Major adverse	0	0	0	0	0	0	0	0
No change	0	Negligible	0	0	0	0	0	0	0	0
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	0	0	0	0	0	0	1	0
	3 to 4.9	Minor beneficial	1	0	1	1	0	0	0	1
	5 to 9.9	Moderate beneficial	0	1	0	0	1	1	0	0
	10+	Major beneficial	0	0	0	0	0	0	0	0

Table 1.5 Daytime Do-Minimum Long-term Results for Residential Receptors – East of Huntly to Colpy

Section: East of Huntly to Colpy										
Scenario/Comparison: Do Minimum 2045 compared to Do Minimum 2030 (Long-term) - Daytime – Residential Receptors										
Change in noise level		**DMRB Impact category (long-term)**	**Number of Residential Receptors**							
			Cyan route option				**Red route option**			
			C-P-V	**C**-P-O	**C**-Br-V	**C**-Br-O	**R**-P-V	**R**-P-O	**R**-Br-V	**R**-Br-O
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	1064	1063	1064	1064	1069	1069	1069	1069
	3 to 4.9	Minor adverse	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate adverse	0	0	0	0	0	0	0	0
	10+	Major adverse	0	0	0	0	0	0	0	0
No change	0	Negligible	0	0	0	0	0	0	0	0
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	3	3	3	3	3	3	3	3
	3 to 4.9	Minor beneficial	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate beneficial	0	0	0	0	0	0	0	0
	10+	Major beneficial	0	0	0	0	0	0	0	0

Table 1.6 Daytime Do-Minimum Long-term Results for Non-residential Receptors – East of Huntly to Colpy

Section: East of Huntly to Colpy										
Scenario/Comparison: Do Minimum 2045 compared to Do Minimum 2030 (Long-term) - Daytime - 'other' sensitive receptors (non-residential receptors)										
Change in noise level		**DMRB Impact category (long-term)**	**Number of 'other' sensitive receptors (non-residential receptors)**							
			Cyan route option				**Red route option**			
			C-P-V	**C**-P-O	**C**-Br-V	**C**-Br-O	**R**-P-V	**R**-P-O	**R**-Br-V	**R**-Br-O
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	12	12	12	12	12	12	12	12
	3 to 4.9	Minor adverse	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate adverse	0	0	0	0	0	0	0	0
	10+	Major adverse	0	0	0	0	0	0	0	0
No change	0	Negligible	0	0	0	0	0	0	0	0
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	0	0	0	0	0	0	0	0
	3 to 4.9	Minor beneficial	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate beneficial	0	0	0	0	0	0	0	0
	10+	Major beneficial	0	0	0	0	0	0	0	0

Table 1.7 Night-time Long-term Results for Residential Receptors – East of Huntly to Colpy

Section: East of Huntly to Colpy										
Scenario/Comparison: Do Something 2045 compared to Do Minimum 2030 (Long-term) - Night-time – Residential Receptors										
Change in noise level		**DMRB Impact category (long-term)**	**Number of Residential Receptors**							
			Cyan route option				**Red route option**			
			C-P-V	**C**-P-O	**C**-Br-V	**C**-Br-O	**R**-P-V	**R**-P-O	**R**-Br-V	**R**-Br-O
Increase in noise level, $dBL_{night, outside}$	0.1 to 2.9	Negligible	39	42	38	40	39	42	39	42
	3 to 4.9	Minor adverse	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate adverse	0	0	0	0	0	0	0	0
	10+	Major adverse	0	0	0	0	0	0	0	0
No change	0	Negligible	0	0	0	0	0	0	0	0
Decrease in noise level, $dBL_{night, outside}$	0.1 to 2.9	Negligible	0	0	0	0	0	0	1	1
	3 to 4.9	Minor beneficial	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate beneficial	8	8	7	7	2	2	0	0
	10+	Major beneficial	1	1	2	2	6	6	7	7

Table 1.8 Night-time Do-Minimum Long-term Results for Residential Receptors – East of Huntly to Colpy

Section: East of Huntly to Colpy										
Scenario/Comparison: Do Minimum 2045 compared to Do Minimum 2030 (Long-term) - Night-time – Residential Receptors										
Change in noise level		**DMRB Impact category (long-term)**	**Number of Residential Receptors**							
			Cyan route option				**Red route option**			
			C-P-V	**C**-P-O	**C**-Br-V	**C**-Br-O	**R**-P-V	**R**-P-O	**R**-Br-V	**R**-Br-O
Increase in noise level, $dBL_{night, outside}$	0.1 to 2.9	Negligible	48	48	47	48	47	46	47	46
	3 to 4.9	Minor adverse	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate adverse	0	0	0	0	0	0	0	0
	10+	Major adverse	0	0	0	0	0	0	0	0
No change	0	Negligible	0	0	0	0	0	0	0	0
Decrease in noise level, $dBL_{night, outside}$	0.1 to 2.9	Negligible	0	0	0	0	0	0	0	0
	3 to 4.9	Minor beneficial	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate beneficial	0	0	0	0	0	0	0	0
	10+	Major beneficial	0	0	0	0	0	0	0	0

Table 1.9 Nuisance Result Tables for Residential Receptors – East of Huntly to Colpy

Section: East of Huntly to Colpy																
Change in traffic induced airborne vibration nuisance impacts (long-term) – Residential Receptors																
Change in nuisance level, dB		**Do-Minimum Design Year v Do-Minimum Opening Year**								**Do-Something Design Year v Do-Minimum Opening Year**							
		Cyan route option				**Red route option**				**Cyan route option**				**Red route option**			
		C-P-V	**C**-P-O	**C**-Br-V	**C**-Br-O	**R**-P-V	**R**-P-O	**R**-Br-V	**R**-Br-O	**C**-P-V	**C**-P-O	**C**-Br-V	**C**-Br-O	**R**-P-V	**R**-P-O	**R**-Br-V	**R**-Br-O
Increase in nuisance level	<10%	1064	1063	1064	1064	1067	1067	1067	1067	930	854	941	930	909	842	921	873
	10<20%	0	0	0	0	0	0	0	0	52	123	42	46	60	128	48	95
	20<30%	0	0	0	0	0	0	0	0	16	22	21	22	20	21	17	19
	30<40%	0	0	0	0	0	0	0	0	8	9	6	6	9	8	11	10
	>40%	0	0	0	0	0	0	0	0	2	2	2	2	18	18	18	18
No change	0	0	0	0	0	2	2	2	2	2	0	6	4	1	0	1	1
Decrease in nuisance level	<10%	3	3	3	3	3	3	3	3	47	46	39	47	37	39	44	44
	10<20%	0	0	0	0	0	0	0	0	7	7	7	7	10	9	4	4
	20<30%	0	0	0	0	0	0	0	0	3	3	2	2	7	6	6	6
	30<40%	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	2
	>40%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Colpy to Pitcaple

Table 1.10 Daytime Short-term Results for Residential Receptors – Colpy to Pitcaple

Section: Colpy to Pitcaple										
Scenario/Comparison: Do Something 2030 compared to Do Minimum 2030 (Short-term) - Daytime – Residential Receptors										
Change in noise level		**DMRB Impact category (short-term)**	**Number of Residential Receptors**							
			Pink route option				**Brown route option**			
			C-**P**-V	C-**P**-O	R-**P**-V	R-**P**-O	C-**Br**-V	C-**Br**-O	R-**Br**-V	R-**Br**-O
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 0.9	Negligible	38	45	42	45	58	60	53	63
	1 to 2.9	Minor adverse	28	35	32	38	148	143	157	141
	3 to 4.9	Moderate adverse	12	14	9	14	35	50	40	53
	5+	Major adverse	72	94	76	94	27	63	31	66
No change	0	Negligible	10	3	11	2	8	11	4	8
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 0.9	Negligible	76	73	67	72	69	45	64	43
	1 to 2.9	Minor beneficial	95	80	93	82	36	83	33	81
	3 to 4.9	Moderate beneficial	80	79	80	87	10	20	10	20
	5+	Major beneficial	39	70	40	70	33	48	32	48

Table 1.11 Daytime Short-term Results for Non-residential Receptors – Colpy to Pitcaple

Section: Colpy to Pitcaple										
Scenario/Comparison: Do Something 2030 compared to Do Minimum 2030 (Short-term) - Daytime - 'other' sensitive receptors (non-residential receptors)										
Change in noise level		**DMRB Impact category (short-term)**	**Number of 'other' sensitive receptors (non-residential receptors)**							
			Pink route option				**Brown route option**			
			C-**P**-V	C-**P**-O	R-**P**-V	R-**P**-O	C-**Br**-V	C-**Br**-O	R-**Br**-V	R-**Br**-O
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 0.9	Negligible	2	2	2	2	2	2	2	0
	1 to 2.9	Minor adverse	3	3	3	3	5	5	5	7
	3 to 4.9	Moderate adverse	1	0	0	0	2	1	2	1
	5+	Major adverse	4	5	5	5	3	5	3	5
No change	0	Negligible	0	0	0	0	0	0	0	0
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 0.9	Negligible	1	0	1	0	1	0	1	0
	1 to 2.9	Minor beneficial	0	1	0	1	0	1	0	1
	3 to 4.9	Moderate beneficial	1	1	1	1	0	0	0	0
	5+	Major beneficial	2	2	2	2	33	1	1	1

Table 1.12 Daytime Long-term Results for Residential Receptors – Colpy to Pitcaple

Section: Colpy to Pitcaple										
Scenario/Comparison: Do Something 2045 compared to Do Minimum 2030 (Long-term) - Daytime – Residential Receptors										
Change in noise level		**DMRB Impact category (long-term)**	**Number of Residential Receptors**							
			Pink route option				**Brown route option**			
			C-**P**-V	C-**P**-O	R-**P**-V	R-**P**-O	C-**Br**-V	C-**Br**-O	R-**Br**-V	R-**Br**-O
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	109	112	113	113	180	167	183	159
	3 to 4.9	Minor adverse	11	17	11	18	89	100	94	110
	5 to 9.9	Moderate adverse	37	35	32	33	23	46	28	48
	10+	Major adverse	42	67	51	69	16	32	16	34
No change	0	Negligible	4	6	7	7	9	5	13	5
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	146	140	137	140	68	110	51	105
	3 to 4.9	Minor beneficial	67	57	64	66	15	20	15	19
	5 to 9.9	Moderate beneficial	34	42	35	41	18	36	19	38
	10+	Major beneficial	0	17	0	17	6	7	5	5

Table 1.13 Daytime Long-term Results for Non-residential Receptors – Colpy to Pitcaple

Section: Colpy to Pitcaple										
Scenario/Comparison: Do Something 2045 compared to Do Minimum 2030 (Long-term) - Daytime - 'other' sensitive receptors (non-residential receptors)										
Change in noise level		**DMRB Impact category (long-term)**	**Number of 'other' sensitive receptors (non-residential receptors)**							
			Pink route option				**Brown route option**			
			C-**P**-V	C-**P**-O	R-**P**-V	R-**P**-O	C-**Br**-V	C-**Br**-O	R-**Br**-V	R-**Br**-O
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	5	5	5	5	7	6	7	5
	3 to 4.9	Minor adverse	0	0	0	0	2	2	2	3
	5 to 9.9	Moderate adverse	1	1	1	1	3	3	3	2
	10+	Major adverse	4	4	4	4	1	2	1	3
No change	0	Negligible	0	0	0	0	0	0	0	0
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	2	2	2	2	0	1	0	1
	3 to 4.9	Minor beneficial	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate beneficial	2	2	2	2	0	0	1	1
	10+	Major beneficial	0	0	0	0	1	1	0	0

Table 1.14 Daytime Do-Minimum Long-term Results for Residential Receptors – Colpy to Pitcaple

Section: Colpy to Pitcaple										
Scenario/Comparison: Do Minimum 2045 compared to Do Minimum 2030 (Long-term) - Daytime – Residential Receptors										
Change in noise level		**DMRB Impact category (long-term)**	**Number of Residential Receptors**							
			Pink route option				**Brown route option**			
			C-**P**-V	C-**P**-O	R-**P**-V	R-**P**-O	C-**Br**-V	C-**Br**-O	R-**Br**-V	R-**Br**-O
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	425	436	425	447	421	470	421	470
	3 to 4.9	Minor adverse	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate adverse	0	0	0	0	0	0	0	0
	10+	Major adverse	0	0	0	0	0	0	0	0
No change	0	Negligible	23	54	23	54	1	46	1	46
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	2	3	2	3	2	7	2	7
	3 to 4.9	Minor beneficial	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate beneficial	0	0	0	0	0	0	0	0
	10+	Major beneficial	0	0	0	0	0	0	0	0

Table 1.15 Daytime Do-Minimum Long-term Results for Non-residential Receptors – Colpy to Pitcaple

Section: Colpy to Pitcaple										
Scenario/Comparison: Do Minimum 2045 compared to Do Minimum 2030 (Long-term) - Daytime – 'other' sensitive receptors (non-residential receptors)										
Change in noise level		**DMRB Impact category (long-term)**	**Number of 'other' sensitive receptors (non-residential receptors)**							
			Pink route option				**Brown route option**			
			C-**P**-V	C-**P**-O	R-**P**-V	R-**P**-O	C-**Br**-V	C-**Br**-O	R-**Br**-V	R-**Br**-O
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	12	12	12	12	12	13	12	13
	3 to 4.9	Minor adverse	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate adverse	0	0	0	0	0	0	0	0
	10+	Major adverse	0	0	0	0	0	0	0	0
No change	0	Negligible	2	2	2	2	2	2	2	2
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	0	0	0	0	0	0	0	0
	3 to 4.9	Minor beneficial	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate beneficial	0	0	0	0	0	0	0	0
	10+	Major beneficial	0	0	0	0	0	0	0	0

Table 1.16 Night-time Long-term Results for Residential Receptors – Colpy to Pitcaple

Section: Colpy to Pitcaple										
Scenario/Comparison: Do Something 2045 compared to Do Minimum 2030 (Long-term) - Night-time – Residential Receptors										
Change in noise level		**DMRB Impact category (long-term)**	**Number of Residential Receptors**							
			Pink route option				**Brown route option**			
			C-**P**-V	C-**P**-O	R-**P**-V	R-**P**-O	C-**Br**-V	C-**Br**-O	R-**Br**-V	R-**Br**-O
Increase in noise level, $dBL_{night, outside}$	0.1 to 2.9	Negligible	0	0	0	0	0	0	1	0
	3 to 4.9	Minor adverse	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate adverse	0	0	0	0	0	0	0	0
	10+	Major adverse	0	0	0	0	0	0	0	0
No change	0	Negligible	0	0	0	0	1	0	1	0
Decrease in noise level, $dBL_{night, outside}$	0.1 to 2.9	Negligible	0	0	0	0	5	7	6	7
	3 to 4.9	Minor beneficial	3	2	3	2	2	0	0	0
	5 to 9.9	Moderate beneficial	4	1	4	1	10	13	10	13
	10+	Major beneficial	0	3	0	3	3	4	3	4

Table 1.17 Night-time Do-Minimum Long-term Results for Residential Receptors – Colpy to Pitcaple

Section: Colpy to Pitcaple										
Scenario/Comparison: Do Minimum 2045 compared to Do Minimum 2030 (Long-term) - Night-time – Residential Receptors										
Change in noise level		**DMRB Impact category (long-term)**	**Number of Residential Receptors**							
			Pink route option				**Brown route option**			
			C-**P**-V	C-**P**-O	R-**P**-V	R-**P**-O	C-**Br**-V	C-**Br**-O	R-**Br**-V	R-**Br**-O
Increase in noise level, $dBL_{night, outside}$	0.1 to 2.9	Negligible	10	8	10	8	25	28	25	28
	3 to 4.9	Minor adverse	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate adverse	0	0	0	0	0	0	0	0
	10+	Major adverse	0	0	0	0	0	0	0	0
No change	0	Negligible	0	0	0	0	0	0	0	0
Decrease in noise level, $dBL_{night, outside}$	0.1 to 2.9	Negligible	0	0	0	0	0	0	0	0
	3 to 4.9	Minor beneficial	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate beneficial	0	0	0	0	0	0	0	0
	10+	Major beneficial	0	0	0	0	0	0	0	0

Table 1.18 Nuisance Result Tables for Residential Receptors – Colpy to Pitcaple

Section: Colpy to Pitcaple																	
Change in traffic induced airborne vibration nuisance impacts (long-term) – Residential Receptors																	
Change in nuisance level, dB		**Do-Minimum Design Year v Do-Minimum Opening Year**								**Do-Something Design Year v Do-Minimum Opening Year**							
		Pink route option				**Brown route option**				**Pink route option**				**Brown route option**			
		C-**P**-V	C-**P**-O	R-**P**-V	R-**P**-O	C-**Br**-V	C-**Br**-O	R-**Br**-V	R-**Br**-O	C-**P**-V	C-**P**-O	R-**P**-V	R-**P**-O	C-**Br**-V	C-**Br**-O	R-**Br**-V	R-**Br**-O
Increase in nuisance level	<10%	406	414	406	417	414	455	414	455	49	46	52	45	44	32	45	32
	10<20%	0	0	0	0	0	0	0	0	27	38	31	38	40	52	38	48
	20<30%	0	0	0	0	0	0	0	0	31	37	35	39	160	146	164	150
	30<40%	0	0	0	0	0	0	0	0	21	27	22	27	43	70	47	76
	>40%	0	0	0	0	0	0	0	0	63	81	63	81	19	43	24	43
No change	0	42	77	42	85	8	66	8	66	19	12	13	15	14	8	16	8
Decrease in nuisance level	<10%	2	2	2	2	2	2	2	2	224	234	218	241	84	144	70	138
	10<20%	0	0	0	0	0	0	0	0	16	15	16	15	9	16	9	16
	20<30%	0	0	0	0	0	0	0	0	0	3	0	3	10	11	10	11
	30<40%	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
	>40%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Pitcaple to Kintore

Table 1.19 Daytime Short-term Results for Residential Receptors – Pitcaple to Kintore

Section: Pitcaple to Kintore										
Scenario/Comparison: Do Something 2030 compared to Do Minimum 2030 (Short-term) - Daytime – Residential Receptors										
Change in noise level		**DMRB Impact category (short-term)**	**Number of Residential Receptors**							
			Violet route option				**Orange route option**			
			C-P-**V**	C-Br-**V**	R-P-**V**	R-Br-**V**	C-P-**O**	C-Br-**O**	R-P-**O**	R-Br-**O**
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 0.9	Negligible	968	1110	1018	1047	1799	1912	1777	1812
	1 to 2.9	Minor adverse	193	178	209	178	358	207	391	315
	3 to 4.9	Moderate adverse	74	67	67	68	55	52	55	53
	5+	Major adverse	411	380	422	381	41	36	41	37
No change	0	Negligible	259	386	291	336	117	89	116	93
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 0.9	Negligible	3616	5370	3705	5469	1819	1425	1849	1429
	1 to 2.9	Minor beneficial	2852	979	2598	991	3586	3779	3550	3764
	3 to 4.9	Moderate beneficial	135	25	200	25	578	597	575	594
	5+	Major beneficial	19	18	17	18	30	39	29	39

Table 1.20 Daytime Short-term Results for Non-residential Receptors – Pitcaple to Kintore

Section: Pitcaple to Kintore										
Scenario/Comparison: Do Something 2030 compared to Do Minimum 2030 (Short-term) - Daytime – 'other' sensitive receptors (non-residential receptors)										
Change in noise level		**DMRB Impact category (short-term)**	**Number of 'other' sensitive receptors (non-residential receptors)**							
			Violet route option				**Orange route option**			
			C-P-**V**	C-Br-**V**	R-P-**V**	R-Br-**V**	C-P-**O**	C-Br-**O**	R-P-**O**	R-Br-**O**
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 0.9	Negligible	17	22	18	18	24	29	24	25
	1 to 2.9	Minor adverse	5	2	5	3	9	4	9	8
	3 to 4.9	Moderate adverse	0	0	0	0	4	4	4	4
	5+	Major adverse	3	3	3	3	1	1	1	1
No change	0	Negligible	1	3	1	1	1	1	1	0
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 0.9	Negligible	33	43	33	48	31	25	30	26
	1 to 2.9	Minor beneficial	19	3	18	3	24	28	24	28
	3 to 4.9	Moderate beneficial	0	0	0	0	1	1	1	1
	5+	Major beneficial	0	0	0	0	0	0	1	0

Table 1.21 Daytime Long-term Results for Residential Receptors – Pitcaple to Kintore

Section: Pitcaple to Kintore										
Scenario/Comparison: Do Something 2045 compared to Do Minimum 2030 (Long-term) - Daytime – Residential Receptors										
Change in noise level		**DMRB Impact category (long-term)**	**Number of Residential Receptors**							
			Violet route option				**Orange route option**			
			C-P-**V**	C-Br-**V**	R-P-**V**	R-Br-**V**	C-P-**O**	C-Br-**O**	R-P-**O**	R-Br-**O**
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	2691	4736	2695	4660	2874	2770	2917	2649
	3 to 4.9	Minor adverse	89	79	80	82	199	66	211	202
	5 to 9.9	Moderate adverse	190	198	198	201	49	37	50	47
	10+	Major adverse	256	210	256	209	14	14	15	14
No change	0	Negligible	403	781	392	861	289	195	278	195
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	4833	2484	4838	2474	4501	4556	4462	4550
	3 to 4.9	Minor beneficial	54	14	58	15	452	490	445	471
	5 to 9.9	Moderate beneficial	9	9	8	9	5	7	5	7
	10+	Major beneficial	2	2	2	2	0	1	0	1

Table 1.22 Daytime Long-term Results for Non-residential Receptors – Pitcaple to Kintore

Section: Pitcaple to Kintore										
Scenario/Comparison: Do Something 2045 compared to Do Minimum 2030 (Long-term) - Daytime - 'other' sensitive receptors (non-residential receptors)										
Change in noise level		**DMRB Impact category (long-term)**	**Number of 'other' sensitive receptors (non-residential receptors)**							
			Violet route option				**Orange route option**			
			C-P-**V**	C-Br-**V**	R-P-**V**	R-Br-**V**	C-P-**O**	C-Br-**O**	R-P-**O**	R-Br-**O**
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	34	53	34	49	46	48	45	43
	3 to 4.9	Minor adverse	0	0	0	0	8	3	8	8
	5 to 9.9	Moderate adverse	1	1	1	1	1	1	1	1
	10+	Major adverse	2	2	2	2	1	1	1	1
No change	0	Negligible	1	6	1	7	4	2	6	3
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	40	14	40	17	34	37	32	36
	3 to 4.9	Minor beneficial	0	0	0	0	1	1	2	1
	5 to 9.9	Moderate beneficial	0	0	0	0	0	0	0	0
	10+	Major beneficial	0	0	0	0	0	0	0	0

Table 1.23 Daytime Do-Minimum Long-term Results for Residential Receptors – Pitcaple to Kintore

Section: Pitcaple to Kintore										
Scenario/Comparison: Do Minimum 2045 compared to Do Minimum 2030 (Long-term) - Daytime – Residential Receptors										
Change in noise level		**DMRB Impact category (long-term)**	**Number of Residential Receptors**							
			Violet route option				**Orange route option**			
			C-P-**V**	C-Br-**V**	R-P-**V**	R-Br-**V**	C-P-**O**	C-Br-**O**	R-P-**O**	R-Br-**O**
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	8423	8411	8422	8410	8245	8005	8244	8006
	3 to 4.9	Minor adverse	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate adverse	0	0	0	0	0	0	0	0
	10+	Major adverse	0	0	0	0	0	0	0	0
No change	0	Negligible	95	93	96	94	135	128	136	127
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	9	9	9	9	3	3	3	3
	3 to 4.9	Minor beneficial	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate beneficial	0	0	0	0	0	0	0	0
	10+	Major beneficial	0	0	0	0	0	0	0	0

Table 1.24 Daytime Do-Minimum Long-term Results for Non-residential Receptors – Pitcaple to Kintore

Section: Pitcaple to Kintore										
Scenario/Comparison: Do Minimum 2045 compared to Do Minimum 2030 (Long-term) - Daytime - 'other' sensitive receptors (non-residential receptors)										
Change in noise level		**DMRB Impact category (long-term)**	**Number of 'other' sensitive receptors (non-residential receptors)**							
			Violet route option				**Orange route option**			
			C-P-**V**	C-Br-**V**	R-P-**V**	R-Br-**V**	C-P-**O**	C-Br-**O**	R-P-**O**	R-Br-**O**
Increase in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	75	74	75	74	89	87	90	87
	3 to 4.9	Minor adverse	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate adverse	0	0	0	0	0	0	0	0
	10+	Major adverse	0	0	0	0	0	0	0	0
No change	0	Negligible	1	0	1	0	5	5	4	5
Decrease in noise level, $dBL_{A10\ 18h}$	0.1 to 2.9	Negligible	2	2	2	2	1	1	1	1
	3 to 4.9	Minor beneficial	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate beneficial	0	0	0	0	0	0	0	0
	10+	Major beneficial	0	0	0	0	0	0	0	0

Table 1.25 Night-time Long-term Results for Residential Receptors – Pitcaple to Kintore

Section: Pitcaple to Kintore										
Scenario/Comparison: Do Something 2045 compared to Do Minimum 2030 (Long-term) - Night-time – Residential Receptors										
Change in noise level		**DMRB Impact category (long-term)**	**Number of Residential Receptors**							
			Violet route option				**Orange route option**			
			C-P-**V**	C-Br-**V**	R-P-**V**	R-Br-**V**	C-P-**O**	C-Br-**O**	R-P-**O**	R-Br-**O**
Increase in noise level, $dBL_{night, outside}$	0.1 to 2.9	Negligible	185	217	186	214	189	197	201	169
	3 to 4.9	Minor adverse	0	0	0	0	50	0	58	50
	5 to 9.9	Moderate adverse	0	0	0	0	0	0	0	0
	10+	Major adverse	0	0	0	0	1	1	1	1
No change	0	Negligible	18	15	18	11	38	27	34	27
Decrease in noise level, $dBL_{night, outside}$	0.1 to 2.9	Negligible	106	74	105	80	196	194	183	194
	3 to 4.9	Minor beneficial	7	7	7	7	15	16	15	16
	5 to 9.9	Moderate beneficial	2	2	2	2	2	2	2	2
	10+	Major beneficial	1	1	1	1	0	0	0	0

Table 1.26 Night-time Do-Minimum Long-term Results for Residential Receptors – Pitcaple to Kintore

Section: Pitcaple to Kintore										
Scenario/Comparison: Do Minimum 2045 compared to Do Minimum 2030 (Long-term) - Night-time – Residential Receptors										
Change in noise level		**DMRB Impact category (long-term)**	**Number of Residential Receptors**							
			Violet route option				**Orange route option**			
			C-P-**V**	C-Br-**V**	R-P-**V**	R-Br-**V**	C-P-**O**	C-Br-**O**	R-P-**O**	R-Br-**O**
Increase in noise level, $dBL_{night, outside}$	0.1 to 2.9	Negligible	331	331	331	332	459	427	459	427
	3 to 4.9	Minor adverse	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate adverse	0	0	0	0	0	0	0	0
	10+	Major adverse	0	0	0	0	0	0	0	0
No change	0	Negligible	2	2	2	2	2	2	2	2
Decrease in noise level, $dBL_{night, outside}$	0.1 to 2.9	Negligible	0	0	0	0	0	0	0	0
	3 to 4.9	Minor beneficial	0	0	0	0	0	0	0	0
	5 to 9.9	Moderate beneficial	0	0	0	0	0	0	0	0
	10+	Major beneficial	0	0	0	0	0	0	0	0

Table 1.27 Nuisance Result Tables for Residential Receptors – Pitcaple to Kintore

Section: Pitcaple to Kintore																	
Change in traffic induced airborne vibration nuisance impacts (long-term) – Residential Receptors																	
Change in nuisance level, dB		**Do-Minimum Design Year v Do-Minimum Opening Year**								**Do-Something Design Year v Do-Minimum Opening Year**							
		Violet route option				**Orange route option**				**Violet route option**				**Orange route option**			
		C-P-**V**	C-Br-**V**	R-P-**V**	R-Br-**V**	C-P-**O**	C-Br-**O**	R-P-**O**	R-Br-**O**	C-P-**V**	C-Br-**V**	R-P-**V**	R-Br-**V**	C-P-**O**	C-Br-**O**	R-P-**O**	R-Br-**O**
Increase in nuisance level	<10%	7981	7970	7980	7967	8081	7857	8081	7854	1770	3531	1677	3455	932	752	963	764
	10<20%	0	0	0	0	0	0	0	0	689	799	764	761	1583	1744	1581	1663
	20<30%	0	0	0	0	0	0	0	0	234	190	246	197	477	273	499	369
	30<40%	0	0	0	0	0	0	0	0	150	159	146	159	72	65	71	67
	>40%	0	0	0	0	0	0	0	0	335	288	343	290	24	23	25	23
No change	0	540	537	541	540	299	276	299	279	615	1235	605	1460	403	262	399	256
Decrease in nuisance level	<10%	6	6	6	6	3	3	3	3	4722	2299	4734	2179	4878	5001	4831	4978
	10<20%	0	0	0	0	0	0	0	0	10	10	10	10	14	16	14	16
	20<30%	0	0	0	0	0	0	0	0	2	2	2	2	0	0	0	0
	30<40%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	>40%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix A12.1 **People and Communities Assessment Methodology**

Appendix A12.1 **People and Communities Assessment Methodology**

Methodology

Introduction

This assessment presents the Design Manual for Roads and Bridges (DMRB) Stage 2 assessment of the predicted effects on People and Communities. The assessment has been undertaken in accordance with DMRB (Interim Advice Note 125/15, Environmental Assessment Update) which recommends that the following parts of the DMRB Guidance are combined into a single assessment on 'People and Communities':

- DMRB (Volume 11, Section 3, Part 6, Land Use), which comprises assessments of private property, loss of land used by the community, effects on development land, effects on agricultural land and waterway restoration projects;
- DMRB (Volume 11, Section 3, Part 8, Pedestrians, Cyclists and Community Effects), which comprises assessments of changes in journey length, changes in amenity, community severance, new severance and relief from existing severance; and,
- DMRB (Volume 11, Section 3, Part 9, Vehicle Travellers), which comprises assessments of views from the road and driver stress.

The assessment of impacts of the route options on development land (including planning application sites) is presented in Chapter 9, Policies and Plans, and the assessment of impacts on agriculture, forestry and sporting interests is set out in Chapter 13. Effects on vehicle travellers has been scoped out from this assessment as it is predicted there will be no material differences between route options.

This assessment therefore covers:

- Non-Motorised Users (NMU) – Walkers, cyclists and equestrians;
- Private Properties;
- Community Land, Facilities and Outdoor Access Areas; and
- Community Severance.

Impact Assessment

Non-Motorised Users

In line with the DMRB, the key points to consider when assessing non-motorised users (NMUs) are the identification of existing routes used by pedestrians and other NMUs and an estimation of the number of NMUs using a route. This assessment considers key routes used by NMUs to be those which are identified as Core Paths, Aspirational Core Paths, Public Rights of Way (PRoWs), National Cycle Network (NCN), and existing local routes (ELR).

The assessment considers all users of the paths, irrespective of the purpose of their journey (e.g. commuting, recreation, etc.), and considers all paths to be of equal importance regardless of user type, or levels of usage. It is for this reason that all NMU users and all paths are considered to have high sensitivity. The significance of residual effects on NMUs is, therefore, determined by the assumed sensitivity and by the impact magnitude. It should be noted that the final significance category will, in some instances, be determined using reasoned, professional judgement.

The magnitude criteria for the assessment of impacts on NMUs is set out in Table 1.1. The criteria were developed using professional judgement and have been based on a review of guidance contained within DMRB (Volume 11, Section 3, Part 8, Pedestrians, Cyclists, Equestrians and Community Effects), the nature and design of the route options[1], and professional judgement.

The evaluation of the significance of effects of the route options on users of NMU routes considers changes in journey length and times, and changes in amenity value of NMU journeys.

Table 1.1 Magnitude Criteria for Assessing Impacts on Users of NMU Routes

Impact Magnitude	Description
Major Adverse	People are likely to be significantly deterred from making trips leading to a reorganisation of their habits. Considerable hindrance would be caused to existing journeys, for example, by any of the following: • Increased journey distance for pedestrians by 500m or greater; • Considerable adverse change in the existing views, air quality, noise levels and/or traffic flows resulting in a change in amenity or perceived safety; • Increases in traffic volumes to a subsequent level of over 16,000 vehicles per day on a road (Opening Year), such that it would be likely to deter use by most NMUs; and • three or more of the hindrances set out under 'minor adverse' or two or more set out under 'moderate adverse'.

[1] The route options have been designed so that no at-grade crossings of the dual carriageway are designed in, as such the magnitude criteria relating to at-grade crossings from the DMRB guidance has been omitted with the focus of the assessment relating to traffic flows and their impacts upon NMU journeys.

Impact Magnitude	Description
Moderate Adverse	Some NMUs, particularly vulnerable users, are likely to be deterred from making trips, for example, by any of the following: • Journey lengths would be increased by between 250m and 500m; • Noticeable adverse change in the existing views, air quality, noise levels and/or traffic flows resulting in a change in amenity or perceived safety; • The creation of a new road near to a previously uninterrupted NMU route leading to an alteration in the character of a (or part of a) previously tranquil route; • Increased traffic volumes of between 8,000 and 16,000 vehicles per day (Opening Year) such that would be likely to deter use by some NMUs, particularly road cyclists, or cause noticeably more intimidating conditions; and • Two or more of the hindrances set out under 'minor adverse'.
Minor Adverse	The current journey pattern is generally maintained but some hindrance to movement occurs, for example, from: • An increase in journey length of up to 250m; • A barely noticeable adverse change in the existing views, air quality, noise levels and/or traffic flows resulting in a change in amenity or perceived safety; • Introduction of a new road to cross but for which traffic volumes are below 8,000 vehicles per day (Opening Year); and • A new bridge would need to be climbed or a subway traversed.
Negligible	Little noticeable change from the current conditions.
Minor Beneficial	A minor improvement to routes used by NMUs i.e. a minor beneficial change to existing views, air quality, noise levels and/or traffic flows resulting in a change in amenity and perceived safety.
Moderate Beneficial	• Reductions in traffic to below 8,000 vehicles per day or by more than 30% such that conditions for NMUs are less intimidating. • An overall noticeable beneficial change in the existing views, air quality, noise levels and/or traffic flows resulting in a change in amenity or perceived safety.
Major Beneficial	• Provision of a new NMU route which is perceived as being safer, more direct or having a greater amenity value than routes previously used and / or lead to enhanced links to the wider NMU network and/or improve access to outdoor, recreational and residential areas. • Reductions in traffic to below the threshold of 8,000 vehicles per day or by more than 60% encouraging more NMUs to take the route, particularly road cyclists. • An overall considerable beneficial change in the existing views, air quality, noise levels or traffic flows resulting in a change in amenity or perceived safety

Private Property

The assessment of land-take effects on private property has been informed by the baseline sensitivity and impact magnitude criteria set out in Tables 1.2 and 1.3 respectively. The criteria

were developed using professional judgement and have been based on a review of guidance contained within DMRB (Volume 11, Section 3, Part 6, Land Use).

Table 1.2 Sensitivity Criteria for Private Properties

Sensitivity	Description
High	Residential, commercial or industrial building.
Medium	Residential, commercial, or industrial land (e.g. gardens, garages or parking spaces).
Low	Derelict or unoccupied buildings.

The assessment of the magnitude of impacts has been informed by the predicted change from the identified baseline including the demolition of buildings as well as land-take from the buildings/facility and its curtilage.

The impact on private property accesses has considered those properties where, as a result of the route options, the current access arrangements to/from the property are adversely affected. For the purposes of the assessment of effects to access, the impact significance was adapted from distances for pedestrians to distances for vehicles using (DMRB, Volume 11, Section 3, Part 8, Pedestrians, Cyclists, Equestrians and Community) guidance (Chapter 6) and determined using professional judgement.

Table 1.3 Magnitude for Assessing Impacts on Private Properties

Impact Magnitude	Description
Major	Demolition of property, and/or >50% loss of land, and/or complete separation of the holding due to land-take and/or an increase in vehicle distance for access of >5,000m.
Moderate	Between 10% and 50% loss of land and/or major separation of the holding due to land-take, and/or an increase in vehicle distance for access of 1,000–5,000m.
Minor	<10% land loss and/or partial separation of the holding due to land-take, and/or an increase in vehicle distance for access of 500–1,000m.
Negligible	Very slight or no detectable change from the existing baseline conditions and/or an increase in vehicle distance for access of < 500m.

The evaluation of effect significance was determined taking into account sensitivity and magnitude, drawing on the matrix in Table 1.4.

Table 1.4 Significance Matrix for Effects on Private Properties and Community Land/Facilities

	Impact Magnitude			
Sensitivity	**Major**	**Moderate**	**Minor**	**Negligible**
High	Major	Moderate / Major	Minor / Moderate	Minor
Medium	Moderate / Major	Moderate	Minor	Negligible / Minor
Low	Moderate	Minor / Moderate	Negligible / Minor	Negligible

Community Land and Facilities

Sensitivity criteria for community land and facilities are detailed in Table 1.5. The criteria were developed using professional judgement and have been based on a review of guidance contained within DMRB (Volume 11, Section 3, Part 6, Land Use).

The assessment of effects on community land and facilities considers direct impacts to, the amenity of, and the change in accessibility of the public for facilities and services that they use as well as considering the location, status and importance of any land used by the public that could be lost.

Direct impacts to land and facilities used by the community as a result of permanent change in land use from the route options are considered using the criteria set out in Table 1.5 and the magnitude of impact will be assessed as set out in Table 1.6.

The assessment of indirect impacts on community land and facilities will consider the amenity of and changes in accessibility of facilities, services and outdoor areas that are used by visitors to the sites. The sensitivity criteria for indirect impacts are set out in Table 1.5 and the magnitude of impact will be assessed as set out in Table 1.7. The magnitude criteria were developed using professional judgement based of a review of guidance contained within DMRB (Volume 11, Section 3, Part 8, Pedestrians, Cyclists, Equestrians and Community Effects).

Once the receptor sensitivity and impact magnitude are established, the overall impact significance is determined using Table 1.4.

Table 1.5 Sensitivity of Community Land and Facilities

Sensitivity	Description
High	Land or facilities used by the community such as: • Common (e.g. town or village greens) or Public Open Space (e.g. public parks or disused burial grounds) • Doctors surgeries, Hospitals and Emergency Services • Aged persons homes • Schools • Community Halls • Churches, Places of Worship and Burial Grounds • Post offices • Essential Convenience Shops • Eateries (which act as a focal point within a community) • Parks, play areas and sports centres • Equestrian facilities • Outdoor area-based facilities including: - Woodland used by communities - Lochs and reservoirs used for water-based recreation - Rivers

Sensitivity	Description
Medium	Curtilage of areas of community land or facilities.
Low	Derelict community facilities or disused community land.

The assessment of the magnitude of impacts has been informed by the predicted change from the identified baseline including land-take from the receptor and its curtilage.

Table 1.6 Magnitude Criteria for Assessing Direct Impacts for Community and Facilities

Impact Magnitude	Description
Major	Demolition of community facility, and/or >50% loss of community land and/or complete separation of the community facility/land due to land-take
Moderate	Between 10% and 50% loss of community land/land associated with a community facility and/or major separation of the community facility/land due to land-take
Minor	<10% community land loss and/or partial separation of the community facility/land due to land-take
Negligible	Very slight or no detectable change from the existing baseline conditions.

Table 1.7 Magnitude Criteria for Assessing Indirect Impacts for Community land and Facilities

Magnitude	Description
Major	Visitors to areas of community land are likely to experience considerable hindrance or be deterred from making journeys to community facilities, land and outdoor access areas, for example: • Pedestrian at-grade crossing of a new road carrying >16,000 vehicles Annual Average Daily Traffic (AADT) in the opening year; • An increase in journey distance of over 0.3km for pedestrians (vulnerable groups), 0.5km for pedestrians (non-vulnerable groups), 2km for cyclists and/or >6km for vehicles; • Considerable adverse change in the existing views, air quality, noise levels and/or traffic flows resulting in a change in amenity or perceived safety; and • Three or more of the hindrances set out under 'Minor' or two or more under 'Moderate'.
Moderate	Visitors to areas of community land are likely to be dissuaded from making trips or where trips would become less attractive, for example: • Pedestrian at-grade crossing of a new road carrying between 8,000 and 16,000 vehicles AADT in the opening year; • Journey distance would be increased by 0.15km to 0.3km for pedestrians (vulnerable groups), 0.25km to 0.5km for pedestrians (non-vulnerable groups), 1km to 2km for cyclists and/or 3km to 6km for vehicles; • Noticeable adverse change in the existing views, air quality, noise levels and/or traffic flows resulting in a change in amenity or perceived safety; and • Two or more of the hindrances set out under 'Minor' applying to single trips.

Magnitude	Description
Minor	The current journey pattern is likely to be maintained but there may be some hindrance to movement for communities, for example: • Pedestrian at-grade crossing of a new road carrying <8,000 vehicles AADT in the opening year; • An increase in journey distance by up to 0.15km for pedestrians (vulnerable groups), 0.25km for pedestrians (non-vulnerable groups), up to 1km for cyclists and/or up to 3km for vehicles; • A barely noticeable adverse change in the existing views, air quality, noise levels and/or traffic flows resulting in a change in amenity or perceived safety; and • One hindrance (e.g. a new bridge or underpass) would need to be negotiated by NMUs.
Negligible	Very slight or no detectable change from the existing baseline condition.

Community Severance

The criteria for the assessment of community severance (New Severance and Relief from Existing Severance) has been developed using professional judgement based on a review of guidance contained within DMRB (Volume 11, Section 3, Part 8, Pedestrians, Cyclists, Equestrians and Community Effects). All communities (such as Inverurie, Kintore, Old Rayne etc.) have been assessed as being high value receptors and the significance of residual effects on NMUs is, therefore, informed by the impact magnitude as set out in Table 1.8.

Table 1.8 Magnitude Criteria for Assessing New Severance

Magnitude	Description
Major	Local residents are likely to experience considerable hindrance or be deterred from making trips to community land and facilities, for example: • Pedestrian at-grade crossing of a new road carrying >16,000 vehicles Annual Average Daily Traffic (AADT) in the opening year; • An increase in journey distance of over 0.3km for pedestrians (vulnerable groups), 0.5km for pedestrians (non-vulnerable groups), 2km for cyclists and/or >6km for vehicles; and • Three or more of the hindrances set out under 'Minor' or two or more under 'Moderate'.
Moderate	Some local residents (particularly elderly and children) are likely to be dissuaded from making trips or where trips would become less attractive, for example: • Pedestrian at-grade crossing of a new road carrying between 8,000 and 16,000 vehicles AADT in the opening year; • Journey distance would be increased by 0.15km to 0.3km for pedestrians (vulnerable groups), 0.25km to 0.5km for pedestrians (non-vulnerable groups), 1km to 2km for cyclists and/or 3km to 6km for vehicles; and • Two or more of the hindrances set out under 'Minor' applying to single trips.

Magnitude	Description
Minor	The current journey pattern is likely to be maintained but there may be some hindrance to movement for communities, for example: • Pedestrian at-grade crossing of a new road carrying <8,000 vehicles AADT in the opening year; • An increase in journey distance by up to 0.15km for pedestrians (vulnerable groups), 0.25km for pedestrians (non-vulnerable groups), up to 1km for cyclists and/or up to 3km for vehicles; and • One hindrance (e.g. a new bridge or underpass) would need to be negotiated by NMUs.

Magnitude of effects arising from relief from existing severance is assessed using the criteria presented in Table 1.9.

Table 1.9 Magnitude Criteria for Relief from Existing Severance

Magnitude	Description	
	Urban Areas	**Rural Areas**
Major (Beneficial)	When existing traffic levels are reduced by >60%.	When existing traffic levels are reduced by >90%. Where the existing road substantially bisects a village or small town >60% was used as per DMRB.
Moderate (Beneficial)	When existing traffic levels are reduced from >30% to 60%.	When existing traffic levels are reduced from >75% to 90%. Where the existing road substantially bisects a village or small town, >30% to 60% was used as per DMRB.
Minor (Beneficial)	When existing traffic levels are reduced by approximately 30%.	When existing traffic levels are reduced from 60% to 75%. Where the existing road passes through a village or on the perimeter of a built-up area, 30% was used as per DMRB.

Appendix A12.2 **NMU Assessment Tables**

Appendix A12.2 **NMU Assessment Tables**

NMU Assessment Tables

The following tables set out the NMU assessment carried out for all route options. All receptors in Tables 1.1 to 1.6 have been identified as being of a high sensitivity. See Volume 5, Figures 12.1 to 12.13 for NMU routes.

Table 1.1 East of Huntly to Colpy – Cyan Route Option NMU Assessment

Route Description	Assessment of Changes of Journey Length	Effects on Amenity	Pre-Mitigation Effect	Mitigation	Residual Effect
There are no Public Rights of Way, Core Paths, Aspirational Core Paths or National Cycle Networks within the study area.					
Existing local routes					
Huntly to Greenmyres community path	No predicted change in journey length	Users of this path are likely to experience a considerable adverse change in views and amenity. The current route is in a tranquil setting and the Cyan route option may lead to an alteration in the character of the eastern section of this route.	Major adverse	N/A	**Major adverse**
Scotston Loop	No predicted change in journey length	The current route is in a tranquil setting and the Cyan route option may lead to an alteration in the character of the eastern section of this route.	Moderate	N/A	**Moderate adverse**

Table 1.2 East of Huntly to Colpy – Red Route Option NMU Assessment

Route Description	Assessment of Changes of Journey Length	Effects on Amenity	Pre-Mitigation Effect	Mitigation	Residual Effect
There are no Public Rights of Way, Core Paths, Aspirational Core Paths or National Cycle Networks within the study area.					
Existing local routes					
Huntly to Greenmyres community path	No predicted change in journey length	Users of this path are likely to experience a considerable adverse change in views and amenity. The current route is in a tranquil setting and the Red route option may lead to an alteration in the character of the eastern section of this route.	Major adverse	N/A	**Major adverse**
Scotston Loop	No predicted change in journey length	The current route is in a tranquil setting and the Cyan route option may lead to an alteration in the character of the eastern section of this route.	Moderate	N/A	**Moderate adverse**

Table 1.3 Colpy to Pitcaple – Pink Route Option NMU Assessment

Route Description	Assessment of Changes of Journey Length	Effects on Amenity	Pre-Mitigation Effect	Mitigation	Residual Effect
There are no Public Rights of Way or National Cycle Networks within the study area.					
Core Paths and Aspirational Core Paths					
L3R – Old Rayne Village link to 415.02	No predicted change in journey length	Unlikely to impact existing travel patterns but the new road may cause hinderance as the side road will be on an overbridge where it traverses the Pink route option. There will be a noticeable change in existing views due to the overbridge for the new A96.	Moderate adverse	MPC2	**Moderate adverse**
415.02 – Jenny's Trees via Urie Riverside	No predicted change in journey length	Unlikely to impact existing travel patterns but the new road may cause hinderance as the Lewesk Access road will cross under the Pink route option. There will be a noticeable change in existing views due to the overbridge for the new A96.	Moderate adverse	MPC2	**Moderate adverse**
404.01 – Logie Woods to Durno	NMU route requires diversion. Potential journey distance increase for pedestrians due to diversion along by approx. 900m	Considerable adverse changes in amenity due to the diversion required to walk along the side road between Durno and Pitcaple then along Lourin Close. The current core path is a countryside off road route and connects other core paths to create an extended network.	Major adverse	MPC1, MPC2	**Major adverse**
Existing local routes					
GA3 – Oldmeldrum to Old Rayne	No increase in journey length.	Unlikely to affect existing travel patterns but the new road may cause hinderance as Lawrence Road will be	Minor adverse	MPC2	Minor adverse

Route Description	Assessment of Changes of Journey Length	Effects on Amenity	Pre-Mitigation Effect	Mitigation	Residual Effect
		on an overbridge where it traverses the Pink route option.			
GA1 - Insch to Oyne via Archaeolink	No predicted change in journey length.	Traffic flow reductions along the existing A96 between Kellockbank (B992) and Carden Junction are predicted to result in a beneficial impact to the amenity for users of the path which, at this location, is in proximity with the existing A96.	Major Beneficial	N/A	**Major Beneficial**

Table 1.4 Colpy to Pitcaple – Brown Route Option NMU Assessment

Route Description	Assessment of Changes of Journey Length	Effects on Amenity	Pre-Mitigation Effect	Mitigation	Residual Effect
There are no Public Rights of Way or National Cycle Networks within the study area.					
Core Paths and Aspirational Core Paths					
404.02 – Whiteford to Old Rayne (Logie Road)	Route will require diversion. Increased journey distance for pedestrians by approx. 900m.	Considerable adverse changes in views, amenity and perceived safety. The current core path is a countryside off road route and will require diversions or features to navigate around. This route also connects other core paths to create an extended network.	Major adverse	MPC1, MPC2	**Major adverse**
404.01 – Logie Woods to Durno	Route will require diversion through Pitcaple and Whiteford via local roads which will increase journey distance for pedestrians by approx. 900m.	Considerable adverse changes in views, amenity and perceived safety. The current core path is a countryside off road route and will require diversions or features to navigate around. This route also connects other core paths to create an extended network.	Major adverse	MPC1, MPC2	**Major adverse**
Existing local routes					
GA1 - Insch to Oyne via Archaeolink	Route severs this path, but it has been diverted via the realigned side roads to maintain access. Minor alterations but will not impinge on journeys made by NMUs. Existing travel patterns are unlikely to be altered.	The route has been diverted slightly due to the Brown route option earthworks. As a result, there will be a barely noticeable adverse change to existing views. This point along the route is already impacted by the existing A96. Predicted reduction of traffic flows along the minor road (U61S).	Moderate adverse	MPC1, MPC2	**Moderate adverse**

Route Description	Assessment of Changes of Journey Length	Effects on Amenity	Pre-Mitigation Effect	Mitigation	Residual Effect
GA3 - Oldmeldrum to Old Rayne	Minor alterations to side road U84C but will not impinge on journeys made by NMUs. The realigned side road U84C has maintained access. Existing travel patterns are unlikely to be altered.	This route option will be located within a tranquil setting resulting in a considerable adverse change in existing views. The U84C will become an underpass passing below the new A96 which may cause some hinderance to movement. Expected increase of traffic flow along the U84C by approx. 300 vehicles per day.	Moderate adverse	MPC1, MPC2	**Moderate adverse**

Table 1.5 Pitcaple to Kintore – Violet Route Option NMU Assessment

Route Description	Assessment of Changes of Journey Length	Effects on Amenity	Pre-Mitigation Effect	Mitigation	Residual Effect
There are no National Cycle Networks within the study area.					
Public Rights of Way (Scotways)					
GG53 – West of Hillhead of Lethenty to the B9001	Route has been severed and will require diversion which is predicted to increase journey distance of greater than 500m for NMUs. .	Considerable adverse change in existing conditions and views resulting in a change of amenity. The current path is a countryside offroad route and will require diversions on the road network with features to navigate around e.g. roundabouts. Perceived safety negatively impacted.	Major adverse	MPC1, MPC2	**Major adverse**
GG55 – leading west from Old Kemnay Road, running parallel to the River Don towards Woodend Burn	No predicted change in journey length.	Traffic flow reductions along the existing A96 between Blackhall (B9144) and Port Elphinstone (B993) are predicted to result in a beneficial impact to the amenity for users of the path which crosses the existing A96 at-grade.	Moderate Beneficial	N/A	**Moderate Beneficial**
Unrecorded path passing from the B993 to Kemnay Road, Inverurie.	No predicted change in journey length.	Traffic flow reductions along the existing A96 between Blackhall (B9144) and Port Elphinstone (B993) are predicted to result in a beneficial impact to the amenity for users of the path which crosses the existing A96 at-grade.	Moderate Beneficial	N/A	**Moderate Beneficial**
Core Paths and Aspirational Core Paths					
408.06 – Inverurie to Kintore Cycle path (existing core path)	The route will require diversion because it is severed by the new Tavelty Junction which is	Noticeable adverse change in existing conditions and views resulting in a change of amenity. This core path	Moderate adverse	MPC1, MPC2	**Moderate adverse**

Route Description	Assessment of Changes of Journey Length	Effects on Amenity	Pre-Mitigation Effect	Mitigation	Residual Effect
	predicted to increase journey length by 100m.	connects other core paths to create an extended network. Both the northern and southern sections of this path are impacted.			
408.06R – Inverurie to Kintore Cycle Path Road Links	Negligible - minor alterations to this path.	Barely noticeable change in existing views resulting in a change of amenity. This path connects other core paths to create an extended network. The path links to a wider path network, therefore, the effects are considered higher due to the impacts on community connectivity	Moderate adverse	MPC2	**Moderate adverse**
410.01 – Castle Farm to Gauchhill Plantation	No predicted change in journey length.	Little noticeable change in amenity of this path.	Minor adverse	N/A	Minor adverse
408.04 – Inverurie to Aquhorthies	No predicted change in journey length.	Slight traffic flow increases along the C116C are predicted to result in NMUs experiencing little noticeable change from the current conditions.	Minor adverse	N/A	Minor adverse
408.09 – Souterford Road to The Bass	No predicted change in journey length.	Traffic flow reductions along Oldmeldrum road, Inverurie (B9170) are predicted to result in minor beneficial change in amenity and perceived safety.	Minor Beneficial	N/A	Minor Beneficial
309.04P – Oldmeldrum: Village link to Lochter - Proposed Link	No predicted change in journey length.	Traffic flow increases along the C76C between the new Daviot Junction to Oldmeldrum (A920) are predicted to result in a noticeable adverse change in amenity and perceived safety	Moderate adverse	N/A	**Moderate adverse**

Route Description	Assessment of Changes of Journey Length	Effects on Amenity	Pre-Mitigation Effect	Mitigation	Residual Effect
408.11P - Howford Bridge Link Meldrum Meg Way - Proposed Link	No predicted change in journey length.	Traffic flow reductions along the B9001 in Inverurie between the Portstown Link to Harlaw Road are predicted to result in minor beneficial change in amenity and perceived safety	Minor Beneficial	N/A	Minor Beneficial
309.05 – Oldmeldrum: Roadside Cycle Path	No predicted change in journey length.	Slight traffic flow increases along the B9170 are predicted to result in NMUs experiencing little noticeable change from the current conditions.	Minor adverse	N/A	Minor adverse
Existing local routes					
GA3 - Oldmeldrum to Old Rayne	Journey distance increase by 100m	Major adverse effects predicted due to proximity to the Violet route option and new junctions resulting in a considerable adverse change to amenity.	Major adverse	MPC1, MPC2	**Major adverse**
GA3 - Oldmeldrum to Old Rayne	No predicted change in journey length.	Slight traffic flow increases along the B9170 between Oldmeldrum (A920) and the new Uryside Junction to result in NMUs experiencing little noticeable change from the current conditions.	Minor adverse	N/A	Minor adverse
GA3 - Oldmeldrum to Old Rayne	No predicted change in journey length.	Traffic flow increases along the C76C between the new Daviot Junction to Oldmeldrum (A920) are predicted to result in a noticeable adverse change in amenity and perceived safety	Moderate adverse	N/A	**Moderate adverse**
GA2 - The Great Inverurie Bike Ride	No predicted change in journey length.	Slight traffic flow increases along the C116C are predicted to result in NMUs experiencing little noticeable change from the current conditions.	Minor adverse	N/A	Minor adverse

Route Description	Assessment of Changes of Journey Length	Effects on Amenity	Pre-Mitigation Effect	Mitigation	Residual Effect
A96 Inverurie to Kintore: Foot/Cycleway	Route is severed due the route option. Likely diversion route via realigned A96 would result in an increased journey distance by up to 250m.	Noticeable adverse change in existing views resulting in a change of amenity however the existing A96 already affects the amenity of this path. Traffic flow decreases on the realigned A96 are predicted to result in a minor beneficial impact to the amenity and perceived safety for users of the path	Minor adverse	N/A	Minor adverse

Table 1.6 Pitcaple to Kintore - Orange Route Option NMU Assessment

Route Description	Assessment of Changes of Journey Length	Effects on Amenity	Pre-Mitigation Effect	Mitigation	Residual Effect
There are no National Cycle Networks within the study area.					
Public Rights of Way (Scotways)					
GG55 – leading west from Old Kemnay Road, running parallel to the River Don towards Woodend Burn	Route will require diversion. Severance occurs to the south near Kemnay Wood – Roquharold Hill and surrounding woodland and is likely to result in increased journey distance by 250 - 500m (approx. 400m).	Considerable adverse change in existing conditions and views resulting in a change of amenity. Loss of provision at Woodend Burn as a result of this route option. The current path is a countryside off road route and will require diversions likely on the road network or features to navigate around. This route also connects other core paths (eg Old Kemnay Road (Kemnay - Inverurie) - Proposed Link) to create an extended network.	Major adverse	MPC1, MPC2	**Major adverse**
GG55 – leading west from Old Kemnay Road, running parallel to the River Don towards Woodend Burn	No predicted change in journey length.	Traffic flow reductions along the existing A96 between Blackhall (B9144) and Port Elphinstone (B993) are predicted to result in a beneficial impact to the amenity for users of the path which crosses the existing A96 at-grade.	Moderate Beneficial	N/A	**Moderate Beneficial**
Unrecorded path passing from the B993 to Kemnay Road, Inverurie.	No predicted change in journey length.	Traffic flow reductions along the existing A96 between Blackhall (B9144) and Port Elphinstone (B993) are predicted to result in a beneficial impact to the amenity for users of the path which crosses the existing A96 at-grade.	Moderate Beneficial	N/A	**Moderate Beneficial**
Core Paths and Aspirational Core Paths					
408.04R – Inverurie to East Aquhorthies 408.04a Road Link	Increase journey length approx. 100m.	Noticeable adverse changes to existing views and amenity - new junction at this location and path would require detour around the junction roundabouts.	Moderate adverse	MPC1, MPC2	**Moderate adverse**

Route Description	Assessment of Changes of Journey Length	Effects on Amenity	Pre-Mitigation Effect	Mitigation	Residual Effect
408.04 – Inverurie to East Aquhorthies	No predicted change in journey length	Noticeable adverse changes to existing views and amenity - new junction at this location and path would require detour around the junction roundabouts. Slight traffic flow increases along the C116C are predicted to result in NMUs experiencing little noticeable change in amenity from the current conditions at this location	Moderate adverse	MPC1, MPC2	**Moderate adverse**
408.05P – Old Kemnay Road (Kemnay - Inverurie) - Proposed Link	Route is severed and would result in diversions with increased journey distance of greater than 500m for NMUs.	Considerable adverse change in existing conditions and views resulting in a change of amenity. Loss of approx. 1km of path at Kemnay Woods - Roquharold Hill as a result of this route option. The current core path is a countryside off road route and will require diversions on the road network or features to navigate around. This route also connects other core paths to create an extended network.	Major adverse	MPC1, MPC2	**Major adverse**
408.06 – Inverurie to Kintore Cycle path	Route is severed and would result in increased journey distance of greater than 500m for NMUs.	Considerable adverse change in existing conditions and views resulting in a change of amenity. Loss of full path in its current form. This route also connects other core paths to create an extended network. The existing A96 already affects the amenity of this path.	Major adverse	MPC1, MPC2	**Major adverse**
408.09 – Souterford Road to The Bass	No predicted change in journey length.	Traffic flow reductions along Oldmeldrum road, Inverurie (B9170) are predicted to result in little noticeable change from the current conditions.	Minor Beneficial	N/A	Minor Beneficial
309.04P – Oldmeldrum: Village link to Lochter - Proposed Link	No predicted change in journey length.	Traffic flow increases along the C76C are predicted to result in a noticeable adverse change in amenity and perceived safety. The increase in traffic volumes would be likely to deter use by some NMUs, particularly road cyclists, or cause a noticeable change in amenity.	Moderate adverse	N/A	**Moderate adverse**

Route Description	Assessment of Changes of Journey Length	Effects on Amenity	Pre-Mitigation Effect	Mitigation	Residual Effect
309.05 – Oldmedrum: Roadside Cycle Path	No predicted change in journey length.	Slight traffic flow increases along the B9170 to result in little noticeable change from the current conditions.	Minor adverse	N/A	Minor adverse
408.11P - Howford Bridge Link Meldrum Meg Way - Proposed Link	No predicted change in journey length.	Traffic flow reductions along the B9001 in Inverurie between the Portstown Link to Harlaw Road are predicted to result in a beneficial impact to the amenity and perceived safety for users of the path	Moderate Beneficial	N/A	**Moderate Beneficial**
Existing local routes					
GA3 - Oldmeldrum to Old Rayne	Slight increase in journey length.	Noticeable adverse change in existing conditions and views resulting in a change of amenity – The route option is adjacent to the path. The route will be severed by the Orange route option.	Major adverse	MPC1, MPC2	**Major adverse**
GA3 - Oldmeldrum to Old Rayne	No predicted change in journey length.	Traffic flow increases along the C76C are predicted to result in a noticeable adverse change in amenity and perceived safety. The increase in traffic volumes would be likely to deter use by some NMUs, particularly road cyclists, or cause noticeable change in amenity.	Moderate adverse	N/A	**Moderate adverse**
GA3 - Oldmeldrum to Old Rayne	No predicted change in journey length.	Slight traffic flow increases along the B9170 to result in little noticeable change from the current conditions.	Minor adverse	N/A	Minor adverse
GA3 - Oldmeldrum to Old Rayne	No predicted change in journey length.	Traffic flow reductions along the B9001 are predicted to result in beneficial change in amenity and perceived safety.	Moderate beneficial	N/A	**Moderate beneficial**
GA3 - Oldmeldrum to Old Rayne	No predicted change in journey length.	Traffic flow increases along the B9001 between Wartle (A920) to Daviot (U77C) are predicted to result in NMUs experiencing little noticeable change from the current conditions.	Minor adverse	N/A	Minor adverse
GA2 - The Great Inverurie Bike Ride	No increase in journey length.	This is the first time this path will be impacted by the Orange route option (total of four occurrences): Considerable adverse change in existing conditions	Major adverse	MPC1, MPC2	**Major adverse**

Route Description	Assessment of Changes of Journey Length	Effects on Amenity	Pre-Mitigation Effect	Mitigation	Residual Effect
		and views resulting in a change of amenity. The Orange route option will pass under the path. As this path is severed a number of times in close proximity, the adverse effects will be major.			
GA2 - The Great Inverurie Bike Ride	No increase in journey length.	This is the second time this path will be impacted by the Orange route option (total of four occurrences). There will be a noticeable adverse change in existing conditions and views resulting in a change of amenity. Diversion will be required around a roundabout which will impact perceived safety. As this path is severed at several locations in close proximity, the adverse effects will be major.	Major adverse	MPC1, MPC2	**Major adverse**
GA2 - The Great Inverurie Bike Ride	No increase in journey length.	This is the third time this path will be impacted by the Orange route option (total of four occurrences). There will be a noticeable adverse change in existing conditions and views resulting in a change of amenity. This path follows the side road beneath the Orange route option. As this path is severed at several locations in close proximity, the adverse effects will be major.	Major adverse	MPC1, MPC2	**Major adverse**
GA2 - The Great Inverurie Bike Ride	No predicted change in journey length	This is the fourth time this path will be impacted by the Orange route option (total of four occurrences) Slight traffic flow increases along the C116C are predicted to result in NMUs experiencing little noticeable change in amenity from the current conditions at this location.	Minor adverse	N/A	Minor adverse
Pitcaple Wood	No predicted change in journey length	The path would be screened by the existing woodland. Traffic flow reductions on the existing A96 are predicted to improve user experience leading to minor improvements to air quality and noise levels resulting in a beneficial change in amenity.	Minor beneficial	N/A	Minor beneficial

Route Description	Assessment of Changes of Journey Length	Effects on Amenity	Pre-Mitigation Effect	Mitigation	Residual Effect
A96 Inverurie to Kintore: Foot/Cycleway	No predicted change in journey length	Traffic flow increases on the realigned A96 are predicted to result in a moderate adverse impact to the amenity and perceived safety for users of the path	Moderate adverse	MPC1, MPC2	Moderate adverse

Appendix A12.3 **Community Land and Facilities Assessment Tables**

Appendix A12.3 **Community Land and Facilities Assessment Table**

Community Land and Facilities Assessment Tables

The following tables set out the community land and facilities assessment for all route options. All receptors in Tables 1.1 to 1.6 have been identified as being of a high sensitivity. The following receptors are also identified in Volume 5, Figures 12.1 to 12.13.

Table 1.1 East of Huntly to Colpy - Cyan Route Option

Name	Land-take Effect	Access Effects	Amenity Effects	Pre-Mitigation Effect	Mitigation	Residual Effect
Culsalmond Community Education Centre	Predicted loss of <10% of land from the property.	Access to Culsalmond Community Education Centre has been retained by the realigned A96 and Colpy Junction. There would be a requirement for NMUs and vehicle travellers to navigate Colpy Junction and associated underbridge to access this facility.	The location of the route option and the Colpy Junction adjacent to the facility is predicted to have adverse impacts on amenity. The presence of the existing A96 already effects this facility however the scale of the junction in comparison to the current conditions is considered to have noticeable adverse changes.	Moderate adverse	MPC2 and MPC4	**Moderate adverse**
Morgan McVeighs Restaurant	N/A	Access to Morgan McVeigh's restaurant facility has been retained via the realigned A96 and Colpy Junction. There would be a requirement for travellers to navigate Colpy Junction which is considered a hinderance.	The location of the route option adjacent to the facility is predicted to have adverse impacts on amenity. The presence of the existing A96 already negatively affects the amenity of this facility however the scale of the nearby junction in comparison to the current conditions is still considered to have noticeable adverse changes.	Moderate adverse	MPC2 and MPC4	**Moderate adverse**

Table 1.2 East of Huntly to Colpy - Red Route Option

Name	Land-take Effect	Access Effects	Amenity Effects	Pre-Mitigation Effect	Mitigation	Residual Effect
Culsalmond Community Education Centre	Predicted loss of <10% of land from the property.	Access to Culsalmond Community Education Centre has been retained by the realigned A96 and Colpy Junction. There would be a requirement for NMUs and vehicle travellers to navigate Colpy Junction and associated underbridge to access this facility.	The location of the route option and the Colpy Junction adjacent to the facility is predicted to have adverse impacts on amenity. The presence of the existing A96 already effects this facility however the scale of the junction in comparison to the current conditions is considered to have noticeable adverse changes.	Moderate adverse	MPC2 and MPC4	**Moderate adverse**

Table 1.3 Colpy to Pitcaple - Pink Route Option

Name	Land-take Effect	Access Effects	Amenity Effects	Pre-Mitigation Effect	Mitigation	Residual Effect
Durno and Logie Woodland area	Land-take required from the woodland will impact the function of this facility and result in loss of part of the facility. The route option will fragment and isolate the northern section of the facility. This will result in significant adverse impacts. Landownership boundaries are not defined at this site therefore percentage of land taken is unknown.	Negative adverse effects predicted due to severance of core path provision restricting access to the full facility.	It is predicted that there would be significant loss of amenity to the woodland which could dissuade users visiting the facility.	Major adverse	MPC1, MPC2, MPC4	**Major adverse**
The following community land and facilities are located within the study area and it was predicted that there would be a minor adverse effect to users of these facilities because of the Pink route option: Loch Insch Fishery, Kellockbank Country Emporium and coffee shop, Logie Durno Village Hall, Logie Durno Play Park and Logie Durno School						

Table 1.4 Colpy to Pitcaple - Brown Route Option

Name	Land-take Effect	Access Effects	Amenity Effects	Pre-Mitigation Effect	Mitigation	Residual Effect
Kellockbank Country Emporium and Coffee Shop	N/A	Access to Kellockbank Country Emporium and Coffee Shop has been retained via the B992 and the Kellockbank Junction. There would be a requirement for NMUs and vehicle travellers to navigate Kellockbank Junction and associated underbridge to access this facility.	The junction is thought to cause noticeable adverse changes to the existing views of NMU journeys resulting in a change in amenity.	Moderate adverse	MPC1, MPC2 and MPC3	**Moderate adverse**
Durno and Logie Woodland area	Land-take required from the woodland will impact the function of this facility which is predicted to cause significant adverse impacts. Land-take will also result in severance of the woodland area fragmenting and isolating the facility at two points to the north and south of the route option. Landownership boundaries are not defined at this site therefore percentage of land taken is unknown.	Negative adverse effects predicted due to severance of core path provision restricting NMU access to the full facility.	It is predicted that there would be considerable adverse change in the existing views deterring users visiting the facility.	Major adverse	MPC1, MPC2, MPC4	**Major adverse**
River Urie	N/A	Access to the river is retained with the local road network and NMU routes remaining open. NMUs would be required to travel via the local road and path	There will be large scale bridge visible to those using the open space causing a noticeable	Moderate adverse	MPC1	**Moderate adverse**

Name	Land-take Effect	Access Effects	Amenity Effects	Pre-Mitigation Effect	Mitigation	Residual Effect
		network with underbridges to access the river resulting in adverse effects to access.	adverse effect to the amenity of the site.			
The following community land and facilities are located within the study area and it was predicted that there would be a minor adverse effect to users of these facilities because of the Brown route option: Loch Insch Fishery, Old Rayne School, Old Rayne Play Park (Lawrence Road), St Lawrence Hall, Strathorn Farm Stables, Logie Durno School, Logie Durno Play Park, Logie Durno Village Hall and Old Logie Burial Ground north of Logie House (Whiteford Road).						

Table 1.5 Pitcaple to Kintore - Violet Route Option

Name	Land-take Effect	Access Effects	Amenity Effects	Pre-Mitigation Effect	Mitigation	Residual Effect
Overdon Care Home	N/A	Access to Overdon Care Home will be largely unaffected. NMU and vehicle access will be required to travel via Tavelty Junction, which is considered a hinderance, however the presence of the existing A96 junction already affects the traveller.	Noticeable adverse effects to amenity are predicted due to the increase in scale of the new Tavelty Junction. The junction is expected to change the existing views of visitor journeys from the NMU route, however the presence of the existing A96 junction already affects this facility.	Moderate adverse	MPC1, MPC2 and MPC3	**Moderate adverse**
Fyfe House (Girl guide camp site)	N/A	There are no impacts to access predicted. Access is maintained as per current arrangements.	The site is located within a tranquil setting and users of this site are predicted to experience noticeable adverse effects to amenity due to the proximity of the Violet route option.	Moderate adverse	N/A	**Moderate adverse**
Hogholm Stables	5-6% land take required from equestrian property impacting the function of this facility.	Direct access has been maintained by connecting entrance to tie in and there are no changes to distance travelled by vehicle.	Noticeable adverse effects are predicted due to the location and proximity of the new A96.	Moderate adverse	MPC4	**Moderate adverse**
Orcadia	Approx. 30% land loss from community property impacting the function of this facility.	Direct access entrance slightly altered to tie into new B993 however impacts are minor.	Noticeable adverse effects are predicted due to the location and proximity of the new A96 to the property.	Major adverse Due to between 10% and 50% land loss	MPC4	**Major adverse**

Name	Land-take Effect	Access Effects	Amenity Effects	Pre-Mitigation Effect	Mitigation	Residual Effect
Kintore Cemetery	N/A	Access has been retained from the north with slight realignment of the route, however access from the south has been stopped up. The change in access is predicted to increase journey distance of over 300m for NMUs and the complete severance of the core path provision.	Adverse effects are predicted due to the new Tavelty Junction. The junction is expected to change the existing views of NMU journeys, however the presence of the existing A96 junction already affects this facility.	Major adverse	MPC1, MPC2	**Moderate adverse**
The following community land and facilities are located within the study area and it was predicted that there would be a minor adverse effect to users of these facilities because of the Violet route option: Mill Wood, The Cabin Equestrian Centre, Keithhall Public Hall, Masonic Hall, Crown Park, Provost Laurence Court, Kintore Fire Station, Kintore Medical Centre, Kintore Scout Hall, The Bothy, Kintore School, Kintore Playing Fields, Thainstone Agricultural Centre, Porterhouse Restaurant and coffee shop, Clydesdale Bank (Thainstone Agricultural Centre), Ceann Turr Café and Shop, Airlie House, Kintore Community Library, Kintore Family Centre and Kintore Co-op.						

Table 1.6 Pitcaple to Kintore – Orange Route Option

Name	Land-take Effect	Access Effects	Amenity Effects	Pre-Mitigation effect	Mitigation	Residual Effect
Newseat walks and trails	N/A	Access to the facility has been retained however NMUs will need to negotiate Blackhall Road Junction. This is considered a hinderance. It is predicted that the minor realignments of the C116C leading to the facility will increase journey distance.	Adverse effects on amenity are predicted due to the new Blackhall Road Junction. The junction is considered to cause noticeable adverse changes to the existing views of NMU journeys resulting in a change in amenity.	Major adverse	MPC1, MPC2	**Major adverse**
Kemnay Wood - Roquharold Hill and surrounding woodland	Adverse effects predicted due to land-take of between 10% and 50% from Kemnay Wood resulting in the loss of part of the facility. Land-take will also result in severance resulting in the areas of woodland to the north and south of the route option to be fragmented and isolated.	Adverse effects due to the complete severance of the core path provision which will restrict access to the full facility.	It is predicted that there would be significant loss of amenity to the woodland which could cause users to be dissuaded from using the area due to the new A96 traversing through the facility.	Major adverse	MPC1, MPC2, MPC4	**Major adverse**
Crichiebank Business Centre Woodland area	N/A	Access routes to and through this woodland have been severed due to the realignment of the existing A96 with Mill Road which is predicted to hinder the access to the facility.	Mill Road is currently stopped up but will be developed to link with the existing A96 and the side road adjoining the existing Thainstone Roundabout. This will likely result in an increase of traffic which NMUs will be exposed to. It is therefore predicted that users of this facility would experience a noticeable	Moderate adverse	MPC1, MPC2	**Moderate adverse**

Name	Land-take Effect	Access Effects	Amenity Effects	Pre-Mitigation effect	Mitigation	Residual Effect
			adverse effect to their existing views and perceived safety because of this link.			
River Don	N/A	Access to the River Don would be retained via Old Kemnay Road and from C116C.	The existing A96 bridge already impacts the amenity of this path however the Orange route option will result in an additional large-scale bridge and new road which will also be visible to those using the open space. As a result, users of this facility would experience a noticeable adverse effect to their existing views.	Moderate adverse	MPC1, MPC2	**Moderate adverse**
The following community land and facilities are located within the study area and it was predicted that there would be a minor adverse effect to users of these facilities because of the Orange route option: Mill Wood, Buzzard Café, Pitcaple Environmental Project, Thainstone Agricultural Centre, Clydesdale Bank (Thainstone Agricultural Centre), Porterhouse Restaurant and Coffee Shop, Kirkdale Nursery Garden Centre, Port Elphinstone School, Ladeside Gardens Recycling Facility, Port Elphinstone Play Park, Port Elphinstone Playing Fields, Druids Toddler play park, Druids Playing Fields, Port Elphinstone Cemetery , Kintore Cemetery and Overdon Care Home.						

Appendix A13.1 Assessment Methodology

Appendix A13.1 **Assessment Methodology**

Sensitivity

The assessment for agriculture, forestry and sporting interests is based on the land classification, size, and usage type of each holding affected, the magnitude of impact on affected holdings, the area of total land-take and the proportion of prime agricultural land loss.

The holdings affected by the scheme have been sourced through local knowledge and directly through landowners. The full extent of land ownership for the scheme will be fully investigated in the DMRB Stage 3 assessment. For this study, land holdings have been labelled west to east in numerical order (See Volume 5, Figures 13.1 to 13.13). For each land holding, the current known land holding area in hectares (ha) has been used for land-take calculations. The exact boundaries for each landowner will be checked and confirmed in the DMRB Stage 3 assessment.

Professional judgement is used to consider the range of sensitivity characteristics found during the baseline data collection process for each agricultural, forestry and equestrian land holding, and a sensitivity rating is assigned accordingly. Table 1.1 provides a description of the criteria used to inform the assignment of sensitivity for land interests. This desk-based assessment was undertaken incorporating all the sensitivity criteria from which a sensitivity rating was given to each land holding.

Table 1.1 Criteria for Sensitivity of Agricultural, Forestry and Sporting interests[1]

Sensitivity	Characteristics
High	• Small farm size (<80ha). • Presence of prime quality land (Class 1, 2 and 3.1). • Conventionally farmed intensive arable cropping or intensive livestock systems (e.g. dairying). • Land of any farm type farmed according to organic or biodynamic standards. • High value commercial sporting activity (e.g. salmon fishing). • Small woods/plantations (less than 2ha). • Ancient Woodland Inventory (AWI).
Medium	• Medium farm size (80ha – 150ha). • Presence of land of moderate quality (Class 3.2 and 4). • Conventionally farmed mixed cropping and livestock systems of moderate intensity. • Moderate value commercial sporting activity (e.g. pheasant shooting). • Medium-sized woods/plantations (2ha-5ha).
Low	• Large farm size (>150ha).

[1] Farm size sourced from SAC Consulting Mixed Farms criteria, Farm Performance in Scotland: 2017 crop year, April 2019, https://www.fas.scot/publication/whole-farm-benchmarks-2017-18/ accessed July 2019.

	• Presence of land of low quality (Class 5, 6 and 7). • Conventionally farmed extensive livestock systems or agricultural land in non-agricultural use. • Low value sporting activity (e.g. rough shooting). • Large woods/plantations (5ha+).

Impact Magnitude

As indicated in Table 1.2, the magnitude of impacts was determined based on a range of characteristics and was determined taking into account the following factors:

- Number and type of land holdings/interests/fields impacted including severance; and
- Land lost by agricultural land capability classification.

Severance impacts refer to situations where:

The scheme would cut through land parcels, potentially disrupting access and also creating field sizes and shapes, which may become impractical for agricultural use; and/or

- The main farm steading would be separated from land parcels.

The magnitudes of various impacts, both pre-and post-mitigation, were determined and an overall magnitude assigned for each agricultural, forestry and equestrian land interest accordingly.

Table 1.2 Criteria for Magnitude of Impacts on Agriculture, Forestry and Sporting Interests

Impact (Adverse)	Impact Description
Major	• Loss of more than 10% of the land holding. • High degree of severance extending to more than 20% of the land holding. • Access to agricultural, forestry and sporting land restricted. • Disruption to driven shooting and/or high value fishing (e.g. salmon). • Significant change to woodland over a wide area, or an intensive change over a limited area.
Moderate	• Loss of between 5% and 10% of the land holding. • Moderate degree of severance extending to between 10% and 20% of the land holding. • Access to agricultural, forestry and sporting land compromised. • Disruption to walked-up shooting and/or medium value fishing (e.g. trout). • Small changes to woodland over a wide area, or noticeable change over a limited area.

Impact (Adverse)	Impact Description
Minor	• Loss of less than 5% of the land holding. • Low degree of severance extending to less than 10% of the land holding. • Minimal change in access to agricultural, forestry and sporting land. • Disruption to rough shooting and/or low value fishing (e.g. no permit charged). • Minor change to the woodland cover.
Negligible	• Negligible change to all of the above factors.

Impact Significance

The overall significance was determined taking into account sensitivity and magnitude as set out in Table 1.3. It should be noted that as this assessment included a wide range of considerations, the final significance category was adjusted in some instances using professional judgement and reasoned judgement to result in a single significance where land interests were between criteria. Where such an adjustment was made, an explanation is provided in the assessment. Within the assessment, land holdings considered to have an effect of Moderate or above were deemed as significant.

Table 1.3 Significance of Effects for Agriculture, Forestry and Sporting Interests

Magnitude / Sensitivity	Major	Moderate	Minor	Negligible
High	Major	Moderate/ Major	Minor/ Moderate	Minor
Medium	Moderate/ Major	Moderate	Minor	Negligible/ Minor
Low	Moderate	Minor/ Moderate	Negligible/ Minor	Negligible

Appendix A13.2 Land-take Calculations

Appendix A13.2 **Land-Take Calculations**

All land-take figures are rounded to one decimal place and are an approximate estimate of the land required for each route option. All land holding figures are based on current land holding information. Land-take figures will change in DMRB Stage 3 due to more complete land holding information and design development.

Land-take by Land Capability for Agriculture Classifications

Table 1.1 lists the required land-take by land capability for agriculture classification (LCfA) and the total across all classifications for each route option.

Table 1.1 Land Capability for Agriculture per LCfA Class

Route Option	3.1 (ha)	3.2 (ha)	4.1 (ha)	4.2 (ha)	5.2 (ha)	5.3 (ha)	6.1 (ha)	6.3 (ha)	Prime (ha)	All LCfA (ha)
Cyan	2	71.5	41	41.5	-	3	-	-	2	159
Red	2	57	70.5	19.5	0.5	10	3	1.5	2	164
Pink	41.5	44.5	-	6.5	-	-	-	-	41.5	92.5
Brown	61.5	37	-	8	-	-	-	-	61.5	106.5
Violet	53	119.5	-	7.5	-	3.5	-	-	53	183.5
Orange	18.5	126.5	-	27	-	6.5	-	-	18.5	178.5

Area of Woodland

For each route option, the total area of woodland identified as required for land-take has been calculated and presented in Table 1.2.

Table 1.2 Woodland Land-take

Route Option	Total Area of Woodland (ha)
Cyan	4.5
Red	13
Pink	7
Brown	13
Violet	17
Orange	18

Area of High Agricultural Value Land as Percentage of Total Agricultural Land

Each route option requires a loss of high value agricultural land. Of the total agricultural land-take, the percentage of high value agricultural land loss required has been calculated and presented within Table 1.3.

Table 1.3 Land-take of High Value Agricultural Land

Option	Total Agricultural Land-take (ha)	Area of High Value Agricultural Land (ha) (Prime Land)	High Value Agricultural Land as a Percentage of Total Agricultural Land (%)
Cyan	159	2	1
Red	164	2	1
Pink	92.5	41.5	45
Brown	106.5	61.5	58
Violet	183.5	53	29
Orange	178	18.5	10

Land-take by Known Holding

Tables 1.4 to 1.9 details land-take associated with each known holding impacted by the Cyan, Red, Pink, Brown, Violet and Orange route options respectively. Where land ownership has not been available, a total of land loss to unknown landowners has been calculated and presented within each table where applicable. The location of land interests referred to in Tables 1.4 to 1.9 are shown in Volume 5, Figures 13.1 to 13.13 Agriculture, Forestry, and Sporting Interests.

Table 1.4 Agricultural Land-take Huntly to Colpy Cyan Route Option

Land Interest	Holding (ha)	Footprint Intersect (ha)	% Intersect of Holding	Sensitivity
1	73.0	<0.5	<0.5	Medium
2	131.0	2.0	1.5	Medium
3	66.0	10.5	16.0	High
4	159.5	21.5	13.5	Medium
5	120.5	3.5	2.5	Low
6	25.0	<0.5	<0.5	Medium
7	9.0	2.0	21.0	High
8	6.0	<0.5	0.5	High
10	201.0	26.5	13.0	Medium
13	134.0	11.0	8.0	Medium
14	110.0	4.0	3.5	Medium
16	417.0	<0.5	<0.5	Low

Land Interest	Holding (ha)	Footprint Intersect (ha)	% Intersect of Holding	Sensitivity
17	110.0	23.5	21.5	Medium
23	294.5	10.5	3.5	Low
24	0.5	<0.5	2.5	Medium
25	49.5	1.0	2.5	Medium
26	404.5	5.0	1.5	Low
27	3.5	0.5	15.0	High
28	2.0	1.5	65.0	High
29	70.5	13.0	18.5	High
30	2.5	<0.5	3.0	High
31	4.5	<0.5	<0.5	High
32	5.5	0.5	4.5	High
34	38.0	2.0	6.0	High
35	23.5	5.0	22.0	High
36	52.5	0.5	1.0	High
Unknown	-	15.0	-	High
Total agriculture land loss(ha)[2]		159		

Table 1.5 Agricultural Land-take Huntly to Colpy Red Route Option

Land Interest	Holding (ha)	Footprint Intersect (ha)	% Intersect of Holding	Sensitivity
1	73.0	<0.5	0.5	Medium
2	131.0	2.0	1.5	Medium
3	66.0	10.5	16.0	High
4	159.5	22.5	14.0	Medium
5	120.5	3.5	3.0	Low
6	25.0	1.0	3.0	High
9	124.0	15.0	12.0	Medium
10	201.0	5.0	2.5	Medium
11	276.5	19.5	7.0	Medium
12	7.0	<0.5	1.0	Medium
13	134.0	13.5	10.5	Medium
14	110.0	3.0	2.5	Medium
17	110.0	4.5	4.0	Medium

[2] Includes land loss to unknown landowners. Total land loss based on actual figures, but the numbers reported have been rounded to half a hectare.

Land Interest	Holding (ha)	Footprint Intersect (ha)	% Intersect of Holding	Sensitivity
18	57.5	0.5	1.0	Medium
19	84.0	9.0	11.0	Medium
20	60.5	7.0	12.0	High
21	1.0	<0.5	<0.5	High
22	7.5	0.5	6.5	High
29	70.5	16.5	23.0	High
30	2.5	<0.5	1.0	High
32	5.5	0.5	8.0	High
34	38.0	3.0	8.5	High
35	23.5	5.5	23.0	High
36	52.5	0.5	1.0	High
Unknown	-	21.5	-	High
Total agriculture land loss(ha)[2]		164		

Table 1.6 Agricultural Land-take Colpy to Pitcaple Pink Route Option

Land Interest	Holding (ha)	Footprint Intersect (ha)	% Intersect of Holding	Sensitivity
130	8.0	0.5	7.5	High
35	23.5	<0.5	<0.5	High
36	52.5	0.5	1.0	High
37	6.5	0.5	10.5	High
38	152.5	4.0	2.5	Medium
39	4.0	0.5	12.0	High
40	479.0	6.0	1.5	Low
41	52.0	11.0	21.0	High
46	93.5	6.0	6.5	Medium
47	89.0	3.5	3.5	Medium
50	0.5	<0.5	1.0	High
51	142.5	7.0	5.0	Medium
52	45.0	4.0	9.5	High
53	1.5	<0.5	1.5	High
54	151.5	<0.5	<0.5	Low
55	27.5	3.0	11.5	High
56	6.5	2.0	28.0	High
57	416.0	12.0	3.0	Low
58	117.0	3.5	3.0	Medium

Land Interest	Holding (ha)	Footprint Intersect (ha)	% Intersect of Holding	Sensitivity
61	107.5	2.5	2.5	Medium
63	137.0	4.5	3.5	Medium
65	38.0	4.5	12.5	High
67	52.0	4.5	9.0	High
68	223.0	4.0	2.0	Low
Unknown	-	8.5	-	High
Total agriculture land loss(ha)[2]		92.5		

Table 1.7 Agricultural Land-take Colpy to Pitcaple Brown Route Option

Land Interest	Holding (ha)	Footprint Intersect (ha)	% Intersect of Holding	Sensitivity
130	8.0	0.5	9.0	High
35	23.5	<0.5	<0.5	High
36	52.5	0.5	1.0	High
37	6.5	0.5	11.5	High
38	152.5	4.0	2.5	Medium
39	4.0	0.5	11.0	High
40	479.0	6.5	1.0	Low
42	77.0	1.0	1.5	Medium
43	115.5	<0.5	<0.5	Low
44	49.0	8.0	16.0	High
45	15.0	2.0	12.0	High
46	93.5	4.0	4.0	Medium
48	315.0	12.0	4.0	Medium
49	0.5	<0.5	4.0	Low
59	45.0	2.5	5.5	High
60	214.0	25.0	11.5	Medium
61	107.5	3.0	3.0	Medium
62	25.0	4.0	15.5	High
63	137.0	6.0	4.5	Medium
64	26.0	3.0	10.5	High
65	38.0	2.0	5.5	High
66	6.0	2.0	35.0	High
67	52.0	4.5	8.5	High
68	223.0	6.0	2.5	Low
131	4.5	1.0	24.5	High

Land Interest	Holding (ha)	Footprint Intersect (ha)	% Intersect of Holding	Sensitivity
Unknown	-	8.0	-	High
Total agriculture land loss(ha)[2]		106.5		

Table 1.8 Agricultural Land-take Pitcaple to Kintore Violet Route Option

Land Interest	Holding (ha)	Footprint Intersect (ha)	% Intersect of holding	Sensitivity
69	195.5	2.5	1.5	Low
70	32.5	3.5	10.5	High
71	81.5	<0.5	<0.5	Medium
72	109.0	7.5	7.0	Medium
73	147.0	24.5	16.5	Medium
76	14.5	<0.5	<0.5	High
78	80.0	4.5	5.5	High
79	215.0	17.0	8.0	Low
80	66.5	<0.5	<0.5	High
91	1.5	0.5	21.5	High
100	123.0	8.0	6.5	Medium
101	5.5	1.0	15.0	High
102	76.0	<0.5	<0.5	Medium
103	52.0	7.5	15.0	High
104	78.0	0.5	1.0	High
105	77.0	1.0	1.0	High
106	69.0	3.0	4.5	High
107	88.5	3.5	4.0	High
108	91.5	1.5	2.0	Medium
109	4.0	<0.5	2.0	High
110	95.0	6.5	7.0	Medium
111	252.5	3.5	1.5	Low
112	102.0	5.0	5.0	Medium
113	1.5	0.5	31.0	High
114	2.5	1.5	47.0	High
115	109.5	9.5	9.0	Medium
119	219.5	1.0	0.5	Low
121	110.0	8.0	7.5	Medium
122	2.0	0.5	19.0	High
123	122.0	9.0	7.5	Medium

Land Interest	Holding (ha)	Footprint Intersect (ha)	% Intersect of holding	Sensitivity
124	72.5	0.5	1.0	High
125	9.0	<0.5	1.0	High
126	9.0	0.5	5.5	High
127	18.5	3.0	17.0	High
128	124.0	12.5	10.0	Medium
129	189.0	1.0	0.5	Low
132	58.0	3.5	6.5	High
133	7.5	<0.5	0.5	High
134	7.5	2.5	35.5	High
135	2.0	<0.5	1.0	High
Unknown	-	27.5	-	High
Total agriculture land loss(ha)[2]		183.5		

Table 1.9 Agricultural Land-take Pitcaple to Kintore Orange Route Option

Land Interest	Holding (ha)	Footprint Intersect (ha)	% Intersect of holding	Sensitivity
69	195.5	7.0	3.5	Low
70	32.5	14.0	43.0	High
71	81.5	2.5	3.0	Medium
72	109.0	0.5	<0.5	Medium
73	147.0	3.0	2.0	Medium
75	33.0	1.5	4.0	High
76	14.5	<0.5	<0.5	High
77	120.5	3.5	3.0	Medium
136	1.5	<0.5	10	High
92	247.0	29.5	12.0	Medium
93	198.0	0.5	0.5	Low
94	93.5	6.5	7.0	Medium
95	7.5	<0.5	3.0	High
96	3.0	1.5	50.0	High
97	1.0	0.5	30.0	High
98	116.5	10.0	8.5	Medium
99	6.0	0.5	4.5	High
116	10.5	<0.5	1.5	High
117	263.5	7.5	3.0	Low
118	122.0	30.0	25.0	Medium

Land Interest	Holding (ha)	Footprint Intersect (ha)	% Intersect of holding	Sensitivity
119	219.5	9.5	4.5	Low
120	5.5	0.5	8.0	High
121	110.0	2.0	1.5	Medium
122	2.0	<0.5	9.5	High
137	13.0	<0.5	0.5	High
Unknown	-	48.0	-	High
Total agriculture land loss (ha)[2]		178		

Appendix A13.3 Land Capability for Agriculture in Scotland Classifications

Appendix A13.3 **Land Capability for Agriculture in Scotland Classifications**

The Macaulay Land Use Research Institute (MLURI), now the James Hutton Institute (JHI), mapped Scotland to show the distribution of the different land classes across Scotland's cultivated agricultural land and adjacent uplands. This classification system gives an indication of the capability of the land to grow certain types of crops and grass. Land is classified into seven main classes, some of which have subdivisions. Class 1 is the best quality land and Class 7 is the poorest quality land. Classes 1, 2 and 3.1 are known as prime quality land and Classes 3.2-7 are known as non-prime land. These classifications have been used in our assessment

1 Land Capable of Producing a very wide range of crops

Cropping is highly flexible and includes the more exacting crops such as winter harvested vegetables (e.g. cauliflower, brussels sprouts and leeks). The level of yield is consistently high. Soils are usually well-drained deep loams, sandy loams, silty loams or their related humic variants with good reserves of moisture. Sites are level or gently sloping and the climate is favourable. There are no or only very minor physical limitations affecting agricultural use.

2 Land Capable of Producing a Wide Range of Crops

Cropping is very flexible, and a wide range of crops can be grown but the land may be unsuited to winter harvested crops. The level of yield is high but less consistently obtained than on Class 1 land due to the effects of minor limitations affecting cultivation, crop growth or harvesting. The limitations include, either singly or in combination, slight workability or wetness problems, slightly unfavourable soil structure or texture, moderate slopes or slightly unfavourable climate. The limitations are always minor in their effects and land in the class is highly productive.

3 Land Capable of Producing a Moderate Range of Crops

Land in this class is capable of producing good yields of a narrow range of crops, principally cereals and grass, and/or moderate yields of a wider range including potatoes, some vegetable crops (e.g. filed beans and summer harvested brassicas) and oil seed rape. The degree of variability between years will be greater than is the case for Classes 1 and 2, mainly due to interactions between climate, soil and management factors affecting the timing and type of cultivations, sowing and harvesting. The moderate limitations require careful management and include wetness restrictions to rooting depth, unfavourable structure or texture, strongly sloping ground, slight erosion or a variable climate. The range of soil types within the class is greater than for previous classes.

3.1
Land in this division is capable of producing consistently high yields of a narrow range of crops (principally cereals and grass) and/or moderate yields of a wider range (including potatoes, field beans and other vegetables and root crops). Short grass leys are common.

3.2
The land is capable of average production, but high yields of barley, oats and grass are often obtained. Other crops are limited to potatoes and forage crops. Grass leys are common and reflect the increasing growth limitations for arable crops and degree of risk involved in their production.

4 Land Capable of Producing a Narrow Range of Crops

The land is suitable for enterprises based primarily on grassland with short arable breaks (e.g. barley, oats, and forage crops). Yields of arable crops are variable due to soil, wetness or climatic factors. Yields of grass are often high but difficulties of production or utilisation may be encountered. The moderately severe levels of limitation restrict the choice of crops and demand careful management. The limitations may include moderately severe wetness, occasional damaging floods, shallow or very stony soils, moderately steep gradients, moderate erosion risk, moderately severe climate or interaction of these which increase the level of farming risk.

4.1
Land in this division is suited to rotations which, although primarily based on ley grassland, include forage crops and cereals for stock feed. Yields of grass are high but difficulties of utilisation and conservation may be encountered. Other crop yields are very variable and usually below the national average.

4.2
The land is primarily grassland with some limited potential for other crops. Grass yields can be high, but difficulties of conservation or utilisation may be severe, especially in areas of poor climate or on very wet soils. Some forage cropping is possible and, when the extra risks involved can be accepted, an occasional cereal crop.

5 Land Capable of Use as Improved Grassland

The agricultural use of land in Class 5 is restricted to grass production but such land frequently plays an important role in the economy of British hill lands. Mechanized surface treatments to improve the grassland, ranging from ploughing through rotavation to surface seeding and improvement by non-disruptive techniques are all possible. Although as occasional pioneer forage crop may be grown, one or more severe limitations render the land unsuitable for arable cropping. These include adverse climate, wetness, frequent damaging floods, steep slopes, and soil defects of erosion risks. Grass yields within the class can be variable and difficulties in production and particularly utilisation are common.

5.1
Establishment of a grass sward and its maintenance present few problems and potential yields are high with ample growth throughout the season. Patterns of soil, slope or wetness may be slightly restricting but the land has few poaching problems. High stocking rates are possible.

5.2
Sward establishment presents no difficulties but moderate of low trafficability, patterned land and/or strong slopes cause maintenance problems. Growth rates are high and despite some problems of poaching satisfactory stocking rates are achievable.

5.3
Land in this division has properties, which lead to serious trafficability and poaching difficulties and although sward establishment may be easy, deterioration in quality is often rapid. Patterns of soil, slope or wetness may seriously interfere with establishment and/or maintenance. The land cannot support high stock densities without damage, and this may be serious after heavy rain even in summer.

6 Land Capable of Use Only as Rough Grazing

The land has very severe site, soil or wetness limitations, which generally prevent the use of tractor-operated machinery for improvement. Reclamation of small areas to encourage stock to range is often possible. Climate is often a very significant limiting factor. A range of widely different qualities of grazing is included from very steep land with significant grazing value in the lowland situation to moorland with a low but sustained production in the uplands. Grazing is usually insignificant in the full arctic zones on the mountain lands, however, below this level grazings, which can be utilised for five months or longer in any year are included in this class. Land affected by severe industrial pollution or dereliction may be included if the effects of the pollution are non-toxic.

6.1
Land in the division has high proportions of palatable herbage in the sward, principally the better grasses, e.g. meadow grass-bent grassland, bent-fescue grasslands.

6.2
Moderate quality herbage such as white and flying bent grasslands, rush pastures and herb-rich moorlands or mosaics of high and low grazing values characterise land in the division.

6.3
The vegetation is dominant by plant communities with low grazing values, particularly heather moor, bog heather moor and blanket bog.

7 Land of Very Limited Agricultural Value

This land has extremely severe limitations that cannot be rectified. The limitations may result from one or more of the following: extremely severe wetness, extremely stony rocky land, unvegetated soils, scree or beach gravels, toxic waste tips and dereliction, very steep gradients, severe erosion including intensively hagged peatlands, and extremely severe climates (exposed situations, protracted snow-cover and short growing season). Agricultural use is restricted to very poor rough grazing.

Appendix A15.1 **Visual Assessment Methodology**

Appendix A15.1 **Visual Assessment Methodology**

Introduction

A Visual Impact Assessment has been carried out to identify and assess the predicted effects for each of the route options. The aim is to inform the selection of the Preferred Option from a visual perspective.

The assessment has been undertaken in accordance with: Guidelines for Landscape and Visual Impact Assessment (GLVIA)[1]; and the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 5, Landscape Effects.

This visual assessment focusses on the effects of the route options on visual receptors including residents and publicly accessible routes.

The visual assessment has been carried out as part of an overall Landscape and Visual Impact Assessment (LVIA) but has been presented in two different chapters because the two different assessments may have different outcomes for the Preferred Option. This concurs with the Design Manual for Roads and Bridges (DMRB) Stage 2 assessment which includes the landscape topic within those grouped under 'Natural and Cultural Heritage' as well as Chapter 17, Landscape, and the visual topic within those grouped under "Communities and People'.

Guidance

Whilst LVIA does not follow prescribed methods or criteria (GVLIA[1] paragraph 1.20), the visual assessment was undertaken with reference to the following publications and guidelines:

- Landscape Institute and Institute of Environmental Management and Assessment, *Guidelines for Landscape and Visual Impact Assessment*, 2013, third revised edition;
- Countryside Agency in conjunction with Scottish Natural Heritage, *Landscape Character Assessment Guidance for England and Scotland*, 2002;
- Christine Tudor, Natural England, *An Approach to Landscape Character Assessment*, October 2014;
- *Design Manual for Roads and Bridges Volume 11, Section 3 part 5*, June 1993; and
- Transport Scotland, *Fitting Landscapes: securing more sustainable landscapes*, March 2014.

The methodology adopted follows the GVLIA with reference to DMRB Volume 11, Section 3, Part 5. Page 9/2 paragraph 9.6 (DMRB Stage 2) which states:

'The objective at this stage is to undertake sufficient assessment to identify the landscape and visual factors and the effects upon them to be taken into account by the Design Organisation in developing and refining route options in agreement with the Overseeing Department's Project Manager'.

[1] Landscape Institute and Institute of Environmental Management and Assessment, *Guidelines for Landscape and Visual Impact Assessment*, 2013, third revised edition, Routledge.

Consultation

Stakeholder consultation has been undertaken with Scottish Natural Heritage (SNH), Historic Environment Scotland (HES), Aberdeenshire Council and the Transport Scotland Landscape Advisor (carried out jointly for landscape and visual aspects). The topics relevant to this visual assessment which were discussed included the following:

- The scope and method of the DMRB Stage 2 LVIA (including the extent of the study area);
- Landscape and visual design objectives;
- The visual baseline assessment, including grouping of visual receptors; and
- Assessment of the experience of the landscape and views within the DMRB Stage 2 LVIA.

Scope of the Assessment

The assessment focuses on permanent visual impacts of the route options and impacts that will occur over the long term as a result of the new development (increased activity, lighting, etc.).

It is recognised that temporary impacts will also occur during construction work and that these impacts may be staggered, particularly, to separate construction phases of the development.

Temporary visual effects are expected to be the same for each route option and have been scoped out since an assessment of temporary effects for each route option would not contribute to an assessment of clear differences between the route options.

GLVIA3 is the recognised primary guidance for undertaking LVIA for development requiring EIA and has evolved from the two previous editions of GLVIA and through general LVIA practice and precedent.

The assessment method also meets the requirements of DMRB and IAN 135/10[2]. Guidelines for DMRB and GLVIA vary slightly in their detail for different steps and aspects given the different subject areas they were originally written for and the dates they were published (GVLIA was first published in 1995 and DMRB was published in 1993).

However, both DMRB and IAN 135/10 contain guidance that is specific to highways development and which has informed the assessment methodology and the overall approach to the LVIA. This assessment is, therefore, based on GLVIA with reference from DMRB and its specific guidance on the assessment of trunk road schemes.

Baseline Data Collection

Baseline landscape and visual assessments were undertaken in parallel by a combination of desk and field-study based techniques, informed by data gathered during 2017, 2018, and 2019 from the following sources:

- Ordnance Survey maps at 1:50,000 and 1:25, 000 scale;

[2] DMRB. *Interim Advice Note 135/10 Landscape and Visual Effects Assessment.* November 2010.

- Local Development Plan;
- Field surveys;
- Aerial photographs;
- Computer generated ZTV plans;
- Computer modelled wireline images and photomontages; and
- Consultations with statutory bodies (SNH, Aberdeenshire Council, Historic Environment Scotland).

Specific field surveys were undertaken during 2019 in a variety of seasonal conditions in order to provide a realistic assessment of effects. This included field study during seasonal changes in the weather including along public roads, public areas or open space such as recreational routes as well as within settlements and areas of public interest.

Study Area and ZTV

Following the 15km wide baseline study in the Strategic Environmental Assessment[3], the study area was set out provisionally, as 10km from the centreline for all route options to ensure the inclusion of any sensitive landscape receptors, where effects may be significant e.g. Special Landscape Area's (such as Bennachie and Deveron Valley (Aberdeenshire Council LDP 2017[4])).

The study area has been informed using Zone of Theoretical Visibility (ZTV) software. The size of the Zone of Theoretical Visibility within the study area for field study was extended to 3km from the centreline of the route options to include all receptors within that area. Proofing the ZTV on the ground demonstrated that beyond 1km visual effects are not likely to be significant, due to the combination of topography, elevation and distance. Therefore, for assessment purposes, the ZTV was later reduced to 1km, however, further on-site appraisal identified extenuating circumstances where, in some cases, localised topography provided extensive views and the opportunity for enhanced visibility over long distances. Aberdeenshire Council suggested a 5km radius ZTV for R1/R2 (Red section: Dummuies to Colpy). Accordingly, an enlarged ZTV with a 5km radius was produced. ZTV plans were created using a maximum vehicle height of 4.5m with an observer / viewer height of 1.6m. Each of these parameters are applied to junction and road ZTV analysis in order to produce two separate ZTV plans for comparison purposes.

Two separate ZTV plans allowed identification of individual receptors affected by the junctions only and those affected by the road only. This process helps facilitate the identification of appropriate mitigation where required.

Whilst the study area extends to 1km from the centreline of each route option, within which the majority of significant effects occur, GVLIA3 and DMRB do not require this to be defined. The inclusion of the 1km study area helps to indicate an area, beyond which effects are considered to be 'not significant' in the majority of cases. However, given the nature of the varied topography throughout the study area, a number of visual receptors have been identified outside this area, where they are afforded views of the route options. This includes elevated locations such as R46 Dunnideer Hill. These 'long-range' receptors out with the 1km study

[3] Halcrow. *A96 Dualling SEA Tier 1 Environmental Report.* September 2014
[4] Aberdeenshire Council. *Aberdeenshire Local Development Plan 2017, Supplementary Planning Guidance 9b, part 2.* Adopted on 17 April 2017.

area, can be identified on 'Figures 15.14 to 15.16 Visual Receptors (Long Range)'. These long-range receptors identified as having potential for significant adverse visual effects are listed under the relevant route option section. They are assessed in detail in Volume 4b, Appendix A15.2 under Visual Receptors – Baseline Description and Assessment of Effects. Tables 15.2 to 15.6 (Table of Predicted Visual Effects) provide a description of the visual baseline and the predicted effects.

A theoretical ZTV maps the area within which a proposed development might have an influence or effect upon the visual environment and is used as a tool to select areas and points for more detailed assessment. ZTV analysis was undertaken using landform from a digital terrain model derived from the Ordnance Survey 'Terrain 5' OSDTM data[5] which has a 5m grid spacing. The resulting ZTV plan was overlaid on OS 1:25,000 mapping. When interpreting the ZTV, two important issues must be considered:

- The ZTVs are theoretical in that they do not take account of intervening vegetation, buildings or minor changes in topography, such as road cuttings. Where these features intervene between the viewer and the proposed development, this local screening will reduce the visibility of the project.
- The ZTVs indicate where visibility might be possible anywhere within a 0.25ha grid square (i.e. this is its' level of resolution) and it should not, therefore, be assumed that the proposed development will actually be seen at all points within each 0.25ha square.

Baseline Field Assessment

Field surveys have been undertaken during periods of clement weather from along public roads, public areas or open space such as recreational routes, and from within settlements and areas of public interest. Field surveys have been carried out in all seasons during 2017, 2018 and 2019.

Site work has involved a corroboration of the findings of the desktop review, collection of additional information on groups of visuals receptors and views for those receptors and localised screening where public access allowed together with site-based assessment of effects.

Visual Assessment Methodology

Visual impact assessment considers the sensitivity to change of visual receptors with the study area and the predicted magnitude of visual change associated with the introduction of the route options into the existing visual context.

Visual receptors

The visual receptors for the visual assessment are identified as residential, the public or community, visitors and pedestrians travelling throughout the area.

To help identify visual receptors that may experience effects from the scheme, computer generated ZTV's were supplemented with site based visual surveys to consider the scale of

[5] Technical Details; Supplier; Ordnance Survey, Update Cycle: 6 weekly, Coverage GB; Scale: 5m resolution. Formats Available; ASC, XYZ, TXT, DXF. Licence Options; Annual.

the proposed development and any visual screening such as built-form, topography or vegetation.

The process of recognizing visual receptors has been proportionate to the level of assessment, i.e. DMRB Stage 2. To establish the visual receptors that may have potential views of the scheme, ZTV's were supplemented by site-based study. Site-based study has allowed the identification of visual screens, vegetation and buildings and where they may screen receptors potential views. Visual receptors have been assessed and grouped with the aim of reducing the substantial number of baseline receptors in the assessment by grouping them where possible as follows:

- Combine receptors of a similar type e.g. residential receptors are grouped together;
- Merge receptors of the same address and limit them to one receptor;
- Combine receptors within close proximity to each other and those with a similar view e.g. several farmhouses may have similar views of a route option and are therefore grouped together;
- A focus on high and medium sensitivity through the study area specifically to focus the assessment on locations where significant effects are likely to occur. For example, vehicles along local routes have not been included in the assessment because they are of lower sensitivity than pedestrians on the same routes and since they are focussed primarily on the task of driving, they are less likely to be affected by the quality of the view; and
- Receptors identified as out with the 1km buffer zone are classed as 'long-range receptors' and indicated separately on Figures 15.14 to 15.19 Visual Receptors (Long Range) where they do not fit on the Visual Receptor plan at the scale.

People's overall visual sensitivity has been assessed by combining their visual susceptibility with the importance or value attributed to their views. The sensitivity of the visual receptor to changes associated with the development has been judged as high, medium or low based on professional interpretation of a combination of parameters as follows:

- The nature of receptors;
- The location and nature of the views;
- The direction and extent of the views; and
- The activity of the receptors, expectations and the frequency and duration of views; and, the value/importance attributed to the views.

GLVIA3 lists in detail the process of defining the sensitivity of visual receptors[6].

Table 1.1 summarises the different levels of sensitivity of visual receptors that have been applied for this level of assessment, i.e. DMRB Stage 2. Visual receptors have been assessed and judged on fitting most appropriately with the criteria within one of the categories. Table 1.2 summarises the different levels of value that may be attributed to a view. To achieve an overall

[6] Landscape Institute and Institute of Environmental Management and Assessment, *Guidelines for Landscape and Visual Impact Assessment. Pages 112-114*, third revised edition, 2013.

assessment of visual sensitivity of a receptor, the judgement on visual susceptibility has subsequently been combined with consideration of any identified value attributed to the view.

Table 1.1 Visual Susceptibility Criteria

Level of visual susceptibility	Indicators of susceptibility to visual change
High	People with a particular interest in the view or with prolonged opportunity to experience the view, for example, residents at home where the proposed development may affect the intrinsic qualities of their visual amenity, with fixed views from their property, people using access routes or outdoor recreational facilities including footpaths or existing local paths and popular hills where the attention of people undertaking such activities is likely to be focused on the landscape or where the view is a key contributor to the landscape. The view of the development may be open and dispersed and where the proposed development would be likely to be seen as one of several key visual elements or features.
Medium	People with a general interest in their surroundings or who experience transient views, for example, residents who may experience views of a road scheme but it is unlikely to change the intrinsic qualities of their visual amenity; visitors to attractions and users of access routes or outdoor recreational facilities (including footpaths and cycle routes) and who have a general interest in the landscape surroundings or with transient viewing opportunities. Attention is more likely to be focussed on participation in the activity than the surrounding landscape and views.
Low	People with a limited or passing interest in their surroundings whose attention is focussed on work or an activity rather than the landscape. For example, people using public transport or motorists who commuting to a place of work, people exercising or working in an industrial or commercial centre. Experienced views may be unfocussed or partially screened where the proposed development would be likely to form a minor visual element of feature.

Table 1.2 Value Criteria

Level of visual susceptibility	Indicators of susceptibility to visual change
High	Views experienced by receptors within areas of recognised scenic value including those with a proximity to designated areas for national, regional or local scenic value; or views experienced by receptors from important and valued features (including physical, cultural or historic attributes). Principal views from prominent buildings, scenic vistas or popular viewpoints.
Medium	Views experienced by receptors within areas of some recognised value, including those within, near or en-route to areas designated for regional or local scenic value; or views experienced by receptors from some important and valued features (including physical, cultural of historic attributes). The site may form a marginal part of the view from prominent buildings scenic vistas or popular viewpoints.
Low	Views experienced by receptors out with areas of recognised value such as designated landscape.

Magnitude of Visual Change

Assessment of the magnitude of visual change has taken account of all of the following and professional judgement has been used to determine the relevance and appropriate weighting to be attributed[7]:

- The scale of the visual change in the view (with respect to the loss or addition of features and changes in its composition);
- The geographical extent of the area from which the change takes place;
- The likely duration of the visual change; and
- Whether the visual change is likely to be reversed.

The magnitude of change has been assessed as high, medium, low or negligible with reference to criteria set out in Table 1.3. according to these parameters and is largely quantifiable. To achieve an overall assessment of magnitude of change, the judgement on degree of change may be subsequently modified by consideration of the extent, duration and reversibility of the visual change to reach a combined judgement on overall magnitude of change. If it is judged that the proposed development would not alter a view, No Change is stated.

Table 1.3 Degree of Visual Change

Degree of change	Indicators of visual change
High	The visual changes associated with the proposed development will form a prominent element within the view, resulting in a fundamental change to the quality and character of the view.
Medium	The visual changes associated with the proposed development will form a conspicuous element within the view, resulting in a considerable change to the quality and character of the view.
Low	The visual changes associated with the proposed development will form an apparent, small element within the view, without affecting the overall quality and/or character of the view.
Negligible	The visual changes associated with the proposed development will result in a barely perceptible change in the view.

For some receptors the duration of the visual change may result in either an increase or decrease in the assessment of overall magnitude. The scope of this assessment only includes the permanent operational effects of the route options and, therefore, categories have not been applied for the duration of effects.

Level and Significance of Visual Effects

The overall level of significance of visual effects has been categorised using a four-point scale: major, moderate, minor and negligible. The level of effect has been assessed by combining all

[7] Landscape Institute and Institute of Environmental Management and Assessment. *Guidelines for Landscape and Visual Impact Assessment. Paragraph 6.39.* Third revised edition. Routledge. 2013.

the considerations and criteria set out above. This is described by GLVIA3 as an 'overall profile' approach to combining judgements and requires that all the judgements against each of the identified criteria (i.e. susceptibility, value, degree of change, extent of change, duration of change and reversibility of change) are utilised to allow an informed professional judgement assessment of the overall level of effect. The relative weight attributed to each consideration is a matter of professional judgement and varies depending on the specific landscape or visual receptor being assessed.

Professional judgement has been used to evaluate the effects of the route options on visual receptors as being beneficial or adverse.

Visual effects have been assessed as significant or not significant based on the following categories: ·

- **Major** or **moderate** levels of significance of impact are considered significant; and
- Minor or negligible levels of significance of impact are not considered significant.

Mitigation

As part of the wider LVIA process, both potential landscape and visual mitigation measures have been considered. Primary mitigation measures have been incorporated as part of the design development, such as alterations to horizontal and vertical alignments to minimise landscape and visual effects. Additionally, secondary mitigation measures have been considered during the assessment process where these can be reasonably certain and their potential to reduce significant adverse landscape and visual effects has been evaluated.

The level of detail available at DMRB Stage 2 means that secondary mitigation measures have been considered in general terms (as might be reasonably expected to be adopted as part of good practice). This also means a precautionary approach has been taken during the LVIA regarding the ability of these measures to reduce adverse effects. Where at this stage it has not been certain that effects could be mitigated, the residual level of effect is predicted to be the same as the pre-mitigation assessment. Further consideration will be given to the mitigation of predicted significant effects at DMRB Stage 3 if relevant.

Assumptions and Limitations

The DMRB Stage 2 environmental assessment for this scheme had commenced prior to the release of the New DMRB Guidance[8] (updates to the DMRB Visual assessment methodology were released in September 2019 and updated further in February 2020 and this followed a structure outlined in the previous published DMRB guidance[9]. It has been agreed with Transport Scotland and SNH that the DMRB Stage 2 environmental assessment should be completed following the structure of the Withdrawn Guidance, as there is no material difference between it and a report produced following the New Guidance in terms of the detail incorporated or the conclusions drawn.

Due to the level of design detail available at DMRB Stage 2, a precautionary approach has been taken with regards to the sensitivity of visual receptors, with a worst-case scenario

[8] LA 104 *Environmental assessment and monitoring* (formerly HA 205/08, HD 48/08, IAN 125/15, and IAN 133/10) Revision 1 and LA 107 *Landscape and visual effects* (formerly DMRB Volume 11 Section 3 Part 5 Landscape Effects and IAN 135/10) Revision 0, 2019.
[9] DMRB, Interim Advice Note 135/10 *Landscape and Visual Effects Assessment*, November 2010 and *Landscape Effects*, Volume 11, Section 3, Part 5, June 1993.

assumed in the assessment. This precautionary principle approach has also been taken when considering mitigation measures, (refer to main report Volume 2, Chapter 15, section 15.6 Mitigation).

IAN 135/10[10] states that 'Separate schedules should be prepared for different receptor groups' and the 'level of visual effects and whether beneficial or adverse, for each of the scenarios should be prepared (i.e. for construction, winter year 1 and summer year 15)'. Chapter 15 'Visual Effects' (para 15.2.23) states that *'it should be noted that neither the New Guidance nor GLVIA3 guidance are prescriptive, they provide guidance only. Both refer to the requirement for professional judgement from a competent professionally skilled practitioner.'* At DMRB Stage 2 this assessment was to ascertain the Preferred Option and the level of detail of assessment for winter year 1 and summer year 15 was not required but will be included in DMRB Stage 3 for the assessment of the Preferred Option.

Following the approach recommended by Fitting Landscapes: Securing More Sustainable Landscapes: 2014[11], initial landscape design objectives were established for the Scheme. Following consultation with the Transport Scotland landscape advisor on February 2018 and based on the findings of the DMRB Stage 2 LVIA baseline assessment, these were progressed in more detail. The landscape objectives were developed from identification of the sensitivities and opportunities offered by the baseline conditions which, in turn, informed the identification of primary and secondary mitigation measures during the DMRB Stage 2 LVIA. The landscape design objectives will be refined further during DMRB Stage 3, informed by more detailed LVIA and to input to the ongoing design development.

The predicted visual effects of road lighting at the junctions have been considered in general by the LVIA. Given the level of detail available at DMRB Stage 2, the lighting has only been described specifically where it has been judged to have an influence on the predicted visual effects (for example where this is the only element of the route option that would be seen or where the baseline conditions do not include lighting). Otherwise, the effects of junction lighting are included within the overall description of visual effects at junctions. The LVIA at this stage has not assessed the predicted effects of lights from vehicles travelling along the route options although this will be considered at DMRB Stage 3.

Site surveys of representative private properties for the visual assessment were carried out from the nearest available publicly accessible location, supplemented by desk-based data analysis to make an informed assumption of the view from the property. In line with guidance and industry recognised practice for a DMRB Stage 2 visual assessment, access to private properties was not requested as part of the visual assessment of effects.

[10] DMRB. *Interim Advice Note 135/10 Landscape and Visual Effects Assessment. Section 3.5 p43.* November 2010.
[11] Transport Scotland, *Fitting Landscapes; Securing More Sustainable Landscapes,* March 2014.

Appendix A15.2 **Visual Receptors – Baseline Description and Assessment of Effects**

Appendix A15.2 **Baseline Description and Assessment of Effects**

The following tables form Appendix A15.2.

Table 1.1 contains a description of the baseline view and predicted visual effects on receptors located within the area of the East of Huntly to Colpy Cyan route option. The locations of the receptors are shown in Volume 5, 'Figures 15.1 to 15.2 Visual Receptors Cyan Route Option'.

Table 1.1 Predicted Visual Effects for East of Huntly to Colpy Cyan Route Option

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
C1	Core Path: Battle hill 607.01 (Recreational)	Baseline view: An elevated circular walking path around Battlehill Wood (179m AOD) to the east of Huntly and north of the existing A96 and route option. There is dense tree cover on the hilltop with partial views to the existing A96. Predicted effect: Battlehill Wood is a mixed broadleaf and commercial plantation and parts have recently been felled, leaving the eastern footpath open to potential views. Any potential views will be long-range and partially obscured by topography (180m AOD) north of Craigenseat but may include SuDS basin, access road and the transition from single to dual carriageway. Views further east will be screened by Hill of Dummuies and Ordiesnaught.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5	Minor adverse
C2	Existing local path Deveron Valley (Recreational)	Baseline view: This route is 41.8km long and links Huntly to Bridge of Marnoch running along the River Deveron. It joins the existing alignment of the A96 east of Huntly at the A97 but not the route option. The route has mostly clear	High sensitivity receptor	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		panoramic views with some screening from topography restricting views. Predicted effect: The route option largely lies on top of the existing alignment and is partly in a cutting at its closest point. Views to route option extremely unlikely.	No change			
C3	Picnic area – A96 lay-by at Carvichen (Recreational)	Baseline view: A picnic site in a tree screened lay-by. Very limited views to south. Predicted effects: No views to route option to east due to existing foliage and topography.	High sensitivity receptor No change	No change	n/a	No change
C4	Craigenseat (Residential)	Baseline view: An agricultural steading located east of Huntly and Cairn Hill, on the south side of the existing A96 with views east to the route option. Predicted effect: There is potential for medium range views (0.3-1km away) of the embankments of the re-aligned A96, access road and SuDS basin but screening from existing A96 embankments is likely to restrict and prevent views of the associated transition from single to dual carriageway and the Hill of Dummuies (230m AOD) will restrict additional views further east.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5, M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
C5	Whiteleys (Residential)	Baseline view: An agricultural steading located east of Huntly and south of the existing A96 with views to the route option. Predicted effect: There is potential for angled, partial medium range views (0.3-1km away) of the embankments of the re-aligned A96, access road towards Slioch, SuDS basin and the associated transition from single to dual carriageway but screening from existing topography and vegetation will restrict views and the Hill of Dummuies (230m AOD) will also restrict views further south-east.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5, M7	Minor adverse
C6	Slioch (Residential)	Baseline view: A group consisting of two residential properties and two agricultural steadings located east of Huntly and south of Robin's Height (195m AOD), on the north side of the existing A96 with direct open views to the route option. Predicted effect: Close-range views (within <0.3km) of the access road and medium range views (0.3km -1km) of the associated transition from single to dual carriageway, embankments of the re-aligned A96, and SuDS basin will be experienced against the back drop of the Hill of Dummuies (230m AOD). Hill of Weistern woodland (189m AOD) provides screening further east.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
C7	Leys of Dummuies (Residential)	Baseline view: A group of a residential property and an agricultural steading located east of Huntly between Hill of Dummuies and Cairn Hill, adjacent to and on the south side of the existing A96 with direct open views. Predicted effect: Close-range views (within <0.3km) of the associated transition from single to dual carriageway, embankments of the re-aligned A96, access road and SuDS basin will be experienced. The Hill of Dummuies (230m AOD) will restrict longer range views further east.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**
C8	Adamston (Residential)	Baseline view: This receptor group consists of properties at Adamston, West Adamstown, Bogside of Adamstown and Ramstone. They are located on a predominantly north-east facing slope north of the existing A96 and the route option. Predicted effect: Views south to the route option will be angled and are likely to include small embankments, the access road to SuDS basin, the realignment of the existing A96 and the route option with cuttings against the Hill of Dummuies and Ordiesnaught apparent.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**
C9	Thomastown, Howtown	Baseline view: A group of residential properties and agricultural steadings on the north side of the existing A96 with partial views south to	High sensitivity receptor	Moderate adverse	n/a	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
	(Residential)	Clashindarroch Wind Farm and the existing A96 where existing woodland does not obscure the view. Predicted effect: Views of the route option where vegetation allows, will be long-range views (<1km) of the access road and will include cuttings viewed against the backdrop of Ordiesnaught Hill (282m AOD). Embankments will be less visible as the route option will achieve a degree of integration into the view. East of Ordiesnaught Hill, the route option is screened from view by Ramstone Hill and associated topography.	Medium magnitude of change			
C10	Ramstone Hill picnic site (Recreational)	Baseline view: A lay-by and picnic site near Ramstone Hill (280m AOD), on the north side of the existing A96. Direct open views to the north, however, views south to the route option are obscured by Ramstone Hill. Predicted effect: There may be some partial, oblique angled views (within <0.25km) of the SuDS basin and medium range views (0.3km - 1km at Ordiesnaught Hill) as the route option travels south of the existing A96 but it will be screened from view as it is aligned behind Ramstone Hill. Existing roadside embankments also prevent views to the south.	High sensitivity receptor Negligible magnitude of change	Minor adverse	n/a	Minor adverse
C11	Greenmyres Farm	Baseline view: The receptor is a residential/agricultural dwelling located south of Ramstone Hill and the existing A96 and north of	High sensitivity receptor	Major adverse	n/a	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
	(Residential)	Gartly Moor with the route option alignment north of the receptor visual. Predicted effect: Views are likely to be angled and will include the new access road, cuttings and embankments west of Rack Moss woodland, which provides some screening to the east. Both Rack Moss and Ordiesnaught Hill also provide screening to the route option.	High magnitude of change			
C12	Woodside of Chapelton (Residential)	Baseline view: A group of residential properties (including North Broomhill) and an agricultural steading located north of the existing A96 with the route option south of the receptor. Both are screened by existing buildings and woodland shelterbelts/boundary planting. Predicted effect: Intervening woodland vegetation will restrict views to the south, partial views of high sided vehicles and embankments may be possible but will be of short duration. Rack Moss will screen views to the west. Views to south-west are screened by a combination of intervening vegetation and topography (Broomhill), thus the route option will introduce a discernible feature although it will not compromise the view composition.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5,	Minor adverse
C13	Hillhead / Newtongarry Inn / Croft of Broomhill	Baseline view: This group consists of an agricultural and two residential properties, located between Ramstone Hill and Saddle Hill	High sensitivity receptor	Major adverse	n/a	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	(Residential)	adjacent to the existing A96 with the route option south of the receptor. Predicted effect: Views will include possible views of embankments through Rack Moss and cuttings east and west of Rack Moss woodland. The C66S underbridge and embankments will be seen against Saddle Hill and east of Ramstone Hill.	High magnitude of change			
C14	Glennieston (Residential)	Baseline view: The receptor property is an agricultural steading located on the Glen Water between Cot Hill and Saddle Hill to the south of the existing A96. The windows are obscured by coniferous shelterbelt however, the property is not fully screened. Predicted effect: Any views are unlikely due to screening of Saddle Hill and Rack Moss woodland.	High sensitivity receptor No change	No change	n/a	No change
C15	Gartly Moor and Wishach Hill (Including Ski Trail) (Recreational)	Baseline view: A circular trail within an elevated wooded area with significant tree cover including Hill of Corskie (417m AOD) and Wishach Hill (422m AOD). Predicted effect: A combination of tree cover and distance will restrict visibility but there is potential in some areas of clearing for medium range views north toward the route option	High sensitivity receptor Low magnitude of change	Minor adverse	n/a	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
		including the cuttings and embankments east of Saddle Hill (294m AOD) and of SuDS basin, cuttings and embankments at Ramstone Hill (280m AOD).				
C16	Broomhill / Clinkstone / Stodfold (Residential)	Baseline view: The receptor is a group of residential properties and agricultural steadings located south of the existing A96 with the route option north of the receptor and north of the existing A96. There is significant screening from existing buildings and the topography restricts views to the route option. Predicted effect: Views north are likely to include a small cutting, SuDS basin and embankment (south of the existing A96 and east of Saddle Hill) with views further west restricted by Rack Moss woodland. Cuttings and embankments north of the existing A96 will be partially screened and limited by the existing road, embankments and topography.	High sensitivity receptor High magnitude of change	Major adverse	n/a	**Major adverse**
C17	Newton, Overtown, Kilden and Whinbrae (Residential)	Baseline view: The receptor is a group of agricultural steadings located south of the existing A96 with the route option north of the receptor. There is some screening from existing buildings and vegetation along the River Urie, also the topography helps to restrict views to the route option.	High sensitivity High magnitude of change	Major adverse	n/a	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
		Predicted effect: Close-range views to the north will include a large cutting, embankments, SuDS basin and an access road. The route option introduces a contrasting feature across a wide area.				
C18	Wedderburn (Residential)	Baseline view: The receptor is an agricultural steading located north of the existing A96 with the route option south of the receptor. There is some screening from existing topography that helps to restrict views to the route option. Predicted effect: Direct but partial, close-range views to the south and although the route option introduces a contrasting feature across a wide area, the view is restricted by the existing topography.	High sensitivity receptor High magnitude of change	Major adverse	n/a	**Major adverse**
C19	Braehead (Residential)	Baseline view: A group of residential properties and an agricultural steading located adjacent to the existing A96 with the route option south of the receptor and the existing A96. Predicted effect: Direct, close-range views of embankments to the south with some partial screening from topography.	High sensitivity receptor High magnitude of change	Major adverse	n/a	**Major adverse**
C20	Midtown (Residential)	Baseline view: An agricultural steading facing north onto the existing A96 with the route option north of the receptor and south of the existing A96.	High sensitivity receptor	Major adverse	n/a	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
		Predicted effect: Direct, close-range views of embankments to the south of, and in front of the existing A96. Potential oblique views to SuDS basin at Wedderburn.	High magnitude of change			
C21	Bainshole (Residential)	Baseline view: A group of agricultural / commercial steadings and residential properties adjacent to the existing A96 with the route option south of the receptor and the existing A96. Predicted effect: Direct, close-range views of embankments to the south, SuDS basin and the Bog access road.	High sensitivity receptor High magnitude of change	Major adverse	n/a	**Major adverse**
C22	Mid-Bog / Bog (Residential)	Baseline view: This group represents an agricultural steading and a residential property close to the existing A96 with the route option north of the receptor and south of the existing A96. Predicted effect: Direct, close-range views of embankments to the south, SuDS basin and the Bog access road.	High sensitivity High magnitude of change	Major adverse	n/a	**Major adverse**
C23	West Skares (Residential)	Baseline view: A residential property adjacent to the existing A96 and surrounded by conifers and predominantly east or west facing. Any potential view will be oblique.	High sensitivity receptor	Major adverse	n/a	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
		Predicted effect: There is potential for angled views to include large embankments and cuttings viewed against the Hill of Foudland as well as the overbridge of the realigned existing A96.	High magnitude of change			
C24	Rashieslack (Residential)	Baseline view: An agricultural steading facing south and overlooking the existing A96 and the route option. Predicted effect: Direct open and slightly angled/elevated views of the cuttings, embankments, SuDS basin and access road across a wide area.	High sensitivity receptor Medium magnitude of change	Major adverse	n/a	**Major adverse**
C25	Lambhill / Carnbroe (Residential)	Baseline view: An agricultural steading facing south and west, overlooking the existing A96 and the route option above the Glen Water. Significant screening to the south and west from woodland shelterbelts. Predicted effect: Direct open and short-range views of the cuttings and embankments, SuDS basin and access road across a wide area.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5	**Moderate adverse**
C26	Skares (Residential)	Baseline view: An agricultural steading adjacent to the existing A96 with the route option north of the receptor and the existing A96. The existing topography helps restrict visibility further west.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
		Predicted effect: Any views will be oblique, angled, close to medium range and limited by topography and screening from woodland vegetation. Views to the access road realignment and overbridge are likely.				
C27	Fordmouth (Residential)	Baseline view: A group of residential properties and agricultural steadings in or adjacent to the River Urie valley bottom, close to the existing A96 and the route option, with predominant views to the south including Hill of Skares. Predicted effect: Direct open and short-range views of the large cuttings, embankments, SuDS basin and access road across a limited area of the view.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5	**Moderate adverse**
C28	Woodside (Residential)	Baseline view: A group of residential properties including a commercial visitor attraction (Morgan McVeigh's). South and east facing, predominantly overlooking the existing A96 and the route option. Predicted effect: Direct open and short-range views of the cuttings and embankments, SuDS basin and access road across a wide area.	High sensitivity receptor Medium magnitude of change	Major adverse	n/a	**Major adverse**
C29	Jericho (Residential)	Baseline view: This receptor group consists of properties in Jericho and Willow Cottage and Upper Scotstown, an agricultural steading, located south of Foudland Quarries on the Jordan Burn and west of the route option. These	High sensitivity receptor	Major adverse	M1, M2, M3, M5, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
		properties have views to the south-east with some screening from existing buildings, woodland and topography. Predicted effect: There is potential for partially screened views of the Colpy Junction and realignment of existing A96, including SuDS basin, roundabouts, cuttings and embankments as well as potential for partially screened longer range views from Upper Scotstown	Medium magnitude of change			
C30	Waulkmill/Colpy Cottage (Residential)	Baseline view: A residential/agricultural dwelling located east from the route option. It is adjacent to the existing A96 with views facing south. Although there is substantial screening from existing native tree planting, there are also limited views to the west. Predicted effect: Views are likely to include embankments, cuttings, adjacent roundabout and the realignment of the existing A96. Partial, distant views of the roundabout west of Colpy are also likely.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5	**Major adverse**
C31	Kirkton of Culsalmond Old Parish Church, Kirkton Farm, The Old Manse, Lower Braeside	Baseline view: A group of residential properties, an agricultural steading and a parish church. Views west include Bennachie, Fallow Hill (185m AOD) and Dunnideer Hill (268m AOD). Views to Colpy are screened by existing farm buildings and vegetation.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	(Residential)	Predicted effect: Views to the route option will be mostly screened by Williamston House woodland, however, where the route option crosses Fallow Hill (185m AOD), long-range views of large cuttings and embankments will be visible and partial views to Colpy will include cuttings, embankments, and SuDS basin.				
C32	Gardensmill Bridge (Residential)	Baseline view: A group of residential properties in Gardensmill Bridge. The route option can be seen to the west. Predicted effect: Views of cuttings, embankments, the roundabouts, SuDS basin and the realignment of the existing A96 will to be experienced.	High sensitivity receptor Medium magnitude of change	Moderate	n/a	**Moderate adverse**
C33	The Glen and the School (Residential)	Baseline view: A group of three residential properties located east of the route option at the A96/A920 junction. Views are partially obscured by elevation, topography and field boundary shelter belts. Predicted effect: there is potential for views of cuttings, embankments, the proposed roundabouts, SuDS basin and the realignment of the existing A96.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
C34	Colpy (Residential)	Baseline view: A group of residential properties situated within the village between the adjacent existing A96 and the route option. There is some screening from the woodland shelterbelts. Views north-east are screened by buildings. Predicted effect: Close-range views will include access roads, roundabouts, embankments and cuttings to the north-west and south-west, but some views will be partially screened and oblique.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**
C35	St Sairs (Residential)	Baseline view: A residential/agricultural dwelling with some screening from woodland planting and existing agricultural/commercial buildings. Views north-east are screened by buildings. Predicted effect: Partial medium range views (<0.35-1km from Colpy Junction) between Colpy and Fallow Hill including access roads and embankments.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**
C36	Ritchies Garage / Old Wrangham / Boghead (Residential)	Baseline view: A group of properties to the west of the route option including residential properties and agricultural steadings with direct open views to the south. Predicted effect: Close-range views (<0.3km from the route option) including embankments.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
C37	Mains of Sheelagreen (Residential)	Baseline view: A residential property and an agricultural steading both located adjacent to the existing A96 to the west of Williamston House and north-east of Fallow Hill (185m AOD). There is some screening from the adjacent buildings and woodland at Colpy. Predicted effect: The route option will be partially screened north of Colpy village but views of the embankments and cuttings to the west including cuttings against Fallow Hill will be experienced.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**
C38	Williamston House, Home Farm and Michael Fold (Residential)	Baseline view: Williamston House is located approximately 0.8km east of the Cyan route option and included in the Inventory of Gardens and Designed Landscapes. The house and gardens are located on a south-west facing slope above the River Urie east of the existing A96, with long views south to Bennachie and Suie Hill and north-west to Hill of Foudland above Kirkton of Culsalmond. Long-range views are limited from this receptor group due to the surrounding woodlands, however, Williamston House is afforded clear views of the estate fields to the south west up until the woodland surrounding the lodge houses towards the A96. Predicted effect: Views to the route option will be screened to the north and south by substantial woodland policies, although views to the west, of cuttings against Fallow Hill (185m AOD) may be	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
		partially visible as a new element in the view and a noticeable feature. There is screening from woodland shelterbelts at Old Inn Farmhouse, alongside the existing A96 and other intervening vegetation. Whilst the surrounding woodlands limit views, however, there is the potential for long-range filtered views in the winter.				
C39	Wrangham, West Wrangham Cottage (Residential)	Baseline view: A group of residential properties and agricultural steadings to the west of Fallow Hill (185m AOD) and the route option with partially screened views. Views south-east to Bennachie. Predicted effect: Views to the east and north will be screened by Fallow Hill (185m AOD). Medium range views are likely in front of Williamston House and the woodland shelterbelts at Old Inn Steading.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**
C40	Old Inn Farmhouse (Residential)	Baseline view: An agricultural steading situated west of Williamston House on the existing A96, east of the route option. Field boundary shelter belts will provide screening although filtered views are possible when the foliage is not present. Predicted effect: Views will be medium range where woodland screening allows, however, the cuttings against Fallow Hill (185m AOD) will be	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		partially visible as a new element in the view and a noticeable feature.				
C41	Mill of Knockenbaird (Residential)	Baseline view: A residential property and agricultural steading to the west of the existing A96 and the route option with open views between Fallow Hill (185m AOD) and woodland shelterbelts of Old Inn Farmhouse. Predicted effect: Medium range views may be possible between Fallow Hill (185m AOD) and woodland shelterbelts of Old Inn Farmhouse.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5	Minor adverse
C42	Mill Croft, Old Millhouse (Residential)	Baseline view: This group consists of an agricultural steading and residential properties. They are located south of Williamston House on the existing A96, east of the route option. Predicted effect: Views will be screened by substantial existing woodland, however, the cuttings against Fallow Hill (185m AOD) will be partially visible as a new element in the view and a noticeable feature. Field boundary shelter belts will provide screening although filtered views are possible when the foliage is not present.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5	**Moderate adverse**
C43	Huntly to Greenmyres – existing local route	Baseline view: The path runs from Upper Pirriesmill east of Huntly and south of the A96, parallel with the existing A96. It runs around the base of Ba'Hill (238m AOD) and ascends Cot Hill (245m AOD) where distant views of the	High sensitivity receptor	Major adverse	M1, M2, M3, M4, M5, M6	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	(Recreational)	existing A96 can be seen. It joins the road at Bothwellseat then follows the Den Burn to Greenmyres through Dummuies Wind Farm. There are intermittent open views north-east to the existing A96 which are occasionally screened by the existing topography including Cairn Hill (190m AOD), land at Whiteleys (175m AOD), Hill of Dummuies (225m AOD), Ordiesnaught (282m AOD). Predicted effect: Receptors will experience the greatest visual effect where views are closest to the route option i.e.at the section nearest Greenmyres Farm and Dummuies Wind Farm. The Cyan route option will be seen in cutting in front of Ramstone Hill particularly from higher ground at Dummuies Wind Farm. There is some screening from existing topography, but the route option will be visible in transition from cutting to embankment where it enters Rack Moss woodland, from the path at the edge of Gartly Moor plantation. Further west of Dummuies Wind Farm, the route option is screened by Hill of Dummuies (225m AOD), Ordiesnaught (282m AOD) but becomes visible once at Bothwellseat although views are partially screened by the existing vegetation. At Cot Hill (245m AOD) there will be distant views to the route option where it will overlay and widen the existing A96 to form two lanes. Here	High magnitude of change			

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		the visual effect reduces and in sections west of Cot Hill including from the base of Ba' Hill (177m AOD) the distance from the route option and screening from topography reduce the visibility of the route option considerably more.				

Table 1.2 provides a description of the baseline view and predicted visual effects on receptors located within the East of Huntly to Colpy; Red route option. The locations of the receptors are shown in Volume 5, Figures 15.3 to 15.4 'Visual Receptors Red Route Option' and Figure 15.14 'Visual Receptors (Long Range) Red Route Option'.

Table 1.2 Predicted Visual Effects for East of Huntly to Colpy Red Route Option

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
R1	Core Path – Battlehill (Recreational)	Baseline view: An elevated circular walking path around Battlehill Wood (179m AOD) to the east of Huntly and north of the existing A96 and route option. There is dense tree cover on the hilltop with partial views to the existing A96. Predicted effect: Battlehill Wood is a mixed broadleaf and commercial plantation and parts have recently been felled, leaving the eastern footpath open to potential views. Any potential views will be long-range and partially obscured by topography (180m AOD) north of Craigenseat but may include SuDS basin, access road and the transition from single to dual carriageway. Views further east will be screened by Hill of Dummuies and Ordiesnaught.	High sensitivity receptor Negligible magnitude of change	Minor adverse	n/a	Minor adverse
R2	Existing local path – Deveron Valley (Recreational)	Baseline view: This route is 41.8km long and links Huntly to Bridge of Marnoch running along River Deveron. It joins the existing alignment of the A96 east of Huntly at the A97 but not the route option. The route has mostly clear panoramic views with some screening from topography restricting views.	High sensitivity receptor No change	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: The route option is in a cutting at its closest point and any views are unlikely.				
R3	Picnic area – A96 lay-by at Carvichen (Recreational)	Baseline view: A picnic site in a tree screened lay-by. Very limited views to south. Predicted effect: No views to route to east due to existing foliage and topography.	High sensitivity receptor No change	No change	n/a	No change
R4	Craigenseat (Residential)	Baseline view: An agricultural steading located east of Huntly and Cairn Hill, on the south side of the existing A96 with views east to the route option. Predicted effect: There is potential for medium range views of the embankments of the re-aligned A96, access road and SuDS basin including the transition from single to dual carriageway.	High sensitivity receptor Medium magnitude of change	Minor adverse	M1, M2, M3, M5, M7	Minor adverse
R5	Whiteleys (Residential)	Baseline view: An agricultural steading located east of Huntly and south of the existing A96 with views to the route option. Predicted effect: There is potential for medium range views of the embankments of the re-aligned A96, access road, SuDS basin and the associated transition from single to dual carriageway including the transition from single to dual carriageway.	High sensitivity receptor Medium magnitude of change	Minor adverse	M1, M2, M3, M5, M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
R6	Slioch (Residential)	Baseline view: A group consisting of two residential properties and two agricultural steadings located east of Huntly and south of Robin's Height (195m AOD), on the north side of the existing A96 with direct open views to the route option. Predicted effect: Views are likely to include small embankments, the access road to SuDS basin, the realignment of the existing A96 and the route option.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**
R7	Leys of Dummuies (Residential)	Baseline view: A residential property and an agricultural steading located east of Huntly between Hill of Dummuies and Cairn Hill, adjacent to and on the south side of the existing A96 with open views of the route option. Predicted effect: Close-range views (within <0.25km) of the associated transition from single to dual carriageway, embankments of the re-aligned A96, access road and SuDS basin will be experienced. The Hill of Dummuies (230m AOD) will restrict long-range views further east.	High sensitivity receptor High magnitude of change	Major adverse	n/a	**Major adverse**
R8	Adamston (Residential)	Baseline view: This receptor group consists of properties at Adamston, West Adamstown, Bogside of Adamstown and Ramstone. They are located on a predominantly north-east facing slope, north of the existing A96 and the route option.	High sensitivity receptor Medium magnitude of change	Moderate adverse	n/a	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Views south to the route option will be angled and are likely to include small embankments, the access road to SuDS basin, the realignment of the existing A96 and the proposed dual carriageway with cuttings against the Hill of Dummuies and Ordiesnaught apparent.				
R9	Thomastown, Howtown (Residential)	Baseline view: A group of residential properties and agricultural steadings on the north side of the existing A96 with partial views south to Clashindarroch Wind Farm and the existing A96 where existing woodland does not obscure the view. Predicted effect: Views of the route option where vegetation allows, will be medium range views (<1km) of the access road and SuDS basin including cuttings viewed against the backdrop of Ordiesnaught Hill (282m AOD). Embankments will be less visible as the route option will achieve a degree of integration into the view. East of Ordiesnaught Hill, the route option is screened from view by Ramstone Hill.	High sensitivity receptor Medium magnitude of change	Moderate adverse	n/a	**Moderate adverse**
R10	Picnic area – A96 lay-by at Ramstone Brae (Recreational)	Baseline view: A lay-by and picnic site near Ramstone Hill (280m AOD), on the north side of the existing A96. Direct open views to the north, however, views south to the route option are obscured by Ramstone Hill.	High sensitivity receptor Negligible magnitude of change	Minor adverse	n/a	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: There may be some partial, oblique angled views west (within <0.25km), of SuDS basin and medium range views (0.25km - 1km at Ordiesnaught Hill) as the route option travels south of the existing A96 but it will be screened from view as it is aligned behind Ramstone Hill. Existing roadside embankments also prevent views to the south.				
R11	Greenmyres (Residential)	Baseline view: The receptor property is a residential/agricultural dwelling located south of the existing A96 and west of Rack Moss woodland. The route option alignment is north of the receptor. Predicted effect: There is significant screening from existing farm buildings and Rack Moss woodland will provide screening to the east. Views are likely to be angled and will include the new access road, cuttings and embankments.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5	**Major adverse**
R12	Woodside of Chapelton (Residential)	Baseline view: This receptor represents two residential properties and an agricultural steading (including North Broomhill) located north of the existing A96 with the route option alignment south of the receptor and the existing A96. Views south are restricted by Saddle Hill (294m AOD). Predicted effect: Intervening woodland and topography will restrict views to the south	High sensitivity receptor Low magnitude of change	Minor adverse	n/a	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		although there is potential for partial views of the overbridge near Rack Moss but views to the west will be restricted. Views to south-east are screened by a combination of intervening vegetation and topography (Broomhill-274m AOD). The majority of the route option is in cutting restricting any visual intrusion.				
R13	Hillhead / Newtongarry Inn / Croft of Broomhill (Residential)	Baseline view: This receptor group consists of a number of properties in Hillhead and Croft of Broomhill. It is located between Ramstone Hill and Saddle Hill adjacent to the existing A96 with the route option alignment south of the receptor and the existing A96. There is partial screening from existing vegetation. Predicted effect: Views will be obscured by Saddle Hill (294m AOD) and Rack Moss woodland, however, there may be partial medium range views in front of Cot Hill because the existing woodland is juvenile and will not screen the new development immediately.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5	**Moderate adverse**
R14	Glennieston (Residential)	Baseline view: An agricultural steading located between Cot Hill and Saddle Hill. Although the windows are obscured by coniferous shelter belt, the property is not fully screened. Predicted effect: Close-range angled views of cuttings against Saddle Hill may be visible	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		including embankments of the proposed access road and the C66S underbridge /overbridge.				
R15	Gartly Moor and Wishach Hill (Including Ski Trail) – Existing local route (Recreational)	Baseline view: A circular trail within an elevated wooded area with significant tree cover including Hill of Corskie (417m AOD) and Wishach Hill (422m AOD). Predicted effect: A combination of tree cover, and distance will restrict visibility, but some areas of clearing will allow medium range views north toward the route option including the cuttings against Saddle Hill (294m AOD) behind Glennieston.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5	**Moderate adverse**
R16	Broomhill / Clinkstone / Stodfold (Residential)	Baseline view: A group of residential properties and agricultural steadings located south of the existing A96 with the route option south of the receptor and the existing A96. There is significant screening from existing buildings and the topography restricts views to the route option. Predicted effect: Close-range views to the south and west will include a small cutting and SuDS basin, possible views to cuttings east of Saddle Hill to the north-west and embankments and SuDS basin to the south and east.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5	**Major adverse**
R17	Newton, Overtown,	Baseline view: The receptor is a group of agricultural steadings located south of the existing A96 and between the existing A96 and	High sensitivity receptor	Major adverse	M1, M2, M3, M5	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	Kilden and Whinbrae (Residential)	the route option. There is some screening from existing buildings and vegetation along the Glen Water, also the topography helps to restrict views to the route option. Predicted effect: Close-range views will include large cuttings, embankments, SuDS basin and an access road including the overbridge and side road. The route option introduces a contrasting feature across a wide area. Whinbrae has some screening to restrict views to the east, and views to the south from the gable end are unlikely.	High magnitude of change			
R18	Wedderburn (Residential)	Baseline view: The receptor is an agricultural steading located north of the existing A96 with the route option south of the receptor and the existing A96. There is some screening from existing topography that helps to restrict views to the route option. Views to Hill of Foudland looking south. Predicted effect: There is potential for views to the south including SuDS basin, large cuttings, embankments, overbridges and side roads although the view is restricted by the existing topography.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5	**Moderate adverse**
R19	Braehead (Residential)	Baseline view: A group of residential properties and an agricultural steading located adjacent to the existing A96 with the route option south of the receptor and the existing A96. It is located	High sensitivity receptor	Major adverse	M1, M2, M3, M5	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		on the lower slopes of Hill of Bainshole with views to Hill of Foudland. Predicted effect: Views to the south will include SuDS basin, cuttings, embankments, the overbridge and side roads although the view is restricted by the existing topography.	High magnitude of change			
R20	Midtown (Residential)	Baseline view: An agricultural steading facing north onto the existing A96 with the route option alignment south of the receptor. Predicted effect: Direct, close-range views of embankments to the south and potential oblique views to SuDS basin, side road and overbridge.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5	**Major adverse**
R21	Bainshole (Residential)	Baseline view: A group of agricultural/commercial steadings and residential properties adjacent to the existing A96 with the route option alignment south of the receptor and the existing A96, elevated on a south-facing slope. There is partial screening provided by existing vegetation. Predicted effect: Views are likely to include cuttings, embankments, SuDS basin and the overbridge as well as the overbridge and side road to Bog.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
R22	West Skares (Residential)	Baseline view: A residential property on the existing A96 surrounded by conifers and predominantly east and west facing. Any potential view will be oblique. Predicted effect: There is potential for angled views to include large embankments and cuttings viewed against the Hill of Foudland.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5	**Major adverse**
R23	Mid-Bog / Bog (Residential)	Baseline view: This group represents an agricultural steading and a residential property close to the existing A96 with the route option alignment north of the receptor and south of the existing A96. Predicted effect: Views are likely to include cuttings, embankments, SuDS basin and the overbridge as well as the overbridge and access road to Bog.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5	**Major adverse**
R24	Rashieslack (Residential)	Baseline view: An agricultural steading situated north of the existing A96 on a south-facing slope overlooking the route option and the Hill of Foudland (67m AOD). Predicted effect: Views will include embankments and large cuttings viewed against and across the Hill of Foudland.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
R25	Lambhill / Carnbroe (Residential)	Baseline view: An agricultural steading facing south and west, overlooking the existing A96 and the Hill of Skares (329m AOD). There is some screening to the south and west from woodland shelterbelts. Predicted effect: There is potential for views of the cuttings and embankments across the Hill of Foudland where views allow but there will be screening where the route option traverses the Hill of Foudland/Kilmidden (268m AOD).	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5	**Moderate adverse**
R26	Skares (Residential)	Baseline view: An agricultural steading adjacent to the existing A96. Views south are restricted by the raised topography of the Hill of Skares (329m AOD), Hill of Kilmidden and Hill of Foudland (467m AOD). Predicted effect: Views to the route option will be medium range and limited by topography, elevation and screening by woodland. Views may include embankments and cuttings where the overhead power lines traverse the hill.	High sensitivity receptor Medium magnitude of change	Moderate adverse	n/a	**Moderate adverse**
R27	Upper Scotstown (Residential)	Baseline view: An agricultural steading situated high on a south-facing slope of Hill of Foudland at 210m AOD with views south and east. Views north are screened by farm buildings.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: There is potential for north-east, east and south-east views, however, these will be partial, angled and medium range. There will be screening from woodland on the Hill of Kilmidden, but cuttings and embankments will be apparent with possible views of SuDS basin and long-range views of Colpy Junction.				
R28	Jericho (Residential)	Baseline view: This receptor group consists of properties including Jericho and Willow Cottage, located south of Hill of Kilmidden and south of the route option, above the Jericho Burn on a south-facing slope. These properties have views to the south-east with some screening from existing buildings, woodland and topography. Predicted effect: The route option will be located north of the receptor. Angled close-range views of SuDS basin, cuttings and embankments are likely including potential views of the side road alignment, but topography and vegetation will provide some screening.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M7	**Major adverse**
R29	Woodside (Residential)	Baseline view: A group of residential properties including a commercial visitor attraction (Morgan McVeigh's). South and east facing and predominantly overlooking the existing A96 with distant views south to Bennachie. Predicted effect: Views west to the route option are restricted by a combination of topography	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		and existing woodland screening. Partial views to embankments, and SuDS basin are likely. Views south to Colpy Junction will be partly screened by topography and woodland.				
R30	Colpy Cottage (Residential)	Baseline view: A residential property situated north-east of the route option with views to the south and overlooking the existing A96 although the property is screened by existing woodland to the south-west. Predicted effect: Views west to the route option are restricted by a combination of topography and existing woodland screening. Views to embankments, and SuDS basin are likely. There is potential for views south to Colpy Junction, but these will be partly screened due by topography and woodland. .	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5	**Moderate adverse**
R31	Waulkmill (Residential)	Baseline view: A residential/agricultural dwelling located east from the route option, it is adjacent to the existing A96 with views facing south. Although there is substantial screening from existing native tree planting, there are also limited views to the west. Predicted effect: Views are likely to include embankments and SuDS basin at medium range, but views of Colpy Junction are likely to be screened by topography and existing buildings.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
R32	St Sairs (Residential)	Baseline view: A residential/agricultural dwelling with some screening from woodland planting and existing agricultural/commercial buildings. Views north-east are screened by buildings. Predicted effect: There is potential for partial medium range views (<0.3-1km away) between Colpy and Fallow Hill including access roads, cuttings and embankments. The Colpy Junction will be partly screened by woodland.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M7	**Major adverse**
R33	The Glen and the School (Residential)	Baseline view: A group of three residential properties located east of the route option at the A96/A920 junction. Predicted effect: Although views are unlikely due to elevation, topography and screening by boundary shelter belts, there is potential for views of embankments and the access road and roundabout.	Very high sensitivity Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M7	**Moderate adverse**
R34	Colpy (Residential)	Baseline view: A group of residential properties situated within the village between the adjacent existing A96 and the route option, with a peripheral property to the north-west. There is some screening from the woodland shelterbelts. Predicted effect: Close-range views of the embankments and access roads that may be partially screened and oblique for some	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		properties including SuDS basin and the underbridge. Properties in the east of the village will have visibility restricted by screening of existing buildings.				
R35	Gardensmill Bridge (Residential)	Baseline view: This receptor group consists of properties in Gardensmill Bridge. Views to Colpy are screened by extensive woodland shelterbelts at Williamston House and topography. Predicted effect: No predicted effects.	High sensitivity receptor Low	Minor adverse	M1, M2, M3, M5, M7	Minor adverse
R36	Kirkton of Culsalmond Old Parish Church, Kirkton Farm, The Old Manse, Lower Braeside (Residential)	Baseline view: A group of residential properties, an agricultural steading and a parish church. Views west include Bennachie, Fallow Hill (185m AOD) and Dunnideer Hill (268m AOD). Views to Colpy village are screened by existing farm buildings and vegetation. Predicted effect: Views to the route option will be partly screened by Williamston House woodland, however, where the route option crosses Fallow Hill (185m AOD), long-range views of large cuttings and embankments will be visible and partial long-range views to access roads and embankments are likely on the lower slopes of Hill of Killmidden.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M7	**Moderate adverse**
R37	Ritchies Garage/Old	Baseline view: A group of properties to the west of the route option including residential	High sensitivity receptor	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	Wrangham/ Boghead (Residential)	properties and agricultural steadings with direct open views. Predicted effect: Close-range views (<0.3km) of embankments will be seen in front of Fallow Hill including the underbridge.	High magnitude of change			
R38	Braeside (Residential)	Baseline view: A residential property situated east of Kirkton of Culsalmond on a south-facing slope adjacent to the A920. Despite some woodland screening restricting views to the west, the Hill of Foudland (467m AOD) can be seen. Views to Colpy village are restricted by topography. Predicted effect: Views are screened by woodland shelterbelt planting on Lawrence Road and woodland policies at Williamston House. There is potential for elevated long-range views to Hill of Skares (329m AOD) and Hill of Foudland (467m AOD) and Fallow Hill (185m AOD) where embankments may be visible across the hill on lower slopes of Hill of Killmidden.	High sensitivity receptor Low magnitude of change	Minor adverse	n/a	Minor adverse
R39	Mains of Sheelagreen (Residential)	Baseline view: A residential property and an agricultural steading both located adjacent to the existing A96 to the west of Williamston House and north-east of Fallow Hill (185m AOD). There is some screening from the woodland shelterbelts.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: The route option will be partially screened north of Colpy village but views of the embankments to the west near Old Wrangholm/Boghead including cuttings against Fallow Hill will be experienced. Embankments may be visible across the hill on lower slopes of Hill of Killmidden.				
R40	Williamston House, Home Farm and Michael Fold (Residential)	Baseline view: Included in the Inventory of Gardens and Designed Landscapes, the house and gardens are located on south-west facing slope above the River Urie east of the existing A96, with long views south to Bennachie and Suie Hill and north-west to Hill of Foudland above Kirkton of Culsalmond. Predicted effect: Views to the route option will be screened to the north and south by substantial woodland policies, although views to the west, of embankments and cuttings against Fallow Hill (185m AOD) may be partially visible as a new element in the view and a noticeable feature. There is screening from woodland shelterbelts at Old Inn Farmhouse, alongside the existing A96 and other intervening vegetation. Whilst the surrounding woodlands limit views, however, there is the potential for long-range filtered views in the winter.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
R41	Wrangham, West Wrangham Cottage (Residential)	Baseline view: A group of residential properties and agricultural steadings to the west of Fallow Hill (185m AOD) and the route option with partially screened views. Views south-east to Bennachie. Predicted effect: Views to the east and north will be screened by Fallow Hill (185m AOD). Medium range views are likely in front of Williamston House and the woodland shelterbelts at Old Inn Steading.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M7	**Moderate adverse**
R42	Old Inn Farmhouse (Residential)	Baseline view: An agricultural steading situated west of Williamston House on the existing A96, east of the route option. Field boundary shelter belts provide screening. Predicted effect: Views will be medium range where woodland screening allows, however, the cuttings against Fallow Hill (185m AOD) will be partially visible as a new element in the landscape and a noticeable feature.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M7	**Moderate adverse**
R43	Mill Croft, Old Millhouse (Residential)	Baseline view: This group consists of an agricultural steading and residential properties. They are located south of Williamston House on the existing A96, east of the route option. Predicted effect: Views will be screened by existing woodland shelterbelts, however, the	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		cuttings against Fallow Hill (185m AOD) will be partially visible as a new element in the view and a noticeable feature.				
R44	Mill of Knockenbaird (Residential)	Baseline view: A residential property and agricultural steading to the west of the existing A96 and the route option with open views between Fallow Hill (185m AOD) and woodland shelterbelts of Old Inn Farmhouse. Predicted effect: Medium range views may be possible between Fallow Hill (185m AOD) and woodland shelterbelts of Old Inn Farmhouse.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5	Minor adverse
R45	Existing local path – Insch to Oyne via Archaeolink (Recreational)	Baseline view: An existing path making use of existing roads with a figure of eight layout including Insch, Oyne and connecting with the existing A96 and the route option near Old Rayne. Predicted effect: A gradual rise in topography towards the route option will restrict views, and any potential views will be distant and partial.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5, M6, M7	Minor adverse
R46	Hill of Dunnideer (Recreational)	Baseline view: A viewpoint west of Insch with an iron age fort and commanding 360^{o} views including Hill of Foudland (467m AOD), Hill of Skares (329m AOD), Hill of Kilmidden (268m AOD) and Hill of Tillymorgan (381m AOD).	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5, M6, M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Long-range views of cuttings, embankments, SuDS basin and access roads will be visible against the hillside becoming a noticeable feature across a limited area.				
R47	Huntly to Greenmyres – Existing local route (Recreational)	Baseline view: The route runs from Upper Pirriesmill east of Huntly and south of the A96, parallel with the existing A96. It runs around the base of Ba' Hill (238m AOD) and ascends Cot Hill (245m AOD) where distant views of the existing A96 can be seen. It joins the road at Bothwellseat then follows the Den Burn to Greenmyres through Dummuies Wind Farm. There are intermittent open views north-east to the existing A96 which are occasionally screened by the existing topography including Cairn Hill (190m AOD), land at Whiteleys (175m AOD), Hill of Dummuies (225m AOD), and Ordiesnaught (282m AOD). Predicted effect: Receptors will experience the greatest visual effect where views are closest to the route option i.e. at the section nearest Greenmires Farm and Dummuies Wind Farm. The route option will be seen in cutting in front of Ramstone Hill, particularly, from higher ground at Dummuies Wind Farm. Although there is some screening from existing topography, the route option will be visible at the cutting and also where it enters Rack Moss woodland together with the new access track in parallel, and against the backdrop of the woodland, slightly accentuating the visual effect. It will be in close	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		proximity to the path at the edge of Gartly Moor plantation. Further west of Dummuies Wind Farm the route option is screened by Hill of Dummuies (225m AOD), and Ordiesnaught (282m AOD) but becomes visible once at Cot Hill (245m AOD) although views will be distant and partially screened by existing vegetation to where the route option will overlay and widen the existing A96 to form two lanes. Here the visual effect reduces, and in sections west of Cot Hill including from the base of Ba' Hill (177m AOD), the distance from the route option and screening from topography considerably reduce the visibility of the route option.				

Table 1.3 provides a description of the baseline view and predicted visual effects on receptors located within the Colpy to Pitcaple; Pink route option. The locations of the receptors are shown in Volume 5, Figures 15.5 to 15.6 'Visual Receptors Pink Route Option'.

Table 1.3 Predicted Visual Effects for Colpy to Pitcaple Pink Route Option

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
P1	Ritchies Garage/ Aronde and Bardstreen (Residential)	Baseline view: Residential properties situated south-west of Colpy and west of the route option. Partial views from Aronde are screened by garden trees and field boundary vegetation from both	High sensitivity receptor No change	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
		properties over arable fields to Fallow Hill (185 AOD). Predicted effect: No view due to location of Fallow Hill which screens the northern edge of the route option.				
P2	Old Wrangham / Boghead (Residential)	Baseline view: Two agricultural steadings to the north of the route option including residential properties and agricultural steadings. Views south across sloping arable fields are limited due to Fallow Hill and the tree line. Predicted effect: The route option will be screened by topography (Fallow Hill (185m AOD)) and the existing tree line limits views. The route option will be visible where it cuts through the mature tree line including cuttings, embankments access roads.	High sensitivity receptor Medium magnitude of change	Moderate adverse	n/a	**Moderate adverse**
P3	Mains of Sheelagreen (Residential)	Baseline view: A residential property and an agricultural steading adjacent to the existing A96, west of Williamston House and north-east of Fallow Hill (185m AOD). There is some screening from the woodland shelterbelts and boundary vegetation. Predicted effect: There is potential for partial, angled views to the northern edge of the route	High sensitivity receptor Low magnitude of change	Minor adverse effect	M1, M2, M3, M5	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		option, however, the existing tree shelterbelt will help to screen views and reduce visibility.				
P4	Wrangham and West Wrangham Cottage (Residential)	Baseline view: This receptor is located west of the route option, Fallow Hill (185m AOD) can be seen to the north east over undulating arable fields. There are long-distance views of Bennachie to the south-east. Predicted effect: Views to the north and east will be screened by Fallow Hill (185m AOD). Medium range views are likely in front of Williamston House and the woodland shelterbelts at Old Inn Steading including embankments and the overbridge at Loch Insch Fishery.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5	**Moderate adverse**
P5	Williamston House, Home Farm and Michael Fold (Residential)	Baseline view: Williamston House is located approximately 0.8km east of the pink route option and most of this receptor group is enclosed by mature woodlands. Long-range views are limited from this receptor group due to the surrounding woodlands, however, Williamston House is afforded clear views of the estate fields to the south-west up until the woodland surrounding the lodge houses towards the A96. Predicted effect: Views to the route option will be screened to the north and south by substantial woodland policies, although views to the west, of cuttings against Fallow Hill (185m AOD), will be partially visible as a new element in the view and a noticeable feature. There is screening from woodland shelterbelts at Old Inn Farmhouse,	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		alongside the existing A96 and other intervening vegetation. Whilst the surrounding woodlands help to restrict visibility, there is still potential for long-range filtered views particularly in the winter.				
P6	Mill of Knockenbaird (Residential)	Baseline view: A residential property and agricultural steading to the west of the existing A96 and the route option with open views between Fallow Hill (185m AOD) and woodland shelterbelts of Old Inn Farmhouse. Predicted effect: Medium range views may be possible between Fallow Hill (185m AOD) and woodland shelterbelts of Old Inn Farmhouse.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5, M6	Minor adverse
P7	Old Inn Farmhouse (Residential)	Baseline view: An agricultural steading situated west of Williamston House on the existing A96, east of the route option. Field boundary shelter belts will provide significant screening. Predicted effect: Close-range views of existing access roads, with potential partial views of overbridge and embankments to the south west, however, the cuttings against Fallow Hill (185m AOD) to the north-west will be partly screened by field boundary vegetation but also partially visible as a new element in the view and a noticeable feature.	High sensitivity receptor Medium magnitude of change	Moderate adverse effect	M1, M2, M3, M5, M6	**Moderate adverse**
P8	Colrayne House, Darcy Lodge, Caravan Site	Baseline view: Properties including the recreational fishing pond, Colrayne House, Darcy Lodge and caravan site situated south west of the existing A96 adjacent to Williamston House.	High sensitivity receptor	Major adverse	M1, M2, M3, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	and Loch Insch Fishery (Residential)	Views are enclosed by significant parallel woodland shelterbelts of Old Inn Steading running north-to south as well as screening from Fallow Hill (185m AOD). Predicted effect: Partial medium range views of cuttings against Fallow Hill (185m AOD) and new access road and overbridge will be partially visible as a new element in the view and a noticeable feature, however, there is substantial screening from existing woodland shelterbelts/boundary planting and the proposed route option will be in cutting.	Medium magnitude of change			
P9	Old Mill House / Mill Croft (Residential)	Baseline view: This group consists of an agricultural steading and residential properties. They are located south of Williamston House on the existing A96, north of the proposed route option. Millcroft has clear views of agricultural fields south towards the tree shelterbelt, and views to the north are partially restricted by boundary vegetation. To the south, they are restricted by the agricultural building. The lodge properties have restricted views due to existing screening from mature boundary tree planting. Predicted effect: There is potential for medium range, angled, and partial views of the route option from Millcroft to the south. The lodge properties have limited views due to screening from existing woodland that restrict views although there will be increased, filtered views in winter.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
P10	Waterton (Residential)	Baseline view: An agricultural steading and a residential property with views to the south and some screening from existing farm buildings to the north. Predicted effect: There is potential for oblique views of SuDS basin, embankments, access slips at Mains of Williamston and potential for views of the overbridge at Loch Insch Fishery.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5, M6	Minor adverse
P11	Mains of Williamston and Mains of Williamston Cottage/ Aristocats Cattery (Residential/Commercial)	Baseline view: Mains of Williamston agricultural residence and Mains of Williamston Cottage are located east of the existing A96. These dwellings have screening from existing farm buildings and intermittent tree planting to the boundary. Predicted effect: Whilst screening from existing buildings will reduce visibility from Mains of Williamston, there will be short range views of embankments (River Urie underbridge), on/off slips, SuDS basin and potentially under-bridges/overbridges.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
P12	Mellenside (Residential)	Baseline view: A group of two properties with an elevated view west towards the route option, Hill of Knockenbaird (189m AOD) and Hill of Dunnideer (268m AOD). Predicted effect: Open views to the route option including SuDS basin, embankments, overbridge	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		and under-bridges to the west. A high beech hedge provides some screening but direct views west over the boundary hedge to the route option are likely.				
P13	Little Lediken, Kellockbank Country Emporium, Mill of Newton and West Lodge (Residential)	Baseline view: A group of six residential properties including Little Lediken, three bungalows adjacent to the B992, Mill of Newton and West Lodge and a commercial receptor, Kellockbank Country Emporium. Existing views are mainly north from the residential receptors facing the existing A96. Kellockbank Country Emporium has views restricted by an existing timber boundary fence. Predicted effect: There is potential for views of SuDS basin, cuttings, embankments, overbridge and under-bridges including access roads.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5	**Moderate adverse**
P14	Moss-side Croft (Residential)	Baseline view: A group of residential properties including Templeland and Snipefield, south of the A920 with main views over the B992 and with views to the south and west screened by boundary tree planting. Direct views south towards Bennachie. Predicted effect: Medium range views to the south are restricted by distance and a plateau of level topography (Mellenside 159m AOD) and to the west by distance and vegetation but where visibility allows, views are likely to include embankments at Freefield House as a minor,	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5,	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		barely discernible element also with some additional screening from existing vegetation.				
P15	Newton Moss (Recreational)	Baseline view: Views from Newton Moss are restricted to the west due to the coniferous tree planting to the western side. Extensive, unobstructed views over arable fields are available to the north, south and east. Predicted effect: There is potential for views of the embankments to the south-west, but the route option will be a minor feature and a barely discernible element in the view.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M4, M5	Minor adverse
P16	Old Gateside (Residential)	Baseline view: This agricultural residential receptor is located on Lawrence Road with long-range views of Bennachie over agricultural fields and woodland shelterbelts Predicted effect: Oblique and restricted views south over the existing, mature beech hedge, Lawrence Road and agricultural fields. The views are mainly south-east to embankments as topography screens cuttings directly to the south.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6,	**Moderate adverse**
P17	Brankanen-tum Strathalmond Cottage, Newton Cottages, Eastgate, Glenniston	Baseline view: South-facing with rear views to the north including Hill of Tillymorgan. All properties within this receptor group are located adjacent to the B992 and north of the existing A96. Some of the residential properties have boundary planting creating filtered, partial and angled views over arable fields to the north. In some cases,	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	Croft and Glenniston Cottage. (Residential)	extensive views are afforded to the Hill of Tillymorgan. Predicted effect: The route option runs to the north and there will be short range views although several residential properties are partially screened by boundary planting slightly reducing visibility. Some properties will experience views of cuttings to the north and embankments to the east.				
P18	Middle Gateside (Residential)	Baseline view: An agricultural steading on Lawrence Road with long-range views south to Bennachie over agricultural fields and woodland shelterbelts. Predicted effect: Direct medium range views to the south will include embankments and the overbridge.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**
P19	Newton House and Home Farm (Residential)	Baseline view: Newton House including Home Farm are situated on an elevated position above the existing A96 with views to the south over the River Urie and towards the existing A96. Predicted effect: Substantial woodland policies restrict views to the east. Existing woodland along the A96 helps to further restrict views. Views to the route option are extremely unlikely due to topography and existing vegetation.	High sensitivity receptor No change magnitude of change	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
P20	South Lodge, Saint Cloud and Combscauseway (Residential)	Baseline view: Short range and slightly restricted views through boundary tree planting and over hedges to Lawrence Road towards Little Newton and agricultural fields. Long-range views south to Bennachie. Predicted effect: Close-range direct views to the west of South Lodge including SuDS basin, the overbridge and access roads.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
P21	Little Newton (Residential)	Baseline view: North facing with rear views south to Bennachie. Partial, angled views to the east due to screening from an agricultural building and trees. Predicted effect: Close-range, direct and clear views of embankments, access roads and the overbridge to the north and east across agricultural fields to the north, and of SuDS.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
P22	Bonnyton (also Bridgefoot Cottage, Gowan Brae and Dale Cottage (Residential)	Baseline view: Residential and agricultural dwellings. Long-range views of Bennachie from the southern and eastern residential receptor within this receptor group. Screening from Freefield House woodland and topography helps to restrict views and this receptor group sits in a depression further limiting the views south. Predicted effect: Views south to embankments but screening to the south- west from the tree lined	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		drive at Freefield House restricts views to the south-west. There are limited views from receptors east of Bridgefoot Cottage due to boundary vegetation and there are views through boundary planting from Bridgefoot Cottage south towards Lawrence Road that will experience the embankments.				
P23	Mausoleum and Rothney's Well (Recreational)	Baseline view: The family vault of the Gordons of Newton is situated in the woods of Newton near Rothney's Well and adjacent to the existing A96. Predicted effect: Surrounded by existing woodland with no views of the route option.	High sensitivity receptor No change	No change	n/a	No change
P24	Mains of New Rayne (Residential)	Baseline view: A residential/agricultural dwelling situated on a flat plateau north of the existing A96 with farm outbuildings restricting views to the north. Views to the south and east are towards Lawrence Road over a boundary hedgerow to arable fields with long-distance views south to Bennachie. Predicted effect: Close-range unobstructed views of the route option to the south with cuttings (oblique views of embankments may be possible) including the overbridge and side road. There is potential for angled views of embankments to the west.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
P25	Oxenloan and Sontley (Residential)	Baseline view: South-facing residential properties situated, south-east of Bonnyton on a flat plateau north of the existing A96. Views to the south are limited by intermittent tree planting to the property boundaries. There are long-distance views south to Bennachie over agricultural fields. Predicted effect: There is potential for medium range views to the south and south-west, partially screened by tree planting including the overbridge at Lawrence Road and at Mill of Bonnyton but where the route option is in cutting, visibility is reduced.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6	**Moderate adverse**
P26	Westerton of New Rayne, Braehead Cottage, Ploughman's Hall, Easterton of New Rayne and Thorpville (Residential)	Baseline view: A group of residential properties north of Old Rayne and south of the route option, mostly enclosed by mature boundary planting with views through the vegetation. Braehead Cottage has mainly clear views east past the mature tree boundary. Westerton of New Rayne sits in a slight depression and has restricted visibility due to farm buildings with main views north to Lawrence Road and south over agricultural land. Easterton of New Rayne has views to the north, but the visibility is reduced here because the route option is in cutting. Predicted effect: Medium to close-range views of the route option in a cutting to the north with have reduced visibility and partial screening by tree planting. Views will include the overbridge, side	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		access roads and partial angled views of embankments to the west with SuDS basin. Braehead Cottage will have medium range views to the north of the access road and proposed overbridge.				
P27	Existing local route – Oldmeldrum to Old Rayne (Recreational)	Baseline view: This is a circular existing local route, 41.8km long and links Oldmeldrum to Old Rayne through Daviot, Kirkton, Whiteford and Pitcaple. Views towards the existing A96 to the south are screened by the topography. Predicted effect: Part of this existing local path intersects with the route option and a 5km section of the existing local path runs parallel to the route option approximately 0.9km from it. The existing vegetation will allow partial or angled views, but cuttings reduce the visual effect.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
P28	Old Rayne including Barreldykes Way and Leslie Park (Residential)	Baseline view: A group of mainly residential properties situated to the northern edge of Old Rayne alongside Lawrence Road. Gallows Hill (127m AOD) and mature woodland restrict views to the east and views to the north are restricted by topography. Predicted effect: Views west to the route option are screened by topography, views north and east are screened by topography at Gallows Hill (127m AOD) and woodland. Any potential views are	High sensitivity receptor Negligible magnitude of change	Minor adverse	n/a	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		unlikely but if visible they will be partial and angled.				
P29	Core Path Burnside, old Rayne (Recreational)	Baseline view: A core path running along the burn on the western edge of Old Rayne with views focused west toward the existing A96 and Insch. Predicted effect: Views to north are screened by trees on the path. Long-range views north-west to the route option embankments may be possible.	High sensitivity receptor Negligible magnitude of change	Minor adverse	n/a	Minor adverse
P30	Mill of Bonnyton (Residential)	Baseline view: An agricultural steading located north of Bonnyton Burn woodland to the north of the proposed woodland. Predicted effect: Short range views south to the pink route embankments, SuDS basin, an access road and underbridge at Bonnyton Burn. Some screening from existing boundary trees. The route option is in cutting to the west.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5	**Major adverse**
P31	Ailsa Craig (Residential)	Baseline view: A residential property east of Old Rayne with south-facing views to Bennachie and over the River Urie. Predicted effect: Views to the proposed route option are screened by topography and existing woodland, no views are likely to be experienced.	High sensitivity receptor No change	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
P32	Drumfold (Residential)	Baseline view: An agricultural steading located east of Bonnyton Burn woodland and north of the route option. There is screening from boundary trees limiting visibility to surrounding arable fields. Predicted effect: Views to the route option will include embankments and underbridge visible to the south and west where the property boundary vegetation allows views.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5	**Major adverse**
P33	Cromwellside Farm and Cromwellside Cottage (Residential)	Baseline view: A residential/agricultural dwelling and a residential property with south-facing views to Bennachie, Berry Hill (174m AOD) and Candle Hill (204m AOD). These properties are screened to the north by existing farm buildings and woodland at Bonnyton Burn in addition to boundary planting. The cottage has restricted views to Old Rayne and the north although rear angled views to the edge of Old Rayne are available over agricultural fields and extensive views north over Bonnyton Burn woodland. There are views towards Easterton of New Rayne although views are restricted by the surrounding vegetation and outbuildings. Predicted effect: There is potential for oblique partial medium range views east, of embankments, the overbridge and SuDS basin but the route option is mostly in cutting reducing visibility and also screening from Cow's Den vegetation and topography is likely to prevent	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M4, M5	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		views. Any views of the route option to the north and west are extremely unlikely due to a combination of screening by topography, vegetation and that the route option is in cutting at this location.				
P34	Rosehall (Residential)	Baseline view: An agricultural steading located east of Bonnyton Burn woodland and the route option. Farm buildings limit the views to the north and west and views restricted to the south are partially restricted by a small area of tree planting to the boundary. Views beyond the boundary are of large arable fields and overhead powerlines are visible to the west towards Drumfold. Predicted effect: Medium range, angled views south and south-west past overhead powerlines and Drumfold farm steading (P32) towards the underbridge and embankments. Cuttings reduce the visual effect.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5	**Major adverse**
P35	Core Path Old Rayne Link (Recreational)	Baseline view: A core path on a minor road running east from Old Rayne to join the core path which runs south toward the River Urie. Panoramic views of the area. Predicted effect: The path runs directly toward the route option with direct views of it, however, the route option will be in cutting at this location, reducing visibility.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
P36	Longside (Residential)	Baseline view: A south and east facing agricultural steading located south of the route option with some screening from agricultural buildings (149m AOD) to the north and east. Predicted effect: There is potential for short range views north through the tree lined boundary to embankments and cuttings, and east to embankments, cuttings, SuDS basin and the underbridge.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5	**Major adverse**
P37	Bishopston (Residential)	Baseline view: A south-facing agricultural steading located north of the route option with grain silo partially screening view south to the route option. Some screening from agricultural buildings to the east and boundary vegetation to the west and south. Existing views beyond boundary to large arable fields surrounding the receptor. Predicted effect: Short range views to cuttings, embankments, overbridge and Lewesk Access Road/underbridge.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
P38	Core Path – Jenny's trees via Urie Riverside (Recreational)	Baseline view: The path runs down a south-facing slope towards the River Urie and terminates at Whiteford/Old Rayne path. Views are primarily to south-west. There is some tree screening on the east side of the path and also a rise in topography.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: The path will lead directly toward the route option and will pass under the new overbridge. Views of the overbridge and cuttings will be at close-range. The route option is predominantly in cutting at this location, but some embankments will be visible.				
P39	Strathorn Farm Stables, Strathorn Cottage and Garioch Carriage Driving for Disabled (Residential)	Baseline view: This receptor group consists of two residential properties and an agricultural dwelling (stables operating as a commercial business), north of the River Urie on Lourin Close at approximately 95m AOD. Views are mainly to the south of Bennachie, agricultural land and tree lined boundaries. Views to the north-east are limited slightly by boundary vegetation, outbuildings and topography including Longside (136m AOD), Newton of Lewesk (125m AOD) and land north of Durno Roman Fort (130m ADO). Predicted effect: Topography will restrict views and provide screening to large sections of the route option, but views of Lewesk Access Road/underbridge may be visible to the north between Longside and Newton of Lewesk. A short section of embankments will be barely perceptible south of Lawfolds, against The Law (155m AOD).	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5	Minor adverse
P40	Auchentarph Croft and Lewesk (Residential)	Baseline view: Two south-facing residential properties located on a south-facing slope with extensive views south to Bennachie.	High sensitivity receptor	Major adverse	M1, M2, M3, M4, M5	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Medium range views are limited but likely to include the underbridge Lewesk Access Road, SuDS basin, cuttings and embankments and high sided vehicles may be visible. Some screening from tree planting within the boundary and the route option is mostly within cutting at this location, further reducing the visual impact. The elevated location reduces the magnitude of visual effect because the views overlook the route option.	Medium magnitude of change			
P41	Newton of Lewesk (Residential)	Baseline view: An agricultural steading north of the River Urie with screening to the north and east by existing farm buildings. A cottage to the west has views east and west with the gable end facing the route option. Predicted effect: Screening from existing sheds restricts visibility, however, close-range views of embankments against Cairn Law (155m AOD) are likely including cuttings and SuDS basin. A cottage to the west has views north restricted by rising topography.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5	**Major adverse**
P42	Auchentarph Farm and Auchentarph Cottages (Residential)	Baseline view: Residential and agricultural dwellings situated north of the route option with long-distance views south to Bennachie. Screening by topography at The Law (155m AOD) restricts views.	High sensitivity receptor No change	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Topography prevents views of the route option.				
P43	Lawfolds Farm (Residential)	Baseline view: A south-facing agricultural steading located west of The Law (155m AOD) with unobstructed views to the south and restricted views to the east due to rising topography at The Law. Irregular shaped field boundaries. Predicted effect: Direct short-range views south to SuDS basin and embankments.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**
P44	Lawfolds Cottage (Residential)	Baseline view: An agricultural steading located north-west of The Law (155m AOD) with views restricted to the south due to mature boundary planting and screening from Lawfolds and The Law topography. Predicted effect: Limited medium range views, to the south between Lawfolds and The Law, of SuDS basin and embankments are likely.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**
P45	Westerton (Residential)	Baseline view: An agricultural steading facing south-west surrounded by large arable fields. Existing views are mainly to the west towards dense boundary vegetation. Views to the north and east are limited by large agricultural outbuildings and topography (130m & 135m AOD).	High sensitivity receptor Negligible magnitude of change	Minor adverse	n/a	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Medium range, oblique views of embankments near Newton of Lewesk. Views to the east are screened by undulating farmland.				
P46	Core Path – Whiteford to Old Rayne (Logie Road) (Recreational)	Baseline view: The path runs from Old Rayne to Whiteford following the River Urie, running parallel with the existing A96. Views are partially restricted by existing vegetation, but some long-range views are possible through breaks in trees and topography. Predicted effect: Screening from existing vegetation and a combination of distance restrict visibility of the route option, views are unlikely.	High sensitivity receptor Low magnitude of change	Minor adverse	n/a	Minor adverse
P47	Cottages on Lourin Close (Residential)	Baseline view: Two residential semi-detached cottages on Lourin Close, with main views to the south across the local road to agricultural fields with Bennachie in the distance. Views to the north, east and west are restricted due to the adjoining garages and steep topography (130m & 135m AOD. Predicted effect: Views to the route option are prevented by screening due to topography.	High sensitivity receptor No change	No change	n/a	No change
P48	East Law (Residential)	Baseline view: An agricultural steading on the south-east corner of The Law (155m AOD) with screening by woodland to the east and west helping to contain views.	High sensitivity receptor	Major adverse	M1, M2, M3, M4, M5	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Short range open views south to embankments and cuttings.	High magnitude of change			
P49	Easterton (Residential)	Baseline view: A group of residential properties south of The Law (155m AOD) and east of the roman camp (135m AOD) on Lourin Close, with views to the west over field boundary vegetation to agricultural fields, overhead powerlines and coniferous plantation. Views south-east over boundary vegetation to irregular pattern fields and deciduous woodland. Some properties are enclosed by boundary vegetation and have limited views. Predicted effect: Angled, medium range views north-east and north-west to embankments including SuDS basin. The closest part of the route option is in cutting and will have less visual effect.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Major adverse**
P50	Drumore (Residential)	Baseline view: An agricultural steading with views to the north and south, screened to the north-west by farm buildings and vegetation. Views to the east over arable and grassland towards the Kemmels of Durno but are generally restricted to the south due to topography (Gallows Hill 135m AOD) and coniferous woodland. Predicted effect: Views are restricted to the south due to the existing coniferous woodland and surrounding topography and to the west from The	High sensitivity receptor No change	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Law (155m AOD). Any views are extremely unlikely.				
P51	Old Logie Cottages (Residential)	Baseline view: A group of residential properties mostly enclosed by a mix of deciduous and coniferous trees. There are views to the south through breaks in the tree cover to Bennachie. Properties to the north have limited views to the adjacent agricultural fields due to boundary vegetation. Predicted effect: No views to the route option due to the screening from topography, woodland and boundary vegetation.	High sensitivity receptor No change	No change	n/a	No change
P52	Logie Durno Farm (Residential)	Baseline view: Two agricultural steadings located to the south side of the local road with main views to the south towards Bennachie. Views limited to the north and east due to woodland, topography and large farm buildings. Predicted effect: No views to the route option due to screening from agricultural sheds, topography and vegetation.	High sensitivity receptor No change	No change	n/a	No change
P53	Kemmels of Durno (includes Birchfield, Craighead and Woodlands	Baseline view: A group of residential properties on the south side of Durno. Significant screening from The Law (155m AOD) and coniferous woodland prevents views to the south (Gallows Hill 135m AOD).	High sensitivity receptor No change	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	(Residential)	Predicted effect: No views south to the pink route option due to the screening from topography, woodland and boundary vegetation.				
P54	Core Path – Logie woods to Durno (Recreational)	Baseline view: A core path running north from Whiteford/Old Rayne path terminating at Durno. The path has open views with screening by foliage at different points. Predicted effect: The route option cuts through the path and will command views on approach for a short section of the path.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Moderate adverse**
P55	Durno (including Knowes of Durno) and Howes of Durno, Durno House and Loanside Cottages (Residential)	Baseline view: A large group of residential properties, Knowes of Durno is closest to the route option. Screening from The Law (155m AOD), Gallows Hill (135m AOD) and coniferous woodland prevents views to the south. Views along the Burn of Durno. Predicted effect: Significant screening from topography and surrounding coniferous woodland prevent views, however, views south-east towards Stonefield Cottage and across the Burn of Durno toward Pitscurry Moss will include the underbridge and embankments in long-range views.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5	Minor adverse
P56	Ferniebrae and Stonebrae (Residential)	Baseline view: A detached residential house and an agricultural steading with views mainly south over agricultural fields to powerlines and woodland which restricts visibility. Bennachie is visible in long-range, elevated views from	High sensitivity receptor	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Ferniebrae. Stonebrae is generally enclosed by woodland to the west which also restricts views from both properties. Predicted effect: Screening from surrounding woodland shelterbelts and topography prevents any views to the route option.	No change			
P57	Woodend Cottage, Hawthorn House, North Woodend, Cairnton and Stonefield Cottage (Residential)	Baseline view: Residential properties located in the east side of the coniferous plantation at Gallows Hill (1235m AOD) which restricts views to the south-west. Elevated and extensive views north-east and south-east include Pitscurry Cairn over undulating farmland and areas of woodland. Predicted effect: An elevated view looking along the route option including embankments, new access roads and proposed under-bridges.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Moderate adverse**
P58	Logie Durno School – village hall and playing fields (Recreational)	Baseline view: Views mainly to the east over the minor road and hedgerow field boundary from the school play area and stone boundary wall. Views are open and extend to Pitscurry Cairn. Predicted effect: Narrow and angled long-range views between Bridgend and Glenlogie to the north-east. Embankments will be visible towards the base of the hill with some screening from topography.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
P59	Gatehouse, Highbury Grove and Burnside of Pitcaple (Residential)	Baseline view: An agricultural steading and residential properties with mostly open views over agricultural fields, some are restricted slightly by outbuildings and boundary trees with distant views of Bennachie to the south-west. Predicted effect: Close-range views of the access road, embankments and underbridge though some views may be limited due to outbuildings and boundary vegetation.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
P60	Glenlogie (Residential)	Baseline view: An agricultural steading adjacent to the Burn of Durno with substantial screening to the north and east from woodland shelterbelts and buildings. Views to the south include Gallows Hill (177m AOD) and Bennachie. Predicted effect: Restricted views due to screening from existing farm buildings although there is potential for medium range views to the north including embankments, under-bridges and SuDS basin.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
P61	North of Whiteford (Residential)	Baseline view: East facing residential properties with views across agricultural land to Pitscurry Quarry and Pitscurry Cairn including Glenlogie and Bridgend to the north-east and beyond to Burnside of Pitcaple. Ar-dachiach a residential property, is visible to the east but views are limited beyond due to coniferous woodland to the south-east and topography to the east and north-east.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Main views are oblique and between Glenlogie and Bridgend to the north-east. Predicted effect: The embankments and under-bridges will be visible in long-range views including the cuttings at Pitscurry Moss.				
P62	Bridgend (Burn of Durno) (Residential)	Baseline view: An agricultural steading adjacent to the Burn of Durno with substantial screening to the north from farm buildings. Views to the south include Gallows Hill (177m AOD) and buildings at Pitcaple Quarry are visible to the south-east. Predicted effect: Medium-range views including SuDS basin, cuttings and embankments and under-bridges are substantially screened by farm buildings and coniferous vegetation.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6	**Moderate adverse**
P63	Ar-dachaidh / Bridgend (Pitcaple) (Residential)	Baseline view: Residential properties located north of the River Urie and past Riverbank Wood with long-range extensive views north towards Durno over agricultural fields and surrounding woodland planting. Predicted effect**:** Medium range views of the route option north-west across the coniferous plantation to the rear of Glenlogie (P60), an agricultural steading, including embankments, access road, under-bridges but Glenlogie and the topography help to screen views to the north-east.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6	Minor adverse

Table 1.4 provides a description of the baseline view and predicted visual effects on receptors located within the area of Colpy to Pitcaple; Brown route option. The locations of the receptors are shown in Volume 5, Figure 15.7 to 15.8 'Visual Receptors Brown Route Option' and Figure 15.15 'Visual Receptors (Long Range) Brown Route Option').

Table 1.4 Predicted Visual Effects for Colpy to Pitcaple Brown Route Option

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
Br1	Ritchies Garage / Aronde and Bardstreen (Residential)	Baseline view: Residential properties situated south-west of Colpy and north of the route option. Partial views from Aronde are screened by garden trees and field boundary vegetation from both properties over arable fields to Fallow Hill (185 AOD). Predicted effect: No view due to location of Fallow Hill which screens the northern edge of the route option.	High sensitivity receptor No change	No change	n/a	No change
Br2	Old Wrangham / Boghead (Residential)	Baseline view: A group of properties to the north of the route option including residential properties and agricultural steadings with views south to Fallow Hill (185m AOD). Predicted effect: Views may include access roads, cuttings and embankments but Fallow Hill (185m AOD) provides substantial screening to the south-east.	High sensitivity receptor Medium magnitude of change	Moderate adverse	n/a	**Moderate adverse**
Br3	Mains of Sheelagreen (Residential)	Baseline view: A residential property and an agricultural steading both located adjacent to the existing A96 to the west of Williamston House and	High sensitivity receptor	Minor adverse	M1, M2, M3, M6	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		north-east of Fallow Hill (185m AOD). There is some screening from the woodland shelterbelts. Predicted effect: There is potential for partial views of the route option, however, the existing vegetation and the buildings of Old Inn Farmhouse and Mill Croft will help to screen views and restrict visibility.	Low magnitude of change			
Br4	Wrangham and West Wrangham Cottage (Residential)	Baseline view: A group of residential properties and agricultural steadings (including West Wrangham Cottage) to the west of Fallow Hill (185m AOD) with partially screened views north-east. Views south-east to Bennachie. Predicted effect: Views to the east and north will be screened by Fallow Hill (185m AOD). Medium range views are likely in front of Williamston House and the woodland shelterbelts at Old Inn Steading.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**
Br5	Williamston House (Recreational)	Baseline view: Included in the Inventory of Gardens and Designed Landscapes, the House and gardens are located on south-west facing slope above the River Urie near the existing A96, with long views south to Bennachie and Suie Hill and west to the Hill of Foudland above Kirkton of Culsalmond.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Views to the route option will be screened to the north and south by substantial woodland policies, however, views of cuttings against Fallow Hill (185m AOD) to the west may be partially visible as a new element in the view and a noticeable feature. There is significant screening from the woodland shelterbelts at Old Inn Farmhouse, alongside the existing A96 and other intervening vegetation. Whilst the surrounding woodlands help to restrict visibility there is still potential for long-range filtered views particularly in the winter.				
Br6	Mill of Knockenbaird (Residential)	Baseline view: A residential property and agricultural steading to the west of the existing A96 and the route option with open views between Fallow Hill (185m AOD) and woodland shelterbelts of Old Inn Farmhouse. Predicted effect: Long-range views may be possible between Fallow Hill (185m AOD) and woodland shelterbelts of Old Inn Farmhouse.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5	Minor adverse
Br7	Old Inn Farmhouse (Residential)	Baseline view: An agricultural steading situated west of Williamston House on the existing A96, east of the route option. Field boundary shelter belts will provide significant screening. Predicted effect: Close-range views of access roads, overbridge and embankments to the south, however, the cuttings against Fallow Hill (185m	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		AOD) to the north-west will be partly screened by field boundary vegetation but also partially visible as a new element in the view and a noticeable feature.				
Br8	Old Mill House/Mill Croft (Residential)	Baseline view: This group consists of an agricultural steading and residential properties. They are located south of Williamston House on the existing A96, north of the route option. Millcroft has clear views of agricultural fields south towards the tree shelterbelt and views to the north are partially restricted by boundary vegetation. To the south, views are restricted by the large agricultural building. Predicted effect: The cuttings against Fallow Hill (185m AOD) will be partially visible as a new element in the view with noticeable feature views despite partial screening by existing woodland as well as close-range views to the south of the embankments.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**
Br9	Colrayne House, Darcy Lodge, Caravan Site and Loch Insch Fishery (Residential)	Baseline view: A recreational fishery situated south of the existing A96 adjacent to Williamston House. Views are enclosed by significant parallel woodland shelterbelts of Old Inn Farmhouse running north-to south as well as screening from Fallow Hill (185m AOD). Predicted effect: Partial medium range views of cuttings against Fallow Hill (185m AOD) will be	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		partially visible as a new element in the view and a noticeable feature, however, there is substantial screening from woodland shelterbelts/boundary planting.				
Br10	Mellenside (Residential)	Baseline view: A group of two properties with an elevated view west towards the route option and Dunnideer Hill. Predicted effect: Open views to the route option including SuDS basin, embankments, Kellockbank Junction and access roads between Williamston House woodland and Mill of Newton. Some screening from high beech hedge.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**
Br11	Mains of Williamston and Mains of Williamston Cottage/Aristocats Cattery (Residential/Commercial)	Baseline view: Mains of Williamston agricultural steading and a residential property, both adjacent to the existing A96 with views to the west and the route option. Predicted effect: Screening from existing buildings will reduce visibility but views to the route option including embankments and SuDS basin are likely to be experienced and will be angled and medium range (0.25-1km away). There will also be views of embankments, Kellockbank Junction and access roads between Williamston House woodland and Mill of Newton.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
Br12	Waterton/Downie House (Residential)	Baseline view: An agricultural steading and a residential property with views to the south and screening from existing farm buildings. Predicted effect: There is potential for medium range (0.25-1km) oblique views of SuDS basin, embankments including access/slip roads at Kellockbank Junction and the under-bridges.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**
Br13	Minor road junction (Recreational)	Baseline view: Junction of B992 and minor road with existing views of a mixed arable/grassland agricultural landscape. To the north, the Hill of Skares (329m AOD) can be seen with the Hill of Tillymorgan (381m AOD) to the east and the Hill of Foudland (467m AOD) to the west. The existing woodland at Newton House can be seen but views of the existing A96 are very limited. Predicted effect: The route option will be screened by Loch Insch fishery and associated woodland, but embankments and SuDS basin will be seen behind Waterton with embankments, overbridges and access roads in front of Mill of Newton.	Medium sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5, M6, M7	Minor adverse
Br14	Greenhall (Residential)	Baseline view: This receptor is located on the B992, west of the route option and represents Greenhall Farm, an agricultural steading. There are clear views to the north and east of the surrounding arable fields. Views to the west are filtered by a woodland shelterbelt.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5, M6, M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: The route option will be visible east of Loch Insch fishery with partial, angled long-distance views of embankments and overbridges.				
Br15	Toll House (Residential)	Baseline view: A south-facing residential property situated on the B992 east of Insch and west of the existing A96 with potential views of the route option between Insch Fishery and Mill of Newton. Predicted effect: There is potential for partial angled views of embankments and of Kellockbank Junction, off-slip and overbridge, however, views to the south-east will be screened by topography (130m AOD).	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**
Br16	West Lediken (Residential)	Baseline view: A residential property situated between Insch and the Mill of Newton, south of the existing A96 and is mostly surrounded by mature woodland that restricts visibility. Predicted effect: There is potential for partial medium range (0.3-1km) views north-east between the wood of Pitmachie and Mill of Newton where vegetation and topography allow views. Views will include embankments and access roads including the overbridge but may be partially restricted by woodland boundary vegetation.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
Br17	Whitehall (Residential)	Baseline view: An agricultural steading, situated between Insch and Newton House and south-west of the existing A96. There is substantial screening from existing farm buildings. Predicted effect: Views north-east to the route option will be unlikely due to screening of existing farm buildings and topography (142m AOD).	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5, M6, M7	Minor adverse
Br18	Brankanentum (Residential)	Baseline view: This receptor includes the steading garage; both are situated north of the existing A96 and south-facing with views south to Mill of Newton and the route option. Predicted effect: There will be medium range (0.3-1km) views of SuDS basin and Kellockbank Junction, embankments and access roads including the overbridge.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6, M7	Minor adverse
Br19	Little Lediken, Kellockbank Country Emporium, Mill of Newton and West Lodge (Residential)	Baseline view: A group of six residential properties including Little Lediken, three bungalows adjacent to the B992, Mill of Newton and West Lodge and a commercial receptor Kellockbank Country Emporium. Existing views are mainly north from the residential receptors facing the existing A96. Kellockbank Country Emporium has restricted views from a timber boundary fence.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Views of SuDS basin, embankments, underbridge including access roads at Kellockbank Junction at close-range.				
Br20	North Lediken Croft (Residential)	Baseline view: An east facing residential property. Near South and West Lediken, south of the existing A96 and the route option. Predicted effect: Although east facing, there is potential for close-range views of Kellockbank Junction, the overbridge, access roads and embankments. Views east of the route option in cutting will also be close-range.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**
Br21	South Lediken (Residential)	Baseline view: A residential/agricultural dwelling situated north of the Shevock, west of East Lediken. It is screened by topography to the north (140 & 142m AOD) with views north-east to the existing A96. Predicted effect: Views north and north-east to the route option are restricted by topography and farm buildings. There is potential for views of the underbridge at East Lediken.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**
Br22	Westgate Cottage (Residential)	Baseline view: A group of residential properties including Westgate Cottage, Newton Cottage, Galeside Cottage, Eastgate Cottage and Glennside Cottage. These properties are situated on an elevated position above the existing A96,	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		facing south with views to Bennachie where existing vegetation allows. Predicted effect: There is substantial screening from close-range field boundary vegetation, however, there is potential for partial and oblique medium to long-range views of the access roads, overbridge, cuttings and embankments beyond Newton House. Whilst the surrounding woodlands help to restrict visibility, there is still potential for long-range filtered views particularly in the winter.				
Br23	Newton House (Recreational)	Baseline view: Newton House including Home Farm, situated on an elevated position above the existing A96 with views to the south and the River Urie. Predicted effect: Substantial woodland policies restrict views; however, the route option is likely to be seen south of the existing A96 with potential oblique and partial views of embankments, the overbridge and access roads at Mill of Newton and views of cuttings and SuDS basin in front of the Wood of Pitmachie (152m AOD). Existing woodland along the A96 helps to restrict views.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M7	**Moderate adverse**
Br24	Freefield House and South Lodge, Saint Cloud,	Baseline view: Situated on a south-facing gentle slope north of the existing A96 with views to the south including Bennachie.	High sensitivity receptor	Minor adverse	n/a	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	Combscauseway (Residential)	Predicted effect: There is potential for limited and partial long-range views due to screening of topography and existing woodland, between Old Rayne and Newton House woodland policies in front of the Wood of Pitmachie (152m AOD). Significant views are extremely unlikely.	Negligible magnitude of change			
Br25	East Lediken (Residential)	Baseline view: An agricultural property situated south of Newton House and the existing A96 and facing south, views to the existing A96 are screened by buildings and existing woodland. Predicted effect: Views of the route option to the east are screened by the Wood of Pitmachie and views to the north are screened by existing woodland to the north and farm buildings. There is potential for partial oblique views of medium range to the east including SuDS basin, embankments and the Shevock Bridge.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6	**Moderate adverse**
Br26	Little Newton (Residential)	Baseline view: A residential/agricultural dwelling with south-facing views to Old Rayne and over the River Urie, partially screened to the west by existing vegetation with open views to the south of Bennachie. Predicted effect: There is potential for partial medium to long-range views of the route option cuttings and embankments including SuDS basin and the overbridge access road.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
Br27	Mausoleum / Rothney's well (Recreational)	Baseline view: The family vault of the Gordons of Newton is situated in the woods of Newton near Rothney's Well and adjacent to the existing A96. Predicted effect: Surrounded by existing woodland and partly screened by existing topography, partial close-range views of the route option including cuttings, SuDS basin and embankments are likely.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
Br28	Bonnyton (Residential)	Baseline view: A group of residential properties east of Freefield House with views south to Bennachie. Predicted effect: Views to the route option are unlikely due to screening by existing vegetation and topography.	High sensitivity receptor Negligible magnitude of change	Minor adverse	n/a	Minor adverse
Br29	Wester Shevock (Residential)	Baseline view: A residential property situated on The Shevock, west of Old Rayne and the existing A96 with views to the north and east, including the existing A96. Predicted effect: There is some screening provided by existing woodland north of East Lediken and to the south-east at Wood of Pitmachie (152m AOD) and The Quays (141m AOD). There will be views of the route option to the north and east including SuDS basin, cuttings, embankments and The Shevock underbridge.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M5, M6, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
Br30	Oxenloan and Sontley (Residential)	Baseline view: A residential property with south-facing views east of Saint Cloud, situated on a flat plateau north of Old Rayne with views south to Bennachie. Predicted effect: Any views to the route option are restricted by the existing topography.	High sensitivity receptor No change	No change	n/a	No change
Br31	Mains of New Rayne (Residential)	Baseline view: A residential/agricultural dwelling situated on a wide plateau north-east of the existing A96 with views to the existing A96 obscured by topography. Predicted effect: Views to the route option are blocked due to a combination of distance, topography and screening by intervening vegetation.	High sensitivity receptor No change	No change	n/a	No change
Br32	Westerton of New Rayne (Residential)	Baseline view: A group of south-facing residential properties north of Old Rayne (including Braehead Cottage, Ploughman's Hall, Easterton of New Rayne and Thorpville) with views to Pitmachie and the existing A96. Predicted effect: Medium range views of the route option will include cuttings, SuDS basin and embankments behind the existing A96 and in front of Wood of Pitmachie (152m AOD).	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
Br33	Pitmachie/ Bridge of Shevock (Residential)	Baseline view: A group of commercial and residential properties situated alongside The Shevock and overlooking the existing A96. Adjacent to Old Rayne, they are partially screened with clear views west to the existing A96. Predicted effect: Views of embankments including SuDS basin will be seen at close-range following the existing A96 in front of Wood of Pitmachie (152m AOD) and opposite the properties including oblique views of the Shevock underbridge. Bridge of Shevock property has some screening from existing vegetation.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**
Br34	Brecken (Residential)	Baseline view: A residential property adjacent to Barreldykes Way in Old Rayne. Predicted effect: Although the property is screened by trees, there is potential for partial, oblique and long-range views to the route option where it crosses The Shevock, conversely, there is substantial intervening vegetation that will further restrict visibility. The route option is mostly in cutting at this location.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**
Br35	Core Path Burnside, old Rayne (Recreational)	Baseline view: The path runs along the western edge of Old Rayne at approximately 95m AOD with views focused west toward the existing A96.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3 M5, M6	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: There is potential for views toward the route option including SuDS basin, cuttings and embankments, however, screening from foliage and existing structures help restrict visibility.				
Br36	Cromwellside (Residential)	Baseline view: A residential/agricultural dwelling with south-facing views to Bennachie, Berry Hill (174m AOD) and Candle Hill (204m AOD). The property is screened to the north by existing farm buildings and woodland at Bonnyton Burn. Predicted effect: Views to the route option are screened by Candle Hill (126m AOD) in the foreground. No views are likely to be experienced.	High sensitivity receptor No change	No change	n/a	No change
Br37	Ailsa Craig (Residential)	Baseline view: A residential property with south-facing views to Bennachie and over the River Urie Predicted effect: Views to the route option are screened by topography and existing woodland, no views are likely to be experienced.	High sensitivity receptor No change	No change	n/a	No change
Br38	Broombrae (Residential)	Baseline view: An agricultural steading with views south over the existing A96 and the River Urie. Predicted effect: Views south over the River Urie to the route option will include the underbridge, embankments, SuDS basin and angled views of Carden Junction cuttings and access roads.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
Br39	Core Path – Whiteford to Old Rayne (Logie Road) (Recreational)	Baseline view: The path runs from Old Rayne to Whiteford following the River Urie, running parallel with the existing A96. Views appear to be restricted by existing vegetation, but some long-range views can be afforded through breaks in tree cover and topography. The existing A96 can be seen. Predicted effect: There will be close-range open views south towards the route option including SuDS basin, embankments and Carden Junction.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
Br40	Longcroft and Mains of Petmathen (Residential)	Baseline view: A residential property and an agricultural steading situated on a minor road north of Oyne and south of the existing A96. Views south-east are obscured by topography at Home Farm (135m AOD). There is potential for views to the north-east. Predicted effect: Views to the north-east and the route option are restricted by the orientation and angle of view of the properties as well as field boundary shelterbelts at the A96/minor road junction and north of Westhall restricting views to the route option and Carden Junction. There is some screening from existing buildings and any views will be oblique and medium range of the small-scale embankments between Old Rayne and Carden Junction, obscured by shelterbelts north of Westhall.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
Br41	Westhall/ Home Farm (Residential)	Baseline view: A residential / agricultural dwelling situated on a slightly raised hillock east of Candle Hill (204m AOD) and overlooking the existing A96. Predicted effect: Views to the north and north-east are restricted by field boundary shelterbelts and there is substantial screening from surrounding woodland preventing views to Carden Junction. There is potential for partial views to the north of embankments near Old Rayne.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M7	Minor adverse
Br42	Mill of Pitmedden (Residential)	Baseline view: A residential property adjacent to the existing A96 with views facing south. Predicted effect: Direct close-range views of embankments and oblique views to Carden Junction, access roads, cuttings and embankments.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
Br43	Waterside (Residential)	Baseline view: A group of residential properties between Oyne and the existing A96. Views north and east to the route option are partially restricted by existing woodland. Predicted effect: Views north to the route option will be screened by topography and existing woodland (including Drumtootie 120m AOD), restricting direct and open views, however, there is potential for some partial, oblique views of the Carden Junction and associated embankments.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
Br44	Strathorn (Residential)	Baseline view: A group of residential properties and an agricultural steading situated south-east of Old Rayne on a minor road (Lourin Close) with views south over the River Urie and the existing A96. Predicted effect: Medium range views to the south (0.25-1km away) of Carden Junction, associated access roads, embankments and SuDS basin, seen between River Urie and Drumtootie (120m AOD).	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
Br45	Kirkton of Oyne (Residential)	Baseline view: This receptor represents a small settlement of residential properties, south of the existing A96. Views to the north and west are partially restricted by screening from woodland which reduces visibility to the route option. Predicted effect: Views of the route option to the north including Carden Junction are partially screened by intervening topography and existing woodland vegetation (Drumtootie 120m AOD). However, residences located on the elevated plateau at Hart Hill 120m AOD and nearby have potential for views to the junction, embankments and access roads.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M4, M5, M6, M7	Minor adverse
Br46	Core path - Oyne woodland paths	Baseline view: A woodland path through the Oyne woodland to the south of Gadie Burn. Views are restricted due to existing vegetation, however, there is potential for open views to the north.	High sensitivity receptor	Moderate adverse	M1, M2, M3, M4, M5, M6, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	(Recreational)	Predicted effect: Existing woodland provides some screening but partial medium range views to Carden Junction, access roads and embankments will be apparent.	Medium magnitude of change			
Br47	Carden Farm (Residential)	Baseline view: A group of residential properties and agricultural steadings including Over Carden, and adjacent to the existing A96 at Moor of Carden (115m AOD) with open views of the existing A96. Predicted effect: There is potential for views of the route option to the north and west including partial, oblique, close-range views of Carden Junction, associated access roads and embankments from Carden Farm. Over Carden will experience direct views of Carden Junction, associated embankments and the access road at West Lodge.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
Br48	Urie Riverside Walk (Recreational)	Baseline view: A riverside walk from Lourin Close to Riverside Drive along the River Urie with open views south over the River Urie and existing A96. Existing views are restricted by surrounding woodland shelterbelts and woodland plantations. Predicted effect: Includes close-range views (<0.25km) of Carden Junction, associated access roads, cuttings, and embankments visible with Drumtootie (120m AOD) and Moor of Carden (115m AOD) in the background.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
Br49	Core Path – Jenny's trees via Urie Riverside (Recreational)	Baseline view: The path runs down a south-facing slope towards River Urie and terminates at Whiteford/Old Rayne path. Views are primarily to south-west. On the east side of the path, there is some screening from vegetation and a rise in topography. Predicted effect: The path is approximately 1km north of the route option, however, the elevation will allow some direct views including SuDS basin, cuttings, embankments and Carden Junction but these will be oblique and intermittent.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**
Br50	Westerton (Residential)	Baseline view: An agricultural steading with open views south to the River Urie, Bennachie and the existing A96, where vegetation allows. Predicted effect: Woodland shelterbelts provide some screening but there will be elevated views over the Carden Junction, associated cuttings, embankments, access roads and SuDS basin.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6, M7	**Moderate adverse**
Br51	Existing local path – Insch to Oyne via Archaeolink (Recreational)	Baseline view: This existing local path is 30.6km long with a figure of eight layout and makes use of existing roads, connecting with the existing A96 near Old Rayne. There is partial screening from vegetation. Predicted effect: Most of the existing local path is located 1-2km from the A96 but views will be	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		possible where it approaches the existing A96 on two minor roads north of Oyne. Views will include the underbridge, embankments and possibly SuDS basin.				
Br52	North Lodge (Residential)	Baseline view: An agricultural steading with views south over River Urie to the existing A96 with significant screening from existing buildings and woodland plantation. Predicted effect: Close-range views to the route option will include SuDS basin, River Urie Underbridge and embankments.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
Br53	Mill of Carden (Residential)	Baseline view: An agricultural steading adjacent to the existing A96 and with views south over Gadie Burn with significant screening from existing buildings and woodland plantation. Predicted effect: Any views to the route option will be restricted by existing buildings and topography and will be unlikely.	High sensitivity receptor No change	No change	n/ a	No change
Br54	Craigmill (Residential)	Baseline view: A group of residential properties and an agricultural steading adjacent to the existing A96 and the River Urie, (at approximately 97m AOD) with mature woodland to the north. Predicted effect: Views north to the route option will be screened by a combination of topography	High sensitivity receptor No change	No change	n/ a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		(115m AOD) and existing mature woodland and will be unlikely.				
Br55	Home Farm (Residential)	Baseline view: A group of residential properties at the top of an elevated plateau on a south-facing slope situated north of the existing A96. The existing A96 cannot be seen. There are obscure views to the Hill of Knockollochie (162m AOD). Predicted effect: Views of the route option to the north will be screened by Logie Woodland.	High sensitivity receptor No change	No change	n/ a	No change
Br56	Easterton (Residential)	Baseline view: A group of residential properties on Lourin Close, north of the route option with views south-east. Some screening from Logie Woodland and adjacent topography (135m AOD). Predicted effect: Angled partial views of cuttings and embankments will be visible to the south-east.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**
Br57	Old Logie cottages (Residential)	Baseline view: A group of residential properties on a south-facing slope, north of the existing A96 with views to Bennachie and the Hill of Knockollochie (162m AOD). The existing A96 cannot be seen. Predicted effect: Close-range views of the route option to the north will include the cutting where it emerges from Logie Woodland running west to east, SuDS basin and embankments. There may	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		be views under the overhead pylon wayleave to embankments south of Logie Durno Farm.				
Br58	Logie House (Residential)	Baseline view: Logie Country House occupies a prominent position (approximately 85m AOD) on a south-facing slope overlooking the River Urie, north of the existing A96. There is screening from existing woodland to the north. Predicted effect: A combination of topography and existing woodland will screen the route option restricting any likely views.	High sensitivity receptor No change	No change	n/ a	No change
Br59	Logie Durno Farm (Residential)	Baseline view: An agricultural steading on Lourin Close, north of the route option with direct and open views south to Bennachie. The existing A96 cannot be seen. Predicted effect: Direct close-range views south to the route option including embankments, where it enters the adjacent woodland.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**
Br60	Core Path – Logie woods to Durno (Recreational)	Baseline view: A core path running north from Whiteford/Old Rayne path terminating at Durno. The path intermittent clear views contrasted with close foliage screening at different points along its length. Predicted effect: The route option cuts through the path at Logie woods and views of cuttings and	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		embankments will be visible south of Gallow Hill (135m AOD) including underbridge and side road.				
Br61	Benlogie (Residential)	Baseline view: A group of residential property situated on a gradual south-facing slope, west of Whiteford with substantial woodland screening. Predicted effect: There is potential for views of SuDS basin at Ferniebrae on Lourin Close and of cuttings, across Gallows Hill (135m AOD) where the route option is not screened by existing woodland and topography.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**
Br62	Existing local path – Oldmeldrum to Old Rayne (Recreational)	Baseline view: This is a circular existing local path, 41.8km long and links Oldmeldrum to Old Rayne through Daviot, Kirkton, Whiteford and Pitcaple. Views towards the A96 to the south are screened by the topography and existing vegetation with partial or angled views to the existing A96. Predicted effect: The route option intersects this existing local path between Logie Woods and south of Durno near Ferniebrae and the underbridge. There will be close-range views of SuDS basin, embankments and cuttings. However, the majority of the route option is a considerable distance away with almost no visibility to the route option.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
Br63	Ferniebrae (Residential)	Baseline view: Two residential properties situated on a south-facing slope with views to Whiteford and Bennachie. Views north are limited by woodland and topography. Predicted effect: Views south will include SuDS basin and the adjacent underbridge/side road with cuttings and embankments to the north visible and potential for views east to Pitscurry Wood.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**
Br64	Whiteford (Residential)	Baseline view: Residential properties situated at the west edge of Whiteford with east and west facing views. Views north to Lourin Close and Gallows Hill (135m AOD). Predicted effect: Existing woodland provides screening to the west but views to the north will include cuttings and embankments behind Ferniebrae across Gallows Hill with angled views to Pitscurry Wood where the cuttings will be viewed against Pitscurry Hill.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6	**Moderate adverse**
Br65	Kemmels of Durno (Residential)	Baseline view: Residential properties and an agricultural steading including Beechfield, Craighead and Woodlands with south-facing views restricted by topography e.g. Gallows Hill (135m AOD). Predicted effect: No change	High sensitivity receptor No change	No change	n/a	No change
Br66	Knowes of Durno	Baseline view: Residential properties including Howes of Durno, Durno House and Loanside	High sensitivity receptor	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	(Residential)	Cottages, with south-facing views restricted by topography and woodland e.g. Gallows Hill (135m AOD). Predicted effect: No change	No change			
Br67	Cottage, Cairnton, North Woodend, Hawthorn House and Woodend Cottage (Residential)	Baseline view: A group of east facing residential properties on an east facing slope with open views to Pitscurry Wood. Predicted effect: Open and direct views of the route option ascending to Pitscurry Wood including embankments and under-bridges (~0.3km away).	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**
Br68	Bridgend (Burn of Durno) (Residential)	Baseline view: An agricultural steading adjacent to the Burn of Durno with substantial screening to the north from farm buildings. Views to the south include Gallows Hill (177m AOD) and buildings at Pitcaple Quarry are visible to the southeast. Predicted effect: oblique, close-range views as the route option emerges from woodland at Gallows Hill (135m AOD) including SuDS basin, embankments and under-bridges.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**
Br69	North of Whiteford (Residential)	Baseline view: Residential properties situated at the northern edge of Whiteford with views north-east to Pitscurry Hill and partial views to Gallows Hill (135m AOD).	High sensitivity receptor	Major adverse	M1, M2, M3, M5, M6	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Oblique partial views north-east to Pitscurry Wood where the cuttings and embankments will be seen against Pitscurry Hill. There is also potential for angled partial views north-west to Lourin Close and Gallows Hill (135m AOD) including SuDS basin and cuttings/embankments.	Low magnitude of change			
Br70	Logie Durno Hall/School (Recreational)	Baseline view: There are views north-east from the school to Pitscurry Wood. Views from the village hall to the north may be visible but existing woodland provides screening for both properties to the north. Predicted effect: The route option will be visible where the cuttings will be seen against Pitscurry Hill. Angled partial views to the route option at Gallows Hill (135m AOD) may be possible from the village hall as well as views of the realigned access road and under-bridges.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3 M4, M5, M6	**Major adverse**
Br71	Ar-dachaidh / Bridgend (Pitcaple) (Residential)	Baseline view: An agricultural steading adjacent to the Burn of Durno with substantial screening to the north from farm buildings. Views to the south may include Gallows Hill (177m AOD). Predicted effect: Oblique angled partial views to the route option will be seen including cuttings and embankments at Gallow Hill (135m AOD). Views of under-bridges are unlikely due to screening by farm buildings.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
Br72	Glenlogie (Residential)	Baseline view: An agricultural steading adjacent to the Burn of Durno with substantial screening to the north and east from woodland shelterbelts and buildings. Views to the south include Gallows Hill (177m AOD) and Bennachie. Predicted effect: Oblique views of the route option at Gallow Hill (135m AOD) may be visible but open views are screened by farm buildings.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**
Br73	Gatehouse (Residential)	Baseline view: A residential property adjacent to the Burn of Durno with views east to Pitcaple and south to Bennachie. Predicted effect: Close-range open views of the route option between Gallow Hill (135m AOD) to Pitscurry Wood including embankments and under-bridges <0.3km away.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**
Br74	Burnside of Pitcaple (Residential)	Baseline view: An agricultural steading and a residential property (Eringahr) adjacent to the Burn of Durno. Views to the south include Bennachie and Gallows Hill (177m AOD) with some screening from woodland and buildings. Predicted effect: Medium range open views of the route option between Gallow Hill (135m AOD) to Pitscurry Wood including embankments (0.3km-1km away).	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**
Br75	Oxen Craig Existing local route	Baseline view: This viewpoint is of Bennachie at its highest point at 528m AOD. It is very prominent	High sensitivity receptor	Minor adverse	M1, M2, M3, M5	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	(Recreational)	and dominates the skyline. There are panoramic long-distance views. Predicted effect: Due to distance and screening from existing vegetation, any significant views to the route option are unlikely.	Negligible magnitude of change			
Br76	Mither Tap Existing local route (Recreational)	Baseline view: This viewpoint is 518m AOD and has an iron age fort at its summit with good views to the north and east. There are also superb views of Bennachie's southern side, where The Gordon Way (O112) traverses the Southern flank of Bennachie between the Visitor Centre in the east and Suie Car Park to the west. Predicted effect: Due to distance and screening from existing vegetation, any significant views to the route option are unlikely.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5	Minor adverse

Table 1.5 provides a description of the baseline view and predicted visual effects on receptors located within the area of Pitcaple to Kintore; Violet route option. The locations of the receptors are shown in Volume 5, Figures 15.9 to 15.11 'Visual Receptors Violet Route Option.'.

Table 1.5 Predicted Visual Effects for Pitcaple to Kintore Violet Route Option

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
V1	Durno (village) (Residential)	Baseline view: This group of residential receptors is located approximately 1km north west of the route option. Predicted effect: The route option is expected to be partly visible despite some vegetation screening direct views from the property.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5, M6	Minor adverse
V2	Cottage, Cairnton, North Woodend, Hawthorn House and Woodend Cottage (Residential)	Baseline view: The north-east edge of the route option is located approximately 0.7km east of this group of receptors. Views from this receptor group are elevated, open and distant over grazing and arable fields characterised by woodland planting to the east. Predicted effect: The north-east edge of the route option is likely to be visible as it appears over the skyline from the undulating hill opposite which will cut through the woodland planting located to the edge of the hill.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Moderate adverse**
V3	Bridgend (Residential)	Baseline view: The farmhouse at Bridgend is located approximately 0.7km from the route option (NE edge). The farmhouse is mainly surrounded by a coniferous hedge. With views looking to the south.	High sensitivity receptor	Minor adverse	M1, M2, M3, M5, M6	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: The majority of views to the route option are screened by the agricultural buildings to the east and topography and woodland.	Negligible magnitude of change			
V4	Burnside of Pitcaple and Eringahr (Residential)	Baseline view: This receptor is an agricultural steading and a residential property (Eringahr) adjacent to the Burn of Durno with views in all directions. Views to the south include Bennachie and Gallows Hill (177m AOD) with some screening from woodland and buildings. Predicted effect: The route option is in cutting at the north-eastern edge. It is unlikely this receptor will have any views of the route option due to surrounding vegetation, view angle and topography. There is potential for views of the underbridge structure at Pitscurry Junction.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5, M6	Minor adverse
V5	Gatehouse (Residential)	Baseline view: The north-east edge of the route option is located approximately 0.3km east of this receptor. Views from this receptor group are elevated, open and distant over grazing and arable fields, characterised by boundary and roadside vegetation. Predicted effect: The north-east edge of the route option will be clearly visible from this receptor. The route option will cut through Pitscurry woodland to the east.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
V6	Glenlogie Farm (Residential)	Baseline view: Current views extend mainly to the south from the farmhouse over agricultural land. The views to the north and east are screened by	High sensitivity receptor	Minor adverse	M1, M2, M3, M4, M5, M6	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		agricultural buildings and existing vegetation (mature coniferous). Predicted effect: The majority of views to the route option are screened by the existing vegetation and topography.	Negligible magnitude of change			
V7	Bennachie House, The Mains of Glack Farm, The Bungalow and Woodland Lodge (Residential)	Baseline view: Distant views from this receptor group over grazing land with some screening from sparsely planted hedges/small trees. Bennachie House is raised on a slight embankment and has elevated views. Predicted effect: Existing topography and vegetation will screen some of the views towards the route option, but embankments will be visible to the south between Pitscurry Wood and Hill of Den.	High sensitivity receptor Low magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6	Minor adverse
V8	Wider path network: House of Daviot (Recreational)	Baseline view: This path is 0.74km long and links Edinmore Drive to the minor road that links B9001 to Wellbrae Road in Daviot. Views are screened by the existing vegetation and topography Predicted effect: The route option will be largely screened by topography and existing vegetation, with limited long-range partial, angled views, if any.	High sensitivity receptor Low magnitude of change	Moderate adverse	M1, M2, M3, M5	Minor adverse
V9	Mossfield (Residential)	Baseline view: This receptor is located approximately 0.1km north of the route option. This receptor has clear, unobstructed views of the	High sensitivity receptor	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		grazing land leading to the road to the east and restricted, angled views to the south. Predicted effect: The receptor has slightly elevated direct and open views south to access road, embankments and the underbridge, particularly from the first floor where there is no vegetation screening the views. The route option is also slightly elevated increasing the visual effect.	High magnitude of change			
V10	Damhead (Residential)	Baseline view: This receptor is located approximately 0.6km to the south-west of the route option. Main views are west to agricultural grazing land. Views to the east are screened by the mature vegetation and topography. Predicted effect: The route option is on an embankment but is unlikely to be visible due to screening from woodland and topography.	High sensitivity receptor No change	No change	M1, M2, M3, M5	No change
V11	Existing local route (Recreational)	Baseline view: This route runs through the woodland east of Pitcaple, south of the existing alignment of the A96. Existing woodland vegetation and landform allows limited views to the existing A96 from north-east to north-west. These views are more open towards the edge of the woodland. Predicted effect: East to Daviot Junction, there is potential for partial angled views of cuttings, embankments, access roads and lighting but the	High sensitivity receptor Low magnitude of change	Minor adverse	n/a	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		route option will be partially screened by intervening woodland (Mill Wood 106m AOD and Resthivet/Legatesden 110m & 123m AOD).				
V12	Govals (Residential)	Baseline view: A agricultural steading that occupies an elevated position (100m AOD) with views over the River Urie. Predicted effect: East to Daviot Junction, there is potential for partial angled views of cuttings, embankments, access roads and lighting but the route option will be partially screened by intervening woodland and topography (Resthivet/Legatesden 110m & 123m AOD and Hill of Den 117m AOD).	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**
V13	The Buzzard Café/Nursery (Recreational)	Baseline view: Limited views due to existing mature vegetation. Focal point from visitor centre/café of distant views of Bennachie. Predicted effect: There are currently no views of the route option from this receptor group due to the topography and the existing dense surrounding woodland.	High sensitivity receptor No change	No change	n/a	No change
V14	Ben View and Mill of Pitcaple (Residential)	Baseline view: This receptor group is located approximately 1km south of the route option. Views are restricted to the north and east due to Mill Wood and topography. Main views are afforded to the south and south-west only over hedgerows towards grazing pasture and woodland.	High sensitivity receptor No change	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: There are currently no views of the route option from this receptor group due to the topography and the existing dense woodland within Mill Wood.				
V15	Mill Wood (Residential)	Baseline view: This receptor is located approximately 0.8km west of the route option. The receptor is located with a dense wooded woodland with closed views due to the surrounding vegetation. Predicted effect: The receptor is unlikely to have any views of the route option due to the woodland screening surrounding the property.	High sensitivity receptor No change	No change	n/a	No change
V16	Mackstead Farm, Mackstead Farmhouse and the Steading (Residential)	Baseline view: The route option is located approximately 0.1km north of this receptor group. Views are mainly over open grazing pasture from Mackstead Farmhouse with angled views from The Steading to the north. Views to the east from The Steading are restricted due to mature tree boundary planting. Predicted effect: Close-range views to the north of the route option are likely to be experienced particularly from Mackstead Farmhouse including access road, embankments and the underbridge.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
V17	Broadplace (Residential)	Baseline view: This receptor is located approximately 0.6km north-east of the route option, situated within a flat, grazing land field pattern. The B9001 is located south-west. Views are limited and angled due to the boundary hedge to the south.	High sensitivity receptor	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Broadward, a separate commercial steading to the south (Stewart Agricultural Ltd) and its associated boundary vegetation restricts the views to the south. Predicted effect: Limited partial views are likely to the south, towards Daviot Junction and also to the south-west where views across the Hill of Den are likely.	Medium magnitude of change			
V18	Hill of Den / Reservoir (Residential)	Baseline view: The route option is located approximately 0.2km east of this receptor. Views from this receptor are mainly from the farmhouse to the immediate fields to the south and east. Predicted effect: Potential close-range views from this receptor to the north/north-east, however, the farm buildings and topography will restrict views and there may only be narrow glimpses past the buildings.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
V19	Broadward / Stewart Agricultural Ltd. (Residential)	Baseline view: This route option is located approximately 0.2km south of a residential receptor, also in this group. Filtered views are enclosed and characterised by agricultural fields of grazing and arable land. Predicted effect: There will be views south-east and south-west towards Daviot Junction of access roads and embankments. The possible presence of lighting will increase the effect and the realigned	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		B9001 set on embankment, has potential to increase visual intrusion.				
V20	Skellarts Croft and Garage (Gordon Smith's Car Repairs) (Residential)	Baseline view: Filtered views to existing B9001 due to the existing tree line. Open unobstructed views over grazing pasture towards boundary vegetation at Broadward to the south-west. Intermittent angled views through breaks in tree line along Ides Burn are limited due to the commercial buildings. There is potential for long-range filtered views particularly in the winter. Predicted effect: The receptor is expected to have intermittent filtered views to the route option including access roads and embankments. Lighting may increase impact towards Daviot Junction. The presence of lighting will increase the effect and the realigned B9001 set on embankment, has potential to increase visual intrusion.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**
V21	Hillhead and Mullions (Residential)	Baseline view: A group of residential receptors in an elevated location on a south-facing slope at approximately 115m AOD with panoramic views including the B9001. Predicted effect: Medium range views to the route option at Daviot Junction are likely to include roundabout, embankments and access roads as well as lighting which may increase adverse visual effects for local visual receptors.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M4, M5, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
V22	Resthivet (Residential)	Baseline view: The route option is located approximately 0.3km north-east from this receptor. Views are restricted by boundary vegetation. Views are of grazing pasture with tree lined roads and glimpses of vehicles are visible through trees with Hill of Den (117m AOD) screening views further north. Hill of Cuttlecraig can be seen to the east of the route option. Predicted effect: Oblique views to the north- east of Daviot Junction will include cuttings, access roads and embankments.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
V23	Resthivet Croft and Resthivet Cottage (Residential)	Baseline view: The route option is located approximately 0.7km north-east of this receptor group. The mature woodland surrounding Legatesden House and Farm restricts views to the north and north-east. Distant, open views to the south-east over agricultural grazing land can be seen. Predicted effect: The route option is unlikely to be visible due to the mature woodland screening and increase in landform to the north-east.	High sensitivity receptor No change	No change	n/a	No change
V24	Old Meldrum to Old Rayne – existing local path GA3	Baseline view: This existing local path is approximately 41.8km long and links Old Meldrum to Old Rayne. Views towards A96 to the south are screened by the topography and existing vegetation, with partial and angled views to the route option.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	(Recreational)	Predicted effect: There will be partial angled and direct open views, particularly, where it passes through Daviot Junction, including access roads, cuttings, embankments and the overbridge. This path may require a diversion which would be considered at DMRB Stage 3.				
V25	Mains of Inveramsay/ Gunhill (Residential)	Baseline view: A group of residential properties and agricultural steadings located on elevated land approximately 0.3km south west of the route option. Both are enclosed by high boundary vegetation. Mains of Inveramsay is south-facing with open views, Gunhill is east facing with views partially restricted to the east by high beech hedging and views north restricted by agricultural buildings. Views to the west are restricted by boundary vegetation within the garden. Views east are extensive and long- distance (e.g. Hillhead of Lethenty) and include the B9001. Predicted effect: Partial long-distance views of the route option to the east beyond the existing B9001 will include embankments and access roads. Further south-east, it enters into cutting reducing the negative visual impact.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**
V26	Sandwood and Hill of Cuttlecraig (Residential)	Baseline view: A group of residential receptors west of the Hill of Cuttlecraig with views south to Bennachie. They are sheltered by mature woodland with filtered views through mature specimen trees, approximately 0.8km from the route option.	High sensitivity receptor	Moderate adverse	M1, M2, M3, M5, M6 M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Long-range views towards Daviot Junction including embankments and access roads and any lighting will increase the negative visual impact.	Medium magnitude of change			
V27	Cuttlecraigs Farm, Cuttlecraigs Cottages and Auchencleith - and Little Muddy Lumphart (Residential)	Baseline view: This receptor group is located approximately 0.6km west of the route option. The views south-west from Cuttlecraigs Farm are open, elevated over agricultural grazing and arable fields separated by an unnamed road. The remainder of this receptor group is enclosed by mix of mature trees. Predicted effect: The route option is partially screened by the undulating landform (88m AOD) and by existing vegetation. There is potential for angled distant views of embankments.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3,	Minor adverse
V28	Alfresco + two other receptors (Residential)	Baseline view: These receptors are situated in a flat elevated location approximately 0.3km east of the route option. Views are filtered by screening from boundary vegetation within garden grounds. The rooftops of these receptors are barely visible east from the B9001 over the arable fields. Predicted effect: Views to the west are restricted by topography. The route option will integrate into the side of the undulating hill but there is potential for views of embankments, access roads and the overbridge at Daviot Junction.	High sensitivity receptor Low magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
V29	PRoW (Recreational)	Baseline view: This path is approximately 0.8km long and links the bend of a rural road, lying 300m south of the junction with the minor road (C76C) that turns east from B9001, which leads to Oldmeldrum and Lochter visitor centre, approximately 800m east of the junction. The PRoW joins the existing local route (V24) south of Hill of Cuttlecraig starting from the point (E: 375855, N: 826168) and continues south for 760m to the Ides Burn at the B9001 where it terminates. The PRoW has views to the west and south over the surrounding agricultural land, hedgerows and fragments of woodland. Existing woodland vegetation and topography allow limited views to the existing A96. Predicted effect: The route option will be aligned through the PRoW and create a noticeable feature within views, constituting a significant visual element to receptors using the PRoW. This PRoW will require a diversion which would be considered at DMRB Stage 3.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
V30	St Margaret's Wells/Nanaimo/ Romar (Residential)	Baseline view: This group of receptors including the residential two-storey bungalow is enclosed by a mix of mature trees. The receptor is located adjacent to B9001 and approximately 0.1km west of the route option. Intermittent limited views to the west.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: The route option will only be partially screened by existing vegetation and direct close-range views will be experienced to the east including the cutting across the Hill of Lethenty.				
V31	East Harlaw, Wilsonville and the Lodge (Residential)	Baseline view: This receptor group is located approximately 0.2km. Views to the north and east are restricted by mature (coniferous) trees (rear of the farmhouse). Predicted effect: The route option is in cutting on the side of Hill of Lethenty. There will be a narrow view east towards the route option from Wilsonville through the existing tree shelterbelt. Restricted views to the east from the Lodge but boundary vegetation/trees alongside B9001 restrict further views to the east.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**
V32	Hillhead of Lethenty, The Bungalow and Mill View (Residential)	Baseline view: A group of residential properties located approximately 0.2km east of the route option. Hillhead of Lethenty occupies an elevated position with views to the south and west including the B9001. Predicted effect: Views of cuttings and embankments in front of the existing B9001 are likely but any views north-west to Daviot Junction are unlikely because the properties face south-east and are screened to the west by woodland and to the north-west by topography (Lethenty Hill (112m AOD)).	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
V33	Parkview (Residential)	Baseline view: This receptor is located to the east of the route option approximately 30m down the side of Hillhead of Lethenty. Views are restricted to the north over arable fields due to screening from boundary vegetation. Predicted effect: There are no views of the route option due to the topography and existing vegetation.	High sensitivity receptor No change	No change	n/a	No change
V34	Netherton of Lethenty (Residential)	Baseline view: There are no views of Netherton of Lethenty from the B9001. Due to the topography, this receptor has views of surrounding arable fields and boundary vegetation to the north-east restricting views further south. Predicted effect: The route option will be screened due to the topography and existing vegetation.	High sensitivity receptor No change	No change	n/a	No change
V35	Brooms Farm and Brooms (Residential)	Baseline view: An agricultural steading situated approximately 0.8km east of the route option with views to the south, east and west from Brooms farmhouse with some tree lines to the south restricting views beyond. Predicted effect: A combination of screening by topography and existing woodland makes views of the route option extremely unlikely. If visible at all, the route option will be visible in front of the existing B9001 at medium to long-range.	High sensitivity receptor No change	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
V36	Battle of Harlaw (Recreational)	Baseline view: The battlefield is located on relatively flat land with a slope to the south down to the River Urie. The site has open views to the west over the River Urie valley and Inverurie, as well as direct views to the existing A96. Predicted effect: Views to the route option are likely to include the Uryside Junction East and Uryside Junction West, associated access roads, cuttings and embankments in front of the overhead power lines with views to Daviot Junction screened by Harlaw Hill (115m AOD).	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**
V37	West Balhalgardy Cottages (Residential)	Baseline view: This receptor is located approximately 0.6km from B9001 looking out to arable fields and grazing pastures mainly to the south. Predicted effect: The route option is expected to be fully screened due to the topography and existing vegetation.	High sensitivity receptor No change	No change	n/a	No change
V38	West Cottage Lethenty, East Cottage Lethenty, Burnside, Station House, Lethenty Mill and Loch Hart, Station House	Baseline view: This receptor is located approximately 0.2km north-east of the route option. Current views face south to the B9001 over arable fields. There is screening from existing boundary vegetation. Predicted effect: Pre-dominant views to the south-west, west or north-west will be angled with partial	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	(Residential)	close to mid-range views through vegetation of SuDS basin and embankments.				
V39	Ardlair House and Old Mill House (Residential)	Baseline view: These receptors are located approximately 0.4km from route option, north-west of the Lethenty Mill hamlet and are both residential properties. Old Mill House and Ardlair House have views to the south-west down towards the B9001 over arable fields although slightly restricted by the mature tree line and tending to be limited by the flat topography. Predicted effect: Partial views to west to the route option where vegetation and topography allow for views of embankments and SuDS from Ardlair House and Old Mill House to the south and south-west.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M4, M5, M7	**Moderate adverse**
V40	West Balhalgardy, The Bungalow and East Balhalgardy (Residential)	Baseline view: This receptor group is located approximately 0.6km south of the route option. Views from receptors of irregular grassland fields. Angled views to the east, filtered by boundary vegetation and beyond to arable fields and tree line between fields. Predicted effect: No views of the route option.	High sensitivity receptor No change	No change	n/a	No change
V41	East Balhalgardy and Highfield (Residential)	Baseline view: An agricultural steading and a group of residential properties with open, uninterrupted views east past the small woodland area adjacent to the B9001 and north-east across arable fields, towards the Uryside Junction West (angled views).	High sensitivity receptor	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Medium range views towards Uryside Junction West are likely to include access roads, roundabout, embankments, Lochter Burn and B9170 side road under-bridges and SuDS basin.	Medium magnitude of change			
V42	Collyhill Cottage, Collyhill and Birchbrae (Residential)	Baseline view: This receptor represents a group of residential dwellings and an agricultural steading. Birchbrae is surrounded by boundary vegetation limiting views towards the B9170 and the route option. Colyhill has slightly elevated views south/south-west through boundary vegetation to the south over arable fields. Predicted effect: The existing topography and vegetation provides some screening and with partial and angled views, including the Lochter Burn and B9170 side road under-bridges and embankments. Partial, filtered and oblique views of Uryside Junction East and embankments in front of Uryside Junction West will be experienced including a SuDS basin.	High sensitivity receptor Moderate magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**
V43	Aspirational core path: Howford Bridge Link Meldrum Meg Way (Recreational)	Baseline view: This Aspirational core path is approximately 2.3km long and links the former road bridge (a Listed Building) over Lochter Burn to the Inverurie Retail Park with other footpaths. The path lies within an undulating landscape with panoramic views to the surrounding agricultural fields and fragments of woodland, there is also an existing housing development site under construction located immediately adjacent to the east and the B9170. The existing A96 is not directly	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		visible from the path due to the topography, existing vegetation and built environment screening views to the south and south-east. Predicted effect: The route option will pass close to the Aspirational core path and will create a discernible feature with potential for views of the under-bridges and embankments.				
V44	Hillcrest (Residential)	Baseline view: Located adjacent to the B9170 in an elevated position on a south-facing slope although enclosed by a high coniferous hedge to the B9170 roadside and is adjacent to Bourtie Industrial Park. Long-distance views west to Bennachie. Predicted effect: The surrounding vegetation will restrict views but close-range views south to embankments and the B9170 underbridge will be possible.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
V45	Tullochmor (Residential)	Baseline view: This receptor is located approximately 0.2km north of the B9170 roundabout and is surrounded by boundary vegetation restricting visibility, although it will have filtered views in winter as the majority of woodland is deciduous. Predicted effect: A large area of mature woodland will be severed to accommodate the route option, underbridge and Uryside Junction East. The B9170	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		underbridge, embankments and new roundabout will be visible, although views are likely to be restricted due to boundary vegetation.				
V46	Portstown and Fairview (Residential)	Baseline view: Restricted views due to screening from boundary vegetation (mature trees) and farm outbuildings restricting views to adjacent grassland. Predicted effect: Views are unlikely due to a combination of distance and screening by vegetation, topography and existing buildings.	High sensitivity receptor No change	No change	n/a	No change
V47	Carpenters Cottage and Aurora (ex-Smithy Cottages) (Residential)	Baseline view: This receptor group is located on the B9170 north of Portstown Views from both receptors to the south-west include agricultural field and angled views to the north-west of the woodland surrounding Birchbrae. Predicted effect: Close, direct views of Uryside Junction East will be seen from these receptors including the roundabout and embankments with the possibility of associated lighting at this junction.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
V48	Edge of Inverurie (Residential)	Baseline view: This receptor is located approximately 0.3km south of the route option with partial views to the north and west towards B9170. There is a new housing estate currently being built. Predicted effect: There is potential for partial views but a combination of screening from the topography,	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5, M6, M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		tree lines and boundary vegetation will restrict visual intrusion.				
V49	Roundhaugh (Residential)	Baseline view: This receptor is located approximately 0.1km north of the route option in an elevated position with views to the west and south, partly screened by existing vegetation. Predicted effect: There is potential for filtered views of the route option including embankments to the south and access roads.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M5, M7	**Major adverse**
V50	Clochan (Residential)	Baseline view: This receptor is located approximately 0.8km north-east of the route option. This receptor currently has no views due to an existing boundary hedge surrounding the property. The views beyond the hedge are further limited past the tree line/cover at Bourtie House. The topography rises to the tree cover and drops to the south-west. Predicted effect: No views are expected from this receptor due to a combination of screening from topography, tree cover and boundary vegetation.	High sensitivity receptor No change	No change	n/a	No change
V51	Bourtie House and The Lodge (Residential)	Baseline view: The Lodge has restricted views due to surrounding vegetation/tree cover. There are angled glimpses of the adjacent road (B9170). Bourtie House: Partial views to the south. Mature tree planting within the grounds restricts views to the route option.	High sensitivity receptor Medium magnitude of change	Major adverse	n/a	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Limited partial views to the route option are likely.				
V52	Shadowside (Residential)	Baseline view: This receptor is located north-east of the route option. Mature trees planting provide screening. Predicted effect: Views are unlikely due to the distance and screening from existing vegetation and topography.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5	Minor adverse
V53	Moore Park, Shadowside cottage and Smithycroft (Residential)	Baseline view: This receptor is located approximately 0.7km north-east of the route option. Predicted effect: The route option is expected to be screened by the undulating landform and existing vegetation, with only angled partial and distant views, if any at all.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5, M6	Minor adverse
V54	Hillbrae, Ben View, Hillbrae Cottage and Bennachie View (Residential)	Baseline view: A group of residential properties and an agricultural steading, located north-east of the route option with open, elevated views west over large arable fields to Inverurie with Bennachie and associated woodland plantations seen in the distance. Predicted effect: Clear views south to embankments and the access road (side road and overbridge).	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
V55	Lofthillock (Residential)	Baseline view: A group of residential properties and an agricultural steading located approximately 0.7km south-west of the route option with north and east facing views. Predicted effect: The route option is expected to be fully screened by the undulating landform and agricultural buildings to the north and east and by the surrounding vegetation.	High sensitivity receptor No change	No change	n/a	No change
V56	Little Hillbrae (Residential)	Baseline view: This receptor is located approximately 0.2km east of the route option, on the north-west side of Selbie Hill, with open elevated views west over grassland. Views are restricted to north, east and south due to mature boundary tree planting and farm buildings. Predicted effect: Clear, elevated views to the west where the route option is mainly in cutting, with restricted views to the north-west of embankments to accommodate the overbridge and side road leading to Hillbrae and Ben View.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M4, M5	**Major adverse**
V57	Upper Ingliston, Upper Ingliston Cottage, Lower Ingliston and Lower Ingliston Cottage (Residential)	Baseline view: This receptor group is located approximately 0.3km south-west of the route option, north of Keith Hall (GDL) and is slightly elevated. There is some screening from farm buildings and existing vegetation.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5, M6	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: The route option will be incised into the west side of the Hill of Selbie and elevated higher than the receptors (by approx. 20-30m). Upper Ingliston has views screened by boundary tree planting to the west, south and east with farm and outbuildings screening views to the east. Upper Ingliston Cottage - Restricted views due to boundary vegetation and outbuildings. Lower Ingliston Cottage (Jack Morrison Agricultural Contractor) views restricted by boundary planting, farm outbuildings and boundary vegetation but there is potential for angled and partial views.				
V58	Selbie Hill (Residential)	Baseline view: This receptor is located approximately 0.8km east of the route option. It is located to the eastern side of the Hill of Selbie. Views are restricted due to boundary vegetation and outbuildings although a number of the trees are deciduous with filtered views of the agricultural fields. Predicted effect: No views are likely due to a combination of screening by topography, surrounding tree planting and outbuildings.	High sensitivity receptor No change	No change	n/a	No change
V59	Hill of Selbie, cairn 440m SE of Little Hillbrae (Recreational)	Baseline view: The cairn is located on top of the Hill of Selbie. The area has 180-degree views from north-west to south-east over the undulating landscape of agricultural land and small woodlands. To the south and west, views are screened by the existing woodland.	High sensitivity receptor	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effects: The route option will be partly screened by topography and existing vegetation, with limited partial or angled views.	Medium magnitude of change			
V60	Keith Hall Garden and Designed Landscape (Recreational)	Baseline view: Keith Hall GDL lies slightly north of the confluence of the River Don and River Urie on a south-facing slope. The GDL has open views to the west overlooking the town of Inverurie. Views to the south-east towards the existing A96 are screened by the topography, existing vegetation and built environment with restricted/filtered partial and/or angled views. Predicted effect: The route option will pass 1.5km to the north-east, at the north-east boundary of the GDL. Although the woodland vegetation and topography will screen views from the central, south and western parts of the GDL that include a number of cultural heritage features, there is potential for views of the route option from the northern and eastern boundaries.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**
V61	Woodside Cottage (Residential)	Baseline view: This receptor is located approximately 0.3km west of the route option. Views are limited from the garden grounds due to the surrounding boundary vegetation. Predicted effect: No views to the route option are likely due to dense boundary vegetation in this location.	High sensitivity receptor No change	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
V62	Selbie, Wester Selbie and Easter Selbie Cottages (Residential)	Baseline view: This receptor is located approximately 0.7km east of the route option. Views at this location are of grassland which surround this receptor, however, views to the west are restricted due to coniferous woodland and boundary vegetation surrounding Wester Selbie. Predicted effect: No views to the route option due to screening from a combination of topography and mature tree planting.	High sensitivity receptor No change	No change	n/a	No change
V63	East Lodge (Burial Ground and Church) (Recreational)	Baseline view: This receptor is located approximately 0.9km west of the route option. No views from this receptor due to dense woodland planting. Predicted effect: No views to the route option due to topography and mature tree planting.	High sensitivity receptor No change	No change	n/a	No change
V64	Ordiefauld (Residential)	Baseline view: This receptor is located approximately 0.3km north-east of the route option. This receptor is enclosed with woodland preventing views beyond. Predicted effect: No views to the route option due to mature woodland planting.	High sensitivity receptor No change	No change	n/a	No change
V65	The Cabin Equestrian Centre	Baseline view: The Cabin is an equestrian centre providing riding lessons. The centre lies in a glade formed by a newly established woodland. The area has restricted views to the north due to the	High sensitivity receptor	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	(Recreational)	woodland vegetation. Views towards the A96 to the south-east are screened by topography and existing vegetation. Predicted effect: The route option will be passing close to the centre but views to the route option will be screened by woodland.	No change			
V66	Orcadia (Residential)	Baseline view: This receptor is located approximately 0.4km west of the route option and represents a group of residential properties. Woodland screens views to the east and west. Predicted effect: The route option will be partially screened by the surrounding vegetation and farm buildings. There is potential for views to the north and east of embankments and underbridge.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M4, M5 M6	**Major adverse**
V67	Alderlea, Hillcrest, The Brambles, Hillhead, East Hill, Hillhead House and Fyfe (Residential)	Baseline view: This receptor group is located approximately 0.2km west of the route option in a slightly elevated position on a south-facing slope. Hillhead has views south to woodland at Keith Hall with existing outbuildings screening views to the north-east. Coniferous woodland further screens views to the east. Anderlea, Hillcrest and The Brambles – some screening by boundary vegetation to the north-east whilst views east are prevented further by coniferous woodland. East Hill, Hillhead House - views to the east and west are restricted by woodland. There is potential	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		for gable end views to the south. Fyfe - views mainly west, east and south but one window to the north has long-distance views over grazing land. Predicted effect: The route option is expected to be screened by the existing vegetation (Ordiefauld woodland), buildings and topography, with limited partial and/or angled views.				
V68	Millwood (Residential)	Baseline view: This receptor is located approximately 0.6km north-east of the route option. Views to the west beyond the coniferous woodland are restricted by Ordiefauld woodland. Long-distance views are screened by boundary vegetation at Millwood. Predicted effect: The route option is expected to be largely screened by the existing vegetation, built environment and topography but there is potential for partial views of embankments.	High sensitivity receptor Negligible magnitude of change	Minor adverse	n/a	Minor adverse
V69	Newmill, Little Newmill, Newmill Bungalow and Newmill Farm (Residential)	Baseline view: This receptor group is located approximately 0.7km north-east of the route option. Views to the west are restricted by Ordiefauld coniferous woodland. Medium to long-range views south are likely from elevated floors. Predicted effect: The route option is expected to be partly screened by the existing vegetation	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		(Ordiefauld woodland), built environment and topography, with some medium range views.				
V70	Eastfield (Residential)	Baseline view: This receptor is located approximately 30m west of the route option. Open, mainly unobstructed views to the south and west towards grassland. Views to the north-east are prevented by coniferous tree planting at boundary and outbuildings. Predicted effect: Views are likely to relocated B993 and underbridge to the south, SuDS features and embankments.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6, M7	**Moderate adverse**
V71	Keith Hall and Kinkell Parish Manse including the Beeches, Woodlands Cottages, Birchbrae and Beechfield (Residential)	Baseline view: The receptor group is located at the east corner of the woodland surrounding Keith Hall. Views towards existing A96 to the south-east are screened by the topography, existing vegetation and buildings. Beechfield has views to the north. Predicted effect: The route option is partly screened by existing vegetation and topography, however, Beechfield properties to the north will have views of the B993 underbridge and embankments.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5	**Moderate adverse**
V72	Keith Hall School Playing Fields (Recreational)	Baseline view: The receptor is located at the east corner of the woodland surrounding Keith Hall. Views towards the A96 to the south-east are screened by topography, existing vegetation and the built environment with very limited views.	High sensitivity receptor No change	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: The route option will be screened by existing vegetation and topography. Views are unlikely because the receptor is completely enclosed by mature woodland.				
V73	Isaacstown (Residential)	Baseline view: This receptor is located approximately 40m south-west of the route option. Boundary vegetation restricts views. Predicted effect: The route option at this location consists of a slight embankment to accommodate an overbridge structure for access to Coldwell and Ashlea Grange. Despite the proximity, boundary vegetation restricts views, although the embankments are likely to be visible at close-range with potential direct views mainly from the upper floors of the property.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
V74	Whitelums Farm (Residential)	Baseline view: This receptor is located approximately 0.7km east of the route option and occupies an elevated position with predominantly open, unobstructed views to the south and west. Predicted effect: The route option will be partly screened by existing vegetation, buildings and topography, with some angled and medium range views of embankments and the overbridge at Ashlea Grange.	High sensitivity receptor Low magnitude of change	Moderate adverse	M2, M3, M4, M5	**Moderate adverse**
V75	Ashlea Grange and Coldwell	Baseline view: This receptor is located approximately 20m east of the route option. Open unobstructed views from Coldwell. Views from	High sensitivity receptor	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	(Residential)	Ashlea Grange are restricted due to boundary vegetation and outbuildings although there are some narrow-angled views the south- east. Predicted effect: The route option will be partly screened by existing vegetation, built environment and topography, with direct and angled close-range views including the overbridge.	High magnitude of change			
V76	The Ha's, Houlmalees, Craigandhu, Vaila, Craigpark, Wellhillock Croft, Hill View, Newplane Lodge and Newplace Farm Steading (Residential)	Baseline view: This receptor group is located approximately 0.9km east of the route option at an elevated position overlooking the surrounding farmlands with open 180-degree views from the south-east to the south-west. Predicted effect: The Ha's and Houlmalees will be exposed to medium to long-range views of the route option. The route option sits on an embankment at this location and includes the overbridge structure to accommodate access to Ashlea Grange, increasing its prominence to the surrounding receptors.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6	**Moderate adverse**
V77	Burnside (Residential)	Baseline view: This receptor is located approximately 0.6km east of the route option. There is some screening from outbuildings but with views to the west. Predicted effect: The route option is expected to be partially screened by the existing vegetation and	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		topography, with limited to no partial or angled views.				
V78	Altons/ Fawells - now Altons and Altons Cottage (Residential)	Baseline view: This receptor group is located approximately 50m west of the route option with open, extensive angled long-distance views to the east over arable fields from cottages with unobstructed views south from Altons. Views to the east are restricted by existing mature trees and farm outbuildings. There are long-distance views east towards Bankhead/Kinmuck. Predicted effect: The route option at this location is mainly in a deep cutting but will be partially screened mainly by topography, but also by surrounding vegetation, with partial and angled views of small embankments, an overbridge and access road at close-range.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
V79	Windyfold Croft (Residential)	Baseline view: This receptor is located approximately 0.6km north-west of the route option. Main views from this receptor are towards the south over arable fields but these are limited due to boundary vegetation. Predicted effect: The route option is expected to be mostly screened by topography and existing surrounding vegetation. However, there is potential for elevated, partial and angled views.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M5, M6	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
V80	The Millhouse (Residential)	Baseline view: This receptor is located approximately 1km east of the route option. This receptor is enclosed by boundary vegetation and located alongside Newmill Burn. Predominant views are to the south-west. Predicted effect: The route option will be partially screened by existing vegetation and topography, with limited partial and angled views.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Moderate adverse**
V81	Kinmuck (Western edge of Kinmuck) (Residential)	Baseline view: This receptor is located approximately 0.7km east of the route option. There are open views over the Kinmuck road with arable fields and the stone wall field boundary to the south. Views are restricted to the west due to topography / landform. Predicted effect: The route option will be fully screened by existing vegetation and topography, with no views.	High sensitivity receptor No change	No change	n/a	No change
V82	Cairnhill (Residential)	Baseline view: The receptor lies in the middle of agricultural fields and an undulating landscape with some mature vegetation screening views to the west and with angled views to the south. Predicted effect: The route option is in a cutting to the west of the receptor and will be fully screened by the existing vegetation and topography.	High sensitivity receptor No change	No change	n/a	No change
V83	Craigforthie Cottage and	Baseline view: This receptor is located approximately 0.7km west of the route option. There	Low sensitivity receptor	Minor adverse	M1, M2, M3, M5, M6	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	Craigforthie Farm (Residential)	are limited views north and west due to screening by existing farm buildings and tree planting within the property grounds. Predicted effect: The route option at this location is mainly in a cutting and there are no views of the route option at Altons Cottages where an overbridge is proposed. The route option will be partially screened by existing vegetation, farm outbuildings and topography. There is potential for limited partial or angled views.	Medium magnitude of change			
V84	Craigforthie Cottages (Residential)	Baseline view: This receptor is located approximately 0.4km west of route option. There are views from Craigforthie to the north and north-east. Predicted effect: Land rises slightly to the east toward the route option where, at this location the route option goes from being on a slight embankment to the south, to being in a cutting further north. The route option will be partly screened by the existing vegetation, outbuildings and topography at this location, with partial and/or angled views.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**
V85	Balbithan House (Residential)	Baseline view: The site is located approximately 1km south of Kinmuck and 0.7km north-east from the A96. Views towards the A96 are screened by the topography, existing vegetation and built environment with no partial or angled views to the existing A96.	High sensitivity receptor	Minor adverse	M1, M2, M3, M5, M6	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: The route option will be screened by the existing vegetation and topography currently surrounding the site, however, there is potential for filtered views in winter.	Negligible magnitude of change			
V86	Oakleacraig (Residential)	Baseline view: This receptor is located approximately 0.5km west of the route option. There are open, unobstructed and extensive views to the east and west (northern views unknown due to restricted access). A drainage basin lies further east of route option. Predicted effect: The route option here will be on a slight embankment and will be partially screened by the existing adjacent topography, however, there will be medium range direct views of the embankments to the east.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**
V87	Home Farm also known as Balbithan Cottage (Residential)	Baseline view: This receptor is located approximately 0.6km east of the route option. There are no views beyond the boundary vegetation at Balbithan House, as it lies enclosed by mature tree planting. Predicted effect: There are no views of the route option from Home Farm due to surrounding buildings and vegetation providing screening.	High sensitivity receptor No change	No change	M1, M2, M3, M4, M5, M6	No change
V88	Heatherwick, Laginda and	Baseline view: This receptor group is located approximately 0.3km west of Balbithan House. Laginda has open, direct and unobstructed views to the surrounding grassland. Heatherwick Farm	High sensitivity receptor	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	Heatherwick Farm Cottages (Residential)	Cottages has restricted angled views due to vegetation. Predicted effect: Short range views to embankments and C68C underbridge and side road will be experienced.	High magnitude of change			
V89	Hogholm Farmhouse (Residential) and Hogholm Stables (Recreational)	Baseline view: This group of receptors are located approximately 0.1km west of the route option and 2.1km north-east of the existing A96. Views to the east are generally open, close and unobstructed. Currently views are screened by the existing vegetation to the south and topography, with no partial or angled views to the existing A96. Predicted effect: Direct short-range open views of embankments and structure – underbridge and C68C side road.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
V90	Balcraig (Residential)	Baseline view: This receptor is located approximately 0.3km south-west of the route option. Views to east, south and west are open but views to the north are restricted by outbuildings. Predicted effect: The route option will be partially screened by the existing outbuildings with close-range views to the west of embankments and angled views of the underbridge and side road.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
V91	Hogholm Cottage (Residential)	Baseline view: This receptor is located south of Heatherwick and Balbithan House. Views to the south-east are restricted by boundary vegetation and views to the west are restricted by a flat plateau of land (106m AOD) however there are open views to the north and east. Predicted effect: Views to the route option will be obstructed by a flat plateau of land (106m AOD).	High sensitivity receptor No change	No change	n/a	No change
V92	Beechfield Cottage - Now Beechfield (Residential)	Baseline view: This receptor is located approximately 0.3km east of route option. Views to the north are through narrow gaps in boundary vegetation and the drive. Views to the west will be partial and oblique. A high mature beech hedgerow restricts the majority of the view with existing farm buildings also restricting views to the north. Predicted effect: There is potential for partial angled views from upper floor windows of the property of embankments in front of Denny's Burn to the west. Views to the route option are unlikely due to screening by existing topography and vegetation.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5, M6	Minor adverse
V93	Spy Far (Residential)	Baseline view: This receptor is located approximately 0.5km west of the route option and on the west side of Cain Hill on a south-facing slope.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Direct open views south to SuDS basin, embankments, cuttings and River Don crossing will be experienced.				
V94	Ardmurdo House – Now Ardmurdo (Residential)	Baseline view: This receptor is located on a south-facing slope approximately 0.9km west of the route option. This receptor is enclosed by mature woodland to the north, east and west. There are direct, open views to the south-west over arable land towards the River Don. Predicted effect: Views unlikely due to screening of boundary woodland and topography, however, there is potential for oblique long-range views of the River Don crossing where vegetation and angle of view allows.	Very high receptor sensitivity Negligible change	Minor	M1, M2, M3, M5, M6	Minor
V95	Kinkell Church Area (Recreational)	Baseline view: To the east of this receptor the land rises and obscures the view. Views to the south appear long-distance. Predicted effect: Views to the south will include the River Don crossing.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5, M6	Minor adverse
V96	Fullerton, Murrayfield / Edlerton (Residential)	Baseline view: This receptor group is located approximately 10m to the north of, and immediately adjacent to the existing A96. Views are restricted to the A96 due to noise barrier and boundary vegetation. However, there are no views from Murrayfield to the existing A96 as there are no	High sensitivity receptor No change	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		windows in the south-west gable end of this property. Predicted effect: No views as Kintore Business Park screens the route option to the east. There is additional screening from vegetation at the surrounding properties and north-west of Kintore Business Park.				
V97	West Balbithan, West Balbithan Cottages and East Balbithan (Residential)	Baseline view: This receptor group is located approximately 0.5km south, south-west of the route option. West Balbithan and West Balbithan Cottages have views to the south and to the west toward the River Don flood plain. East Balbithan is screened by farm buildings to the west with boundary vegetation restricts views to the east. Predicted effect: Potential for direct and angled views west to the River Don crossing.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6	**Moderate adverse**
V98	Kintore Business Park (Residential)	Baseline view: This receptor is located approximately 0.3km north-west of the route option and consists of a row of residential bungalow properties, located at the entrance to Kintore Business Park. Views are limited due to boundary vegetation to the north-east and south-west and with boundary walls and vegetation to the south-west of the existing A96.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5, M6	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Views of the route option are screened by existing boundary vegetation and Kintore Business Park buildings. An elevated slope with hedging prevents views to the south-west. There is potential for views to the access road roundabout.				
V99	Oakleigh, Braeriach and Glen Nevis Cottage (Residential)	Baseline view: This receptor group is located approximately 0.2km west of the route option. Views are restricted due to surrounding tree cover. There are partial views through boundary vegetation towards the A96 from Oakleigh. Angled views from Glen Nevis Cottage of A96 are experienced. Predicted effect: Distant views are limited due to topography of the realigned A96 to the east from Glen Nevis Cottage. No views will be experienced from Oakleigh or Braeriach,	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5, M6	Minor adverse
V100	Cairnhall (Residential)	Baseline view: This receptor is located approximately 0.3km east of the route option. Open views are mainly of the existing A96 to the north-east over stone boundary walls and restricted further south-east of the A96 by boundary vegetation. Predicted effect: There will be close-range views of the access road from Tavelty Junction to Kintore Business Park. There is also potential for views east to the River Don crossing.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
V101	Tavelty Farm, Whinstone and Overdon Care Home (Residential)	Baseline view: This receptor is located approximately 0.1km east of the route option and is located to the west of the existing A96. This group of receptors have restricted views due to boundary vegetation along the existing A96. Views from Whinstone is further screened by boundary vegetation to the west with partial views to the existing A96. Tavelty farm is screened by Whinstone and its boundary vegetation. Overdon is at a lower elevation and is screened by boundary vegetation and mature tree lines and separated also by the access road from the A96 to the west. Predicted effect: Restricted views to embankments and cuttings north and north-west of this receptor group mainly from Overdon (care home) (partial, angled) and Whinstone as well as potential for views of possible lighting at Tavelty Junction.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
V102	Core path: Inverurie to Kintore (Recreational)	Baseline view: This path is approximately 2.8km long and part of the Inverurie to Kintore core path, a shared use path which follows the route of the A96 and consists of two sections. This path section is approximately 1.3km long and the views are mainly towards the existing A96 to the north, and the surrounding fields to the south. Predicted effect: Direct views will include embankments, the River Don crossing and Tavelty Junction.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
V103	Kintore Cemetery (Community facility)	Baseline view: This receptor is located approximately 40m west of the route option. Views west from the cemetery to the existing A96 are restricted due to high stone boundary walls. Views from the car parking area are also restricted to the west due to a stone wall and existing A96 boundary vegetation. Predicted effect: Angled views including embankments and filtered views of River Don crossing, however, existing high hedgerows and boundary tree planting help to filter the views and reduce visual intrusion.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**
V104	Balbithan Island (Recreational)	Baseline view: A bird hide on an island on the River Don, south of Balbithan, north-east of Kintore and northeast of Tavelty Farm. It is situated west of the Kintore Golf Club clubhouse located approximately 0.7km east, south-east of the route option at its nearest point. There are open 360-degree views. Predicted effect: Views to the River Don crossing and embankments but some screening from topography at East and West Balbithan.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**
V105	Existing local route: Inverurie to Kintore (Recreational)	Baseline view: The Existing local route is approximately 1.3km long and part of the Inverurie to Kintore link. It is a shared use path which follows the route of the existing A96 over the majority of its length. This part is located on the minor road going past the cemetery to the south of Cairnhall and west of A96.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Views towards the existing A96 are open mainly towards the carriageway to the north and to the surrounding agricultural land to the south. Predicted effect: Views will include Tavelty Junction, embankments and access roads.				
V106	Kintore (Residential)	Baseline view: Kintore village lies to the east of the existing A96. Views to the north-northwest and Tavelty Junction are screened by vegetation. Predicted effect: The route option in this area is within the existing A96 corridor and existing tree cover provides screening to Tavelty Junction.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5, M6	Minor adverse
V107	The Rowans, The Firs, Lindos and Romesh (Residential)	Baseline view: This receptor is located approximately 1.0km west of the route option from Tavelty Junction. Dense vegetation and rises in topography restrict views. Predicted effect: There is potential for long-distance, filtered views to the realigned existing A96.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5, M6	Minor adverse
V108	Forest Road/A96 overbridge (Recreational)	Baseline view: A bridge over the existing A96 west of Kintore, on Forest Road with 360-degree medium to short range views. Predicted effect: Close-range views of new embankments, SuDS basin and under-bridges at	High sensitivity receptor Low magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Tavelty Junction, the realigned existing A96 and quarry access road.				
V109	Residencies at Hillhead or Hillcroft (Residential)	Baseline view: A group of receptors located west of the existing A96 in relatively open land. The existing A96 appears screened from view by the flat nature of the topography combined with vegetation cover. Predicted effect: The route option utilises the existing A96 and potential impact will be minimal with views restricted by vegetation and existing houses.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5, M6	Minor adverse
V110	Core path: Castle Farm to Gauchhill Plantation (Recreational)	Baseline view: This path is 1.8km long and links Kintore town centre to the B994. It crosses the current alignment of the A96 at Castle Road underbridge. The path has open views over the surrounding fields and small wooded areas to the south and west. The views are interrupted by the existing alignment of the A96. Predicted effect: The route option is not expected to impact the views of the path as it sits on the existing route alignment.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5, M6	Minor adverse
V111	Castle Farm, Castlebrook Cottage and Barley House (Residential)	Baseline view: This receptor is located west of the existing A96. The boundary appears to be surrounded by trees restricting views. Predicted effect: The route option utilises the existing A96 boundary vegetation which reduces the	High sensitivity receptor	Minor adverse	M1, M2, M3, M5, M6	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		visual effect. There is potential for medium range views.	Negligible magnitude of change			
V112	Castle of Hallforest (Recreational)	Baseline view: The site is located amongst agricultural fields and small woodlands 0.2km north of the B994. Views towards the existing A96 are partly screened by topography, existing vegetation and the built environment with limited to no partial or angled views to the existing A96 mainly towards the north-east. Predicted effect: The route option will be screened by the existing vegetation, topography and existing buildings with limited views.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5, M6	Minor adverse
V113	Core circular path: Gauchhill Woodland Circular path (Recreational)	Baseline view: This path is approximately 1km long and starts at the south of the roundabout by Gauchhill forest and the south end of Hallforest Avenue. The path lies entirely within the Gauchhill Woodland. The views to the existing A96 are screened by woodland vegetation. Predicted effect: The route option will be screened by existing vegetation and the built environment, with no views to the route option.	High sensitivity receptor No change	No change	n/a	No change
V114	Core path: Gauchhill Circular roadside path	Baseline view: This path is approximately 0.5km long, runs along the B977 and links Gauchhill forest by the south end of Hallforest Avenue to the junction of the B994 and B977. The path has restricted views over the surrounding fields and the existing A96 due	High sensitivity receptor	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	(Recreational)	to the wooded vegetation and built environment and row of trees along both sides of the road. Predicted effect: The route option will be visible from the path that crosses the existing A96. The rest of the path will be mostly screened by the built environment and existing vegetation, with limited to no partial or angled views. The impact is expected to be neutral as the route option sits over the existing A96.	No change			
V115	Proposed core path: Gauchhill Circular roadside path (Recreational)	Baseline view: This path is approximately 0.7km long, runs along the B994, linking the south end of core path 410.01 (Castle Farm to Gauchhill Plantation) to the B994/B977 junction. The path has sequential views over arable fields of the existing A96 embankments where gaps allow and is partially screened by woodland and the built environment. Predicted effect: The route option will be screened by existing vegetation and the built environment but there is potential for partial medium range angled views.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5, M6	Minor adverse
V116	Existing local route: A96 Thainstone to Kintore Foot/Cycleway	Baseline view: This path section is between Port Elphinstone and Kintore, alongside the A96 in the eastbound verge, joining the B987/Northern Road at Ovenden Care Home in Kintore. It is 2.0km long and is a shared use path which follows the route of the existing A96 over the majority of its length. Views towards the existing A96 are open mainly	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		towards the carriageway to the south and to the surrounding agricultural land to the north. Predicted effect: Views will include Tavelty Junction, embankments and access roads.				
V117	Logie Durno Hall/School (Recreational)	Baseline view: Views north-east from the school to Pitscurry Wood are apparent. Views from the village hall to the north may be possible but existing woodland provides screening for both properties to the north. Predicted effect: The route option will be visible where the earthwork cuttings will be seen against Pitscurry Hill. Angled partial views may also be possible from the village hall.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3 M5,	Minor adverse

Table 1.6 provides a description of the baseline view and predicted visual effects on receptors located within the area of Pitcaple to Kintore; Orange route option. The locations of the receptors are shown in Volume 5, Figures 15.12 to 15.13 'Visual Receptors Orange Route Option' and Figure 15.16 'Visual Receptors (Long Range) Orange Route Option'.

Table 1.6 Predicted visual effects for Pitcaple to Kintore Orange Route Option

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
O1	Maiden Stone (Recreational)	Baseline view: This receptor is a carved standing stone with a parking area at the roadside. Views are limited to close range and partially screened by to existing mature trees and topography. Predicted effect Views to the route option are unlikely due to distance and screening, however, recent tree felling has created potential for views to Pitscurry Junction, embankments and the overbridge structure.	High sensitivity receptor Negligible magnitude of change	Minor Adverse	M1, M2, M3, M4, M5, M6, M7	Minor Adverse
O2	Kemmels of Durno (Residential)	Baseline view: Residential properties and an agricultural steading including Beechfield, Craighead and Woodlands with south-facing views restricted by topography e.g. Gallows Hill (135m AOD). Predicted effect: Angled long-range views to the south-east will include cuttings, embankments and the overbridge structure.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M4, M5, M6, M7	Minor adverse
O3	Logie Woods to Durno – Aspirational Core Path	Baseline view: This is an aspirational core path running north from Whiteford/Old Rayne path terminating at Durno. The path has clear open views	High sensitivity receptor	Minor adverse	M1, M2, M3, M4, M5, M6, M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	(Recreational)	contrasted with dense foliage screening at different points. Predicted effect: The dense tree planting and screening by topography between receptor and route option will restrict views.	Low magnitude of change			
O4	Durno (including Knowes of Durno) (Residential)	Baseline view: Group of residential properties at Durno with views to the south and east including Pitscurry Wood. Predicted effect: Long-range views (>1km) to the route option as it crosses Pitscurry Wood including cuttings and Pitscurry Junction, as well as associated access road, embankments. There is also potential for views of the overbridge structure.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M4, M5, M6, M7	Minor adverse
O5	Mill of Wartle (Residential)	Baseline view: A residential dwelling (approx. 95m AOD) situated on a south-facing slope adjacent to the Burn of Wartle with views to the south-east and south-west despite some screening vegetation, including Windyhills (an agricultural steading) on the adjacent east facing slope with short range views to the south-west. Predicted effect: Views to the route option from Windyhills are unlikely due to a combination of distance, topography and vegetation screening. There is potential for long-range oblique and partial	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M4, M5, M6, M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		views of embankments and overbridge at Pitscurry Junction.				
O6	Woodend and Cairnton (Residential)	Baseline view: A group of east-facing residential properties on an east facing slope with open views to Pitscurry Wood. Predicted effect: Open and direct views of the route option ascending to Pitscurry Wood including cuttings, embankments and the overbridge structure.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Moderate adverse**
O7	Whiteford to Old Rayne (Logie Road) (Recreational)	Baseline Views: This core path is approximately 5.6km long and runs east to west linking Whiteford and Old Rayne, views are mostly to the north and south due to the alignment of the path. Predicted effect: Views to the route option will be screened by vegetation and the village of Whiteford, however, through gaps in the vegetation and during winter there is potential for views to Pitscurry Junction, cuttings, access road embankments and overbridge structure.	High sensitivity receptor Low magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6, M7	Minor adverse
O8	Logie Durno Hall/School (Recreational)	Baseline view: Views north-east from the school to Pitscurry Wood are apparent. Views from the village hall to the north may be possible but existing woodland provides screening for both properties to the north. Predicted effect: The route option will be visible where the earthwork cuttings will be seen against	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3 M4, M5, M6, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Pitscurry Hill. Angled partial views may also be possible from the village hall including the access road embankments and underbridge structure.				
O9	Southside and Whiteley (Residential)	Baseline view: Two agricultural steadings, west and north-west of Daviot (approx. 105m AOD) with views to the south-east (Pitscurry Moss (95m AOD)) and south-west including Bennachie. Predicted effect: Long-range oblique views of embankments and overbridge structure at Pitscurry Junction will be experienced.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**
O10	Bridgend (Burn of Durno) (Residential)	Baseline view: An agricultural steading adjacent to the Burn of Durno with substantial screening to the north from farm buildings. There are views to the south including Gallows Hill (177m AOD) and buildings at Pitcaple Quarry to the south-east. Predicted effect: Medium-range views including cuttings and embankments with potential for views of under-bridges at Pitscurry Junction.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**
O11	North of Whiteford (Residential)	Baseline view: Residential properties situated at the northern edge of Whiteford with views north-east to Pitscurry Hill and partial views to Gallows Hill (135m AOD). Predicted effect: Oblique partial views north-east to Pitscurry Wood where the earthwork cuttings and embankments will be seen against Pitscurry Hill.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		There is also potential for angled views to Pitscurry Junction, cuttings, access road embankments and underbridge structure.				
O12	Gatehouse (Residential)	Baseline view: A residential property adjacent to the Burn of Durno with views east to Pitcaple and south to Bennachie. Predicted effect: There is screening from topography, woodland shelterbelts and buildings but there is potential for partial medium range angled views to the route option at Pitscurry Wood including cuttings, access road embankments and possibly the underbridge structure.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**
O13	Glenlogie (Residential)	Baseline view: A residential/agricultural dwelling with views east to Pitscurry Wood with screening from topography, woodland shelterbelts and buildings. Predicted effect: There is potential for partial medium-range angled views to the route option through Pitscurry Wood including Pitscurry Junction, cuttings, access road embankments and overbridge structure.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Moderate adverse**
O14	Burnside of Pitcaple (Residential)	Baseline view: This receptor represents an agricultural steading and a residential property (Eringahr) adjacent to the Burn of Durno with views in all directions. Views to the south include	High sensitivity receptor	Minor adverse	M1, M2, M3, M5, M6, M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Bennachie and Gallows Hill (177m AOD) with some screening from woodland and buildings. Predicted effect: Medium-range open views of the route option between Gallow Hill (135m AOD) to Pitscurry Wood including cuttings and embankments (0.25km-1km distant). There is potential for views of the underbridge structure at Pitscurry Junction. The route option is in cutting at the north-western edge and it is unlikely this receptor will have any views of the route option due to surrounding vegetation view angle and topography. There is potential for views of the underbridge structure at Pitscurry Junction.	Low magnitude of change			
O15	Ar-dachaidh / Bridgend (Pitcaple) (Residential)	Baseline view: This group includes two residential properties and an agricultural steading adjacent to the Burn of Durno with substantial screening to the north from farm buildings. Views to the south may include Gallows Hill (177m AOD). Predicted effect: Angled partial views to the route option will be seen including cuttings and embankments at Pitscurry Cairn (133m AOD) with potential views of Pitscurry Junction. Views of under-bridges are unlikely due to screening by farm buildings or partially screened by boundary vegetation.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
O16	Whiteley (Residential)	Baseline view: An agricultural steading with residential properties west of Mains of Glack with oblique views to the south and west towards Pitscurry Moss. Predicted effect: Views will be oblique and partially screened by existing vegetation and farm buildings but there is potential for angled, medium-range views towards the Pitscurry Junction and associated access road and embankments. Views of the underbridge structure may be screened by embankments.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**
O17	Bennachie House and Glack Farm (Residential)	Baseline view: Receptor group includes Bennachie House and Glack Farm, an agricultural steading. Views to the south-east and south-west of Pitscurry Moss and the Hill of Den. Predicted effect: Medium-range views of embankments and road are likely between Pitscurry Moss and Mackstead until the road turns south. There will be views of Pitscurry Junction, underbridge and associated embankments.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**
O18	Properties at B9001/ Edinmore Drive west of Daviot (Residential)	Baseline view: This group of residential properties are located along Sable Close and Mackenzie Drive. The properties are surrounded by vegetation which restricts views, however, the properties are slightly elevated and Bennachie can be seen in the distance.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Views to the route option will be restricted due to distance and tree cover, however, there is potential for medium to long-range, partial views to the south and south-east of embankments and the underbridge structure at Pitscurry Junction.				
O19	House of Daviot (Recreational)	Baseline view: This path is approximately 0.7km long and links House of Daviot with Wellbrae Road with mostly flat terrain with some undulating topography that restricts any significant long-range views. Predicted effect: Views to the route option are restricted by distance and screening by vegetation and, therefore, unlikely.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M4, M5, M6, M7	Minor adverse
O20	Mossfield (Residential)	Baseline view: A residential/agricultural dwelling with some screening from existing buildings. Predicted effect: Close-range direct views of the route option and embankments will be visible <0.25km away.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
O21	Mackstead (Residential)	Baseline view: Residential/agricultural dwelling with west and south-facing views. Predicted effect: Some screening from adjacent agricultural sheds will restrict visibility but there is potential for views of the route option and embankments.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
O22	Skellarts Croft (Residential)	Baseline view: this receptor represents an agricultural steading and a small group of residential properties adjacent to the Ides Burn and east of Pitscurry Moss. Views to the south and west are partially screened by Broadward steading. Views south-west include Bennachie and Pitscurry Moss. Predicted effect: Long-range angled views of embankments and the overbridge structure at Pitscurry Junction will be experienced to the west. To the south-west, views are screened by Hill of Den (117m AOD).	High sensitivity receptor Low magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**
O23	Broadward (Residential)	Baseline view: An agricultural steading (Stewart Agricultural Ltd) with residential property south of Daviot and north-east of Hill of Den. Views west to Pitscurry Wood are screened by existing buildings and partially obscured by existing topography although trees at Pitscurry Moss appear to be visible. Predicted effect: As the route option crosses Pitscurry Wood and Pitscurry Moss, the embankments and the overbridge structure at Pitscurry Junction are likely to be visible but will be medium range (<1km), partial, oblique and across a limited area. Hill of Den (117m AOD) and associated woodland provides screening to the south-west.	High sensitivity receptor Low magnitude of change	Major adverse	M1, M2, M3, M4, M5, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	**Name**					
O24	Damhead (Residential)	Baseline view: A residential/agricultural dwelling, south-west facing with some screening from associated buildings and topography. Predicted effect: Partial angled medium range views of the route option may be possible, south of Pitscurry Moss and in front of Mackstead.	High sensitivity receptor Medium magnitude of change	Major adverse	M1, M2, M4, M7	**Moderate adverse**
O25	Hill of Den (Residential)	Baseline view: A residential/agricultural dwelling with some screening from existing buildings and mature tree planting. Predicted effect: Screening by mature woodland is likely to restrict visibility to the south and west. Any potential views to the embankments and the overbridge structure at Pitscurry Junction are likely to be partial, oblique and across a limited area.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**
O26	Mill Wood (including the Buzzard Café Project and Nursery). (Recreational)	Baseline view: A centre that provides training and support for adults with learning or physical disabilities within Mill Wood. To the south lies the River Urie and the existing A96 with views over the narrow valley to Gallows Hill (177m) in the south. Views to the north, east and west are screened by the woodland vegetation of Mill wood. There are views of the existing the A96. Predicted effect: Partial angled views of the route option at Pitscurry Junction may be possible through gaps in the woodland cover.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
O27	Pitcaple Castle (Residential)	Baseline view: A south-east facing residential property (late 15th century Tower house and lodge) located in woodland with restricted views. Predicted effect: Views screened by adjacent woodland and, therefore, any likely views will be partial across a limited area. Such views may be discernible but will not constitute a significant element of the view.	High sensitivity receptor Low magnitude of change	Major adverse	M2, M3, M5, M7	**Moderate adverse**
O28	Oldmeldrum to Old Rayne – Route (Recreational)	Baseline view: This circular cycle route is approximately 41.8km long and links Oldmeldrum to Old Rayne. Views towards A96 to the south are screened by the topography and existing vegetation with partial or angled views to the existing A96. Predicted effect: There will be close-range views of cuttings and embankments where the route option crosses the path east of Mill of Pitcaple.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6,	**Major adverse**
O29	Mill of Pitcaple (Residential)	Baseline view: Predominantly a group of south facing residential properties with views to Gallows Hill and River Urie. Predicted effect: Short-range oblique views of SuDS basin, embankments and C76C overbridge and the side road are likely with medium to long-range views of the route option to the south.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6,	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
O30	PRoW (Recreational)	Baseline view: This path is approximately 0.5km long and links Whiteford Rd to the A96 crossing over River Urie at its lowest point. Existing vegetation and undulating landscape allow limited views to the existing A96. Predicted effect: Views to the route option at the highest points of the path with screening by existing vegetation at the lower part of the path, with partial or angled views to proposed River Urie crossing.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6	**Moderate adverse**
O31	Resthivet (Residential)	Baseline view: A group of residential properties with potential views to the west. Predicted effect: Significant screening from mature woodland and topography will reduce the likelihood of significant views. Any potential views will be partial and medium range.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	Minor adverse
O32	Existing local route (Recreational)	Baseline view: This route runs within the woodland east of Pitcaple, south of the existing A96. Existing woodland vegetation and landform gives limited views to the existing A96 from the north-east to the north-west. These views are more open towards the edge of the woodland. Predicted effect: Limited partial to no views from this path as it lies approximately 200m further to the west of the route option and the existing vegetation will provide significant screening.	High sensitivity receptor Negligible magnitude of change	Minor adverse	n/a	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
O33	Gunhill (Residential)	Baseline view: An agricultural steading with adjacent residential property. Predicted effect: Significant screening by existing buildings, woodland and topography is likely to prevent any views of the route option.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M3	Minor adverse
O34	Legatesden Farm including Legatesden House and Resthivet Croft (Residential)	Baseline view: Open views to the south and the River Urie with some screening from existing buildings and woodland. Predicted effect: Open and direct short-range views of the route option, River Urie underbridge and embankments.	High sensitivity receptor High magnitude of change to south.	Major adverse	M1, M2, M3, M5, M6	**Major adverse**
O35	Cherrycroft / Derelict / Mains of Inveramsay (Residential)	Baseline view: An agricultural steading with adjacent residential property. Predicted effect: Significant views are extremely unlikely due to screening from topography and vegetation.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M3	Minor adverse
O36	Govals (Residential)	Baseline view: A residential/agricultural dwelling that occupies an elevated position with views over the River Urie. Predicted effect: Open views to the east of the new SuDS basin between 0.25-1km away. The route	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		option may be partially screened by intervening woodland.				
O37	Arcot (former free church manse, Pitcaple (Residential)	Baseline view: Two-storey cottage c.1.5km west of the existing A96. Restricted views all round due to existing tree cover and topography. Predicted effect: Rising topography with tree cover immediately to the east of the receptor will completely screen the route option to the east.	High sensitivity receptor No change	No change	n/a	No change
O38	Pitcaple Pitbee (Residential)	Baseline view: Early 19th century, two storeys with attic, 3-bay farmhouse. Long-range views to north and west, Medium-range views to south. Close-range views to the east. Predicted effect: Rising topography with tree cover immediately to the east of the receptor will completely screen the route option.	High sensitivity receptor No change	No change	n/a	No change
O39	PRoW (Recreational)	Baseline view: Located near Hillhead of Lethenty, this PRoW connects the bend of a rural road lying 300m south of the minor road (C76C) junction that turns east from B9001 and leads to Oldmeldrum and Lochter visitor centre, 800m east. The PRoW joins the existing local route (V24) south of Hill of Cuttlecraig starting from the point (E: 375855, N: 826168) and continues south for 760m to the Ides Burn at the B9001 where it terminates. The PRoW has views over the surrounding agricultural land, hedgerows and fragments of woodland, to the south	High sensitivity receptor Negligible magnitude of change	Minor adverse	n/a	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		and the west. The existing A96 is screened by topography and woodland vegetation. Predicted effect: There is potential for long-range views of embankments and the River Don crossing.				
O40	Inveramsay Cottages (Residential)	Baseline view: A group of residential properties north-east of Gallows Hill (177m AOD) facing north-east with views over the River Urie. Screening from existing vegetation restricts views to the north. Predicted effects: Short range, direct and angled views south and east to the route option including realigned access road. There is potential for partial views north to the River Urie crossing.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**
O41	Mither Steading / Harlaw Heights (Residential)	Baseline view: A former agricultural steading with a group of new build residential properties facing east. Predicted effect: Significant screening from existing woodland restricts views, any views are unlikely due to topography and screening.	High sensitivity receptor Negligible magnitude of change	Minor adverse	n/a	Minor adverse
O42	Milton of Inveramsay (Residential)	Baseline view: A group of residential / agricultural dwellings. Predicted effect: Short range views west and south to the route option including new realigned access road and SuDS basin and embankments. Screening	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		from existing vegetation will restrict visibility but there is potential for views of Drimmies Junction.				
O43	Woodlands lodge (Residential)	Baseline view: A group of residential properties situated on a plateau (115m AOD) east of the River Urie. Predicted effect: There is potential for medium range views west to the route option and River Urie, with distant views to Bennachie. The existing location on a relatively flat plateau helps reduce the prominence of the route option.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	Minor adverse
O44	Harlaw House and adjacent residential dwellings / agricultural steadings (Residential)	Baseline view: Open views to the west and south-west including Bennachie and the Battle of Harlow site and monument. Predicted effect: Medium range direct views 0.25-1km away from the route option and cuttings/embankments with long-range views to Drimmies Junction. The significance of visual impact is reduced by elevation over the valley influencing the angle of view and there is partial screening from existing buildings and vegetation. Mid Harlaw Farm and the row of south-facing terraced cottages have no views of the route option. Wester Harlaw and West Mains of Harlaw have medium range views of embankments and Drimmies Junction.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
O45	Mill of Inveramsay and Mill Croft (Residential)	Baseline view: A group of residential properties between the existing A96 and River Urie, south and south-east facing with partially filtered views to the west towards Gallows Hill (177m AOD) with arable fields and to the existing A96. Views are less filtered from the elevated windows on the first floor of the properties especially in the winter. Predicted effects: Short range filtered direct and angled views south and west to the route option. Screening from existing vegetation and topography will restrict visibility, but less so from the elevated windows of the properties. Potential for views to the Drimmies Junction.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M5, M7	**Major adverse**
O46	Chapel of Garioch churchyard (Recreational)	Baseline view: Church and surrounding buildings situated approximately .2km west of the existing A96. Views are contained to close-range due to existing buildings and tree cover. Predicted effect: There will be no views to the route option in the east due to existing screening from buildings and vegetation blocking views toward the existing A96.	High sensitivity receptor No change	No change	n/a	No change
O47	Battle of Harlaw (Recreational)	Baseline view: The battlefield is situated on relatively flat land with a slope to the south down to the River Urie with open views west over River Urie Valley and Inverurie, and direct views of the existing A96.	High sensitivity receptor	Moderate adverse	M1, M2, M3, M5, M6, M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: The route option, including Drimmies Junction and associated access roads, cuttings and embankments in front of the overhead power lines will be visible from the site. Further east, it will be screened by topography, existing vegetation and built environment.	Medium magnitude of change			
O48	Battle of Harlaw Monument (Recreational)	Baseline view: Monument and battlefield site views to the west over River Urie Valley to the existing A96. Predicted effect: The route option will be visible including Drimmies Junction and associated access roads, cuttings and embankments in front of the overhead power lines. Further east, it will be screened by topography.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	Minor adverse
O49	Balquhain Mains and cottages (Residential)	Baseline view: A group of residential properties south and east facing. Predicted effect: Medium-range views east to the route option and Drimmies Junction will be possible including the junction access roads, embankments and SuDS basin. This introduces a new feature in the view across a limited area.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**
O50	Balquhain Castle (Recreational)	Baseline view: This receptor includes a scheduled monument and part of a group of residential properties operating as a wedding venue. The receptor group has long-range views to the north over arable fields, individual wind turbines and	High sensitivity receptor	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		undulating landscape. The existing vegetation and topography allow limited views to the existing A96. Predicted effect: The open landscape will allow direct views to the route option, which will be approximately 230m closer than the existing A96.	High magnitude of change			
O51	Netherton Smithy/ Balquhain Smithy/ Croft of Netherton (Residential)	Baseline view: A residential single storey bungalow and agricultural dwelling with north-northwest facing boundary shelterbelts helping to screen views. Predicted effect: Partial oblique views to north-east of Drimmies Junction and associated access roads and embankments may be possible, but boundary shelterbelts help to screen views.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**
O52	Drimmies Cottages (Residential)	Baseline view: A group of north facing residential properties with views along the existing A96. Predicted effect: Direct and open short-range views including Drimmies Junction, access roads, SuDS basin, cuttings and embankments.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**
O53	Netherton of Balquhain (Residential)	Baseline view: A group of residential houses and an agricultural dwelling, this receptor occupies a wide flat plateau in an elevated position with long-range views to Harlow House. The topography restricts views to the existing A96 and River Urie.	High sensitivity receptor Low magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Views to Drimmies Junction are likely to be long-range partial and oblique views.				
O54	Great Inverurie Bike Ride – Route (Recreational)	Baseline view: This circular cycle route is approximately 40.2km long and links Inverurie to Kemnay. It crosses the current alignment of the A96 at an overbridge by St James's Place. There are scenic views past the Inverurie Golf Club grounds and the fields west of the existing A96, heading towards Chapel of Garioch and returning to Inverurie via Burnhervie. Predicted effect: The existing local path will cross over the route option at two points and run alongside it for approximately 2km. The route option will be directly visible for approximately 4km.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**
O55	Middleton of Balquhain (Residential)	Baseline view: A group of east facing residential properties with open views to the route option as it turns south, away from the existing A96. Predicted effect: Direct views to the route option including partial views of Blackhall Road Junction and associated SuDS basin/access roads, roundabout and embankments. Existing tree planting will restrict views to the junction.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
O56	Conglass Farm (Residential)	Baseline view: Situated on a minor road between River Urie and the existing A96 west of Inverurie.	High sensitivity receptor	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Any views to the route option are likely to be partially screened by elevation, topography and substantial woodland planting and will be medium range.	High magnitude of change			
O57	Bruntwood Tap (Residential)	Baseline view: A residential housing estate with three-story town houses and views north-west along the existing A96. Predicted effect: Views to the west are screened by Dillyhill and any views to Drimmies Junction are likely to be long-range and partially obscured by existing tree shelterbelts and topography (>1km). Views less than 1km are likely to be partial and oblique with views of cuttings/embankments to the north of Dillyhill reservoir partially obscured by tree shelterbelts. The route option introduces a new element into views across a limited area. Individual views experienced on this residential estate are subject to angle and elevation.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**
O58	Cairn Wynd (Residential)	Baseline view: A residential housing estate adjacent to existing A96 with views looking North of Dillyhill reservoir to the route option. Predicted effect: Views to Drimmies Junction are likely to be long-range and partially obscured by existing tree shelterbelts and topography (>1km). Views of less than 1km are likely to be partial and oblique with views of cuttings/embankments to the north of Dillyhill reservoir partially obscured by tree	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		shelterbelts. The route option introduces a new element into views across a limited area.				
O59	Core path: Inverurie to Dillyhill (Recreational)	Baseline view: This path is approximately 1.2km long and runs through the residential area to Dillyhill, which is located to the north- west of the Blackhall Roundabout at Inverurie. Views are limited to the surrounding residential built environment. Gradually this changes as the path continues past the residential area to the top of Dilly Hill, with 270' views from the north to the south-east to the surrounding woodland area, arable fields and the existing A96. Predicted effect: There is potential for views from Dilly Hill to the north-west and south-west. Although there is some screening from topography, with open views likely to be experienced including views south to Blackhall Road Junction and access roads and embankments	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
O60	Brockhill View (Residential)	Baseline view: A residential estate on the south-western outskirts of Inverurie with partial views to the south. Predicted effect: Screening from Dillyhill and intervening vegetation significantly restricts views to Blackhall Road Junction. Existing topography also restricts direct open views of the Blackhall Road Junction and consequently any views are likely to be angled and partial. Some long-range views below	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Newseat of Mains may be possible but these will be approximately 0.25-1km away.				
O61	Starrmuir and Dubston (Residential)	Baseline view: Topography and existing buildings and vegetation partially restricts views. Predicted effect: Potential short-range views to the south-west including Blackhall Road Junction and associated embankments. There is potential for views to the south-west although these will be oblique and partially screened.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
O62	Braeseat (Residential)	Baseline view: A residential estate on the south-western outskirts of Inverurie with potential for partial views to the south. Predicted effect: Topography restricts direct open views of Blackhall Road Junction but angled partial views may be possible at medium-range (0.25-1km).	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6, M7	Minor adverse
O63	Mains of Blackhall (Residential)	Baseline view: Topography restricts views, however, there is potential for views to the south-west Predicted effect: There is potential for medium range views to the south-west of Blackhall Road Junction and associated embankments.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6, M7	Minor adverse
O64	Core path: Inverurie to East Aquhorthies	Baseline view: This path is approximately 1.4km long and links Inverurie to the East Aquhorthies. It starts at the junction of the minor road between Alton and Starrmuir and B9170 and crosses the A96	High sensitivity receptor	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	(Recreational)	at Blackhall Roundabout at Inverurie, where it ends. Views to the existing A96 are limited to the eastern-most 200m of the path. Predicted effect: There will be views of the route option including embankments and associated access roads at Blackhall Road Junction approximately 0.1km west of the path. There is limited screening from buildings and existing vegetation and the route option will introduce a new feature across a limited area.	High magnitude of change			
O65	Alton (Residential)	Baseline view: Group of residential properties and agricultural steading. Predicted effects: Short range views <0.25km of Blackhall Road Junction and associated access roads and embankments.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
O66	Road link: Inverurie to East Aquhorthies (Recreational)	Baseline view: This path is approximately 2.9km long and links Inverurie to the East Aquhorthies. It starts at the junction of the minor road between Alton and Starrmuir and B9170 and terminates at the East Aquhorthies. Currently, there are no views to the existing A96, the path offers long views over the rural setting, arable fields, dry stone walls and undulating landscape. Predicted effect: The route option will create a significant new visual element. There is expected to	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		be limited screening by the topography and existing vegetation. Short range open views <0.25km of Blackhall Road Junction, associated access roads and embankments will be experienced.				
O67	Newseat of Manar (Recreational)	Baseline view: This receptor includes a recreational forest trail and car park in a small woodland approximately 0.8km north-east of the East Aquhorthies. Existing woodland vegetation and landform prevents views to the existing A96. Predicted effect: The route option will lie approximately 250m to the east. Views will be partly screened by existing vegetation, but where vegetation allows, partial, angled views will be possible especially towards the edge of the woodland and car park, including views of embankments at Blackhall Road Junction.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Moderate adverse**
O68	East Aquhorthies, stone circle (with car park area 250m N) (Recreational)	Baseline Views: The site has long-range views to the east with tree screening in the midground. Predicted effect: The mid-range tree cover and topography (169m AOD) will prevent any significant views of the route option.	High sensitivity receptor No change	No change	n/a	No change
O69	Sycamore View (Residential)	Baseline view: A residential estate on the south-western outskirts of Inverurie. Predicted effect: Screening from Hill of Ardtannes (159m AOD) and associated woodland. Angled partial views over 1km away may be possible.	High sensitivity receptor Negligible magnitude of change	Minor adverse	n/a	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
O70	Backhill of Davah (Residential)	Baseline view: A group of residential properties north of St James Place at Hill of Ardtannes Predicted effect: Open elevated medium-range views of cuttings and embankments west including angled views of Blackhall Road Junction. Some screening by intervening woodland, however, views to Newseat of Mains and the cutting/embankments are likely, with angled views of the River Don crossing (underbridge and side road) and embankments below the woodland at Haughton and Roquharold Hill (140m AOD).	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
O71	Burnside of Manar (Residential)	Baseline view: A residential/agricultural dwelling adjacent to the existing minor road. Predicted effect: Close-range views <0.25km away of the embankments and potential views to the Blackhall Road Junction, however, screening from existing buildings is likely to reduce the visual effect.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
O72	Core path: Davah Hill Loop (Recreational)	Baseline view: This path is approximately 1.9km long, located to the west of the A96 and north of Inverurie Golf Course. Beginning in the east at Blackhall Roundabout at Inverurie, the westernmost part of the path leads from the rural road to the Hill of Davah following the overhead pylons with views over surrounding agricultural land and woodlands.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: There is limited opportunity for views due to screening from existing vegetation or topography.				
O73	Newseat of Mains (Residential)	Baseline view: A residential/agricultural dwelling overlooking the River Don. Predicted effect: Open and close-range views of River Don crossing and the route option with a new access road and adjacent cutting <0.25km away.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
O74	Inverurie Golf Club (Recreational)	Baseline view: Inverurie Golf Course lies adjacent to and with localised open views of the existing A96. Existing woodland vegetation and topography allows limited views to the existing A96 north to south-east with views of Bruce's Camp hillfort and Haughton to the south. Predicted effect: The route option will be visible in filtered views to the south and south-west with some screening by the existing woodland vegetation and landform.	Medium sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6, M7	Minor adverse
O75	Home Farm (Residential)	Baseline view: A residential property with views to the south and west. Views to the north and east are restricted by existing woodland. Predicted effect: No visibility due to screening of adjacent woodland	High sensitivity receptor No change	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
O76	Manar House (Residential)	Baseline view: Rising topography restricts views to the east. Predicted effect: Topography restricts views towards the route option.	High sensitivity receptor No change	No change	n/a	No change
O77	Braeside (Residential)	Baseline view: A south-west facing residential property with open views over the Don River Valley to Roquharold Hill (140m AOD) including Haughton. Predicted effect: The route option and new access road will be seen at close-range (<0.25km away) including angled views of the proposed River Don crossing in front of Haughton and the cemetery.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
O78	Coldwells Cottage (Residential)	Baseline view: Residential property with an open elevated position with views south overlooking the Don River Valley to Roquharold Hill woodland (140m AOD). Predicted effect: Direct open views to Roquharold Hill and close-range views to the River Don Crossing and embankments at Roquharold Hill woodland (140m AOD) will be visible in close proximity (<0.25km away).	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
O79	Waterside Cottages (Residential)	Baseline view: Residential properties on the north side of the River Don overlooking the river with view to the south.	High sensitivity receptor	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Some screening due to topography and woodland but partial views of the River Don crossing are likely.	High magnitude of change			
O80	St Apollinaris Chapel and burial ground (Recreational)	Baseline view: An ecclesiastical scheduled monument and burial ground lies at the edge of a small wooded area with 180' views from ENE to WSW over the arable fields and River Don. Existing woodland vegetation and topography allow no views to the existingA96. Predicted effect: Within close proximity to the route option and relatively little screening, direct close-range views of the River Don crossing and SuDS basin will be apparent.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
O81	Coldwells (Residential)	Baseline view: Residential property with an open elevated position with views south overlooking the Don River Valley to Roquharold Hill woodland (140m AOD). Predicted effect: Direct open views to Roquharold Hill (140m AOD) and close-range views to the River Don crossing and embankments at Roquharold Hill woodland will be visible in close proximity.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
O82	Proposed core path: Old Kemnay Road (Kemnay - Inverurie)	Baseline view: This path is approximately 5.6km long and will link Inverurie to Kemnay. There are views to the existing A96 limited to the closest point to the north end of the path. Views are screened by the existing vegetation and built environment with limited partial or angled views to the current route	High sensitivity receptor	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	(Recreational)	alignment. The core path route to the south offers long views over the rural setting, arable fields, dry stone walls. Predicted effect: The route option will be visible as it crosses Roquharold Burn and through Roquharold woods south of the River Don.	High magnitude of change			
O83	Haughton (Residential)	Baseline view: A residential/agricultural dwelling situated on the south bank of the River Don facing north. Predicted effect: Screening by existing farm buildings restricts views to the route option along the boundary of Roquharold Hill Woodland to the south and associated embankments <0.25km away. The route option will become the dominant focal point in the view.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
O84	Roquharold and Roquharold Cottages (Residential)	Baseline view: Residential properties and an agricultural steading on the west side of Roquharold Hill (140m AOD) facing south-west Predicted effect: There will be restricted views due to topography and Roquharold Hill woodland.	High sensitivity receptor No change	No change	n/a	No change
O85	Cairnton Farm (Residential)	Baseline view: A residential/agricultural dwelling with predominant south-west views	High sensitivity receptor	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: No views due to screening of topography, agricultural sheds and woodland/shelterbelts.	No change			
O86	PRoW (Recreational)	Baseline view: This path is approximately 2.1km long and links a minor road off the B993 from Wooded Burn to Elphinstone Rd. It follows the River Don and crosses the existing A96 at Old Kemnay Rd. Views to the existing A96 are limited to the crossing point. Past this point, views are screened by the existing vegetation and topography. Predicted effect: The route option will be visible along large sections of the footpath, seen against Roquharold Hill.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
O87	Ardtannes (Residential)	Baseline view: A residential bungalow and adjacent farm steading (adjacent farm steading has screening from adjacent buildings). Predicted effect: Direct open views to Roquharold Hill Woodland (140m AOD) and the route option including embankments/cuttings.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6	**Major adverse**
O88	Bogfur and adjacent cottages (Residential)	Baseline view: An agricultural steading and a pair of residential properties. Predicted effect: Views to the route option are unlikely due to screening of Roquharold Hill	High sensitivity receptor Negligible magnitude of change	Minor adverse	n/a	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		woodland (140m AOD). Any views, if visible, will be partial and at oblique angle.				
O89	Autocentre at Duncan's Forest (Commercial)	Baseline view: A commercial property and a small group of residential properties with views across the Don River Valley to Ardtannes cottage. Predicted effect: Topography and existing woodland combine to restrict any likely views of the route option. Any views, if visible, will be partial.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5,	Minor adverse
O90	St James Walk (Residential)	Baseline view: A group of north facing residential properties situated off St James Walk with limited views of the route option. Predicted effect: Limited partial oblique views due to screening of topography, distance and intervening vegetation.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6	Minor adverse
O91	Ardennan House Hotel (Residential)	Baseline view: Ardennan House Hotel and adjacent group of properties on 'old road' adjacent to the existing A96. Predicted effect: Significant screening by existing woodland prevents views to route option.	High sensitivity receptor No change	No change	n/a	No change
O92	Crichie Cottages and agricultural steading (Residential)	Baseline view: The steading provides some screening at an oblique angle to the residential properties, but they are situated in close proximity to the route option and have views to the east.	High sensitivity receptor	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Direct open views of Thainstone Junction and the associated cutting, embankment, SuDS basin and access roads will be seen north of Shaw Hill and Crichie Plantation. There is some screening vegetation to the farm steading.	High magnitude of change			
O93	Bruce's Camp, hillfort (Recreational)	Baseline view: This site is a prehistoric domestic and defensive scheduled monument approximately 1km south-east of the River Don. It includes the hill and promontory fort; prehistoric ritual and funerary cup marks and lies approximately 0.7km west of the existing A96. Mainly views to the south-east due to screening of the existing woodland vegetation. Predicted effect: Views to the route option will be partly screened by the existing vegetation, but where vegetation allows, partial, angled views will be possible especially from the south-east to the north-west including Thainstone Junction.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M5, M6, M7	**Moderate adverse**
O94	PRoW Unrecorded (Recreational)	Baseline view: This path is approximately 0.2km long and links the side road of B993 to Kemnay Road. It crosses under the existing A96 and the existing vegetation allows views to the south-west. Views to the existing A96 tend to be limited to the crossing point as elsewhere views are mostly screened by the existing vegetation and topography. Predicted effect: The route option will have limited to no effect on the views of this path as the existing	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5, M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		vegetation and topography will provide sufficient screening.				
O95	Railway Terrace (Residential)	Baseline view: Limited views to the west and Shaw Hill beyond the existing A96 due to screening of woodland boundary planting. Predicted effect: Screening from existing vegetation and buildings limits potential views to the route option. Any potential views will be angled views of cuttings and embankments, but these will also be partly screened by Crichie and the topography of Shaw Hill as well as existing woodland planting leading to restricted views.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5, M7	Minor adverse
O96	Port Elphinstone Recreational Park - Playing Field and Play Park (Recreational)	Baseline view: These receptors are recreational grounds that are located in south Port Elphinstone. Views are screened by the existing vegetation surrounding the receptors, with limited to no partial or angled views to the existing A96. Predicted effect: The route option and associated access roads and earthworks are expected to be largely screened by the topography and existing vegetation, with limited to no partial or angled views.	High sensitivity receptor No change	No change	n/a	No change
O97	Thainstone House (Recreational)	Baseline view: This site is a category B listed building that operates as a hotel. Due to the proximity to the existing A96, vegetation and topography, there is potential for partial angled views towards the route option, particularly during	High sensitivity receptor	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		winter when there is less screening effect from trees. Predicted effect: Views to the route option will be partly screened by the existing vegetation, but partial, angled views will be possible especially toward Thainstone Junction and associated access roads and earthworks that are likely to have a visual influence between the hotel and along the drive.	High magnitude of change			
O98	Core path: Druids Field Circular (South Heritage Walk) (Recreational)	Baseline view: This core path is approximately 2.9km long and links the Railway Terrace in the north to Mill Road in the south. It is located to the south-east of Port Elphinstone and part of the path lies adjacent to the Old Canal. Views are screened by the existing vegetation and built environment with limited to no partial or angled views to the current route alignment. Predicted effect: The route option is expected to be largely screened by built environment and existing vegetation, with limited to no partial or angled views. There is potential for limited views of earthwork cuttings at Shaw Hill.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5, M7	Minor adverse
O99	Crichie Business Centre, Mill Road, Mill Lane (Residential)	Baseline view: A group of commercial business premises and residential properties located adjacent to existing A96 between the River Don and the existing A96 south of Inverurie. Predicted effect: Woodland planting along the boundary of the existing A96 screens views,	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		however, the route option will be visible in short range and with partial views of the new access road and embankments through gaps in the vegetation (<0.3km). Medium range views of Thainstone Junction (0.3-1km away) may be possible but are likely to be screened (although the cuttings and embankment higher up the slope will be more prominent and more apparent between Shaw Hill and Crichie and between Crichie Steading and the Thainstone Centre).				
O100	Commercial Park at Port Elphinstone (Commercial)	Baseline view: A commercial business park situated between the existing A96 and the River Don at Port Elphinstone with restricted views. Predicted effect: Significant screening from a combination of topography, woodland and buildings restricts views. However, potential for partial medium-range views of cuttings, embankments between Crichie and Thainstone.	Low sensitivity receptor Medium magnitude of change	Minor adverse	n/a	Minor adverse
O101	Core path: Inverurie to Kintore (Recreational)	Baseline view: This path is approximately 2.8km long and part of the Inverurie to Kintore route, a shared use path which follows the route of the existing A96 over the majority of its length. This path consists of three sections. The first connects Elphinstone Rd. to Mill Rd. north-east of the A96. The second runs from the end of Mill Rd. and parallel to the existing A96 until it crosses over to the northbound side by Thainstone Agricultural Centre roundabout and meets the minor road at the cemetery south of Cairnhall and west of the A96.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5, M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		The third section starts west of the Tavelty Junction and crosses over to B987 (Northern Rd.) until the junction with Lochburne Drive. At Mill Road, views towards the existing A96 are blocked by existing vegetation and the built environment. The section running along the existing A96 has screening from vegetation, while a large area remains fully exposed to traffic with views to nearby agricultural land. The third section follows the existing carriageways with views to the surrounding fields and intermittent lines of trees. Predicted effect: The route option crosses the existing A96 and there is expected to be no significant additional impact to these three footpath sections.				
O102	North Lodge (Residential)	Baseline view: A residential property adjacent to the A96 Thainstone roundabout. The property is well screened next to the existing A96 by woodland and shelterbelt tree planting to the north, south and west. Predicted effect: Views to the access road and SuDS basin east of the lodge will be visible at close-range (<0.25km away) with direct uninterrupted views experiencing the introduction of a new feature.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
O103	Thainstone Agricultural Centre (Commercial)	Baseline view: (including Thainstone Business Centre). Close proximity to route option with some screening by existing woodland. Predicted effect: Adjacent woodland and topography will combine to restrict views of Thainstone Junction, however, the access road and SuDS basin are likely to have a visual effect. Thainstone Business Centre is located on a south-facing slope and views are screened by existing woodland.	Low sensitivity receptor High magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	Minor adverse
O104	Porterhouse Restaurant and Coffee Shop (Commercial)	Baseline view: This site is a restaurant within the grounds of the Thainstone Centre. Despite the very close proximity to the existing A96, existing woodland vegetation and landform allows no views to it. Predicted effect: The route option will be largely screened by the topography and existing vegetation but there is potential for partial and/or angled views of earthworks to the east.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	**Moderate adverse**
O105	Ardlogie and Newton (Residential)	Baseline view: A group of south-facing residential/agricultural dwellings. Predicted effect: Some screening from existing buildings with potential for medium range (0.25-1km away) angled partial views to the SuDS basin and access road.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M4, M6, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
O106	Fullerton / Murrayfield (Residential)	Baseline view: Commercial and residential properties adjacent to the existing A96, between the A96 and the River Don. Predicted effect: Very close-range views of new access roads and SuDS basin adjacent to the existing A96 but may be partially screened by the existing A96 and will only be visible across a limited area.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**
O107	Oakleigh, Braeriach (Residential)	Baseline view: A group of residential properties south of Thainstone Agricultural Centre, situated in St Ann's Forest facing north towards the route option. Predicted effect: The properties are well screened by boundary woodland, however, there is potential for partial, oblique angled views at close-range of access road and SuDS basin in front of Thainstone Agricultural Centre. This will introduce a new element into views across a wide area.	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Major adverse**
O108	Clovenstone, Hillair, Southview, Sunnybank (Residential)	Baseline view: A group of residential properties including Southview, Sunnybank, Clovenstone and Hillair. Predicted effect: Existing woodland and topography combine to prevent any views of the route option.	High sensitivity receptor No change	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
O109	Kintore Business Park (Residential)	Baseline view: A mix of commercial and residential properties adjacent to the existing A96 between the A96 and the River Don. Properties have significant screening from existing buildings and/or woodland boundary planting. Predicted effect: Close-range views of a new SuDS basin and the Kintore access road will be seen (<0.25km).	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**
O110	61 The Long Straight (Residential)	Baseline view: An agricultural steading and new residential housing development. Predicted effect: Screened by topography and existing woodland.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5, M6	Minor adverse
O111	Cairnhall and Cemetery (Residential)	Baseline view: Views north along the existing A96 to Thainstone Business Park. Predicted effect: Some screening from buildings but there is potential for medium range views of the proposed SuDS basin and access road, (0.25-1km away) which will introduce a new feature across a limited area. Additionally, there may be potential longer-range views of the access road at Thainstone House Hotel.	High sensitivity receptor Medium magnitude of change	Moderate adverse	M1, M2, M3, M5, M6	**Moderate adverse**
O112	Black Hillock Loch	Baseline view: No views due to screening by vegetation (Clovenstone woodland) and topography.	High sensitivity receptor	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
	(Recreational)	Predicted effect: South-facing with woodland shelterbelt planting to the north. Very high sensitivity, no views and, therefore, no change.	No change			
O113	Existing local route: Inverurie to Kintore (Recreational)	Baseline view: This cycle path is approximately 1.3km long and part of the Inverurie to Kintore link, a shared use path which follows the existing A96 over the majority of its length. This part consists of two sections. The first is entirely on Mill Road, north-east of the existing A96 and the second is on the minor road going past the cemetery south of Cairnhall and west of A96. Views towards the existing A96 from Mill Rd. Views are blocked by existing vegetation and built environment, with limited to no partial or angled views to the route option. The section by the cemetery is mainly exposed to views towards the carriageway to the north and to the surrounding fields to the south. Predicted effect: The route option is expected to have no impact to visual receptors at these two sections of the path.	High sensitivity receptor No change	No change	n/a	No change
O114	Overdon Care Home and Tavelty Farm (Residential)	Baseline view: Situated adjacent to the existing A96 at the Kintore A96/B977 junction. Predicted effect: Close-range views of a new SuDS basin and the Kintore access road will be seen (<0.25km). The associated traffic will also be seen	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M4, M5, M6, M7	**Moderate adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		at close-range. The route option will introduce a new feature across a wide area.				
O115	Deepdale, Strathyre (Residential)	Baseline view: A group of south-facing residential properties with views beyond the Kintore junction and the existing A96 to Kintore business park. Predicted effect: Views to Kintore access road will be screened by existing woodland boundary planting, however, there is potential for long-range partial views where gaps in woodland occur.	High sensitivity receptor Low magnitude of change	Minor adverse	M1, M2, M3, M5, M6,	Minor adverse
O116	Lochburn Brae (Residential)	Baseline view: Situated alongside the embankment of the existing A96. Predicted effect: Views are mostly screened by existing woodland tree planting, and any likely views will be long-range, partial and oblique (>1km away).	High sensitivity receptor Negligible magnitude of change	Minor adverse	n/a	Minor adverse
O117	Mains of Glack to Daviot (Recreational)	Baseline view: This path is approximately 1km long and links the north edge of Mains of Glack to the side road leading to Kirkstyle Road in Daviot. Existing woodland vegetation, built environment and topography allow limited to no partial or angled views to the existing A96. Predicted effect: The route option is expected to be largely screened by the topography, built environment and existing vegetation, with limited to no partial or angled views.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M1, M2, M3, M5, M6, M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
O118	Daviot: Village to Stone Circle – core path (Recreational)	Baseline view: This core path is approximately 0.3km long and links the Daviot cemetery to the Loanhead of Daviot stone circle, following an L shaped route through the car park. The path lies within a small woodland. Views are partly screened by the existing vegetation. Bennachie is visible to the south-west. Predicted effect: The route option will be partly screened by the topography and existing vegetation with, where possible, partial and/or angled long-distance views.	High sensitivity receptor Low magnitude of change	Moderate adverse	M1, M2, M3, M5, M6, M7	Minor adverse
O119	Road link Daviot Loanhead Stone Circle (Recreational)	Baseline view: This is an approximately 0.4km long path running south to north from Daviot Village to Loanhead stone circle. Medium range views are restricted in places by topography and existing trees. Bennachie is visible to the south-west. Predicted effect: Views are restricted by a combination of distance and screening by existing vegetation but there is potential for partial, angled views to Pitscurry Junction cuttings, access road embankments and overbridge structure.	High sensitivity receptor Negligible magnitude of change	Minor adverse	n/a	Minor adverse
O120	Mounie Castle (Recreational)	Baseline view: This historic castle and the surrounding buildings is a site that appears to be surrounded by vegetation, significantly restricting views.	High sensitivity receptor No change	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Views to the route option will be unlikely due to distance, topography and tree cover screening.				
O121	Fingask House (Residential)	Baseline view: This two-storey house is located approximately 4.4km east of the route option. The property boundary is lined with trees which encloses the views. The existing A96 cannot be seen from the site. Predicted effect: The route option will not be seen from the property due to a combination of distance and tree cover screening.	High sensitivity receptor No change	No change	n/a	No change
O122	Battle of Barra Battle site (Recreational)	Baseline view: A historic battlefield site with mostly wide-open views to the west across flat land with some areas of foliage blocking sightlines in places. Predicted effect: Despite mostly open views, the flat nature of the land combined with distance and some tree screening will prevent views to the route option.	High sensitivity receptor No change	No change	n/a	No change
O123	Keith Hall Garden and Designed Landscape (Residential)	Baseline view: Keith Hall lies slightly north of the confluence of the River Don and River Urie. The area has open views to the west overlooking the town of Inverurie. Views towards the existing A96 to the south-east are screened by the topography, existing vegetation and built environment with angled, partial views to the existing A96.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M5, M7	Minor adverse

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: The route option is expected to have limited to no effect on the views from this receptor due to a combination of screening from existing vegetation, built environment and topography which will provide significant screening. There is potential for angled, partial distant views of cuttings, viewed against Shaw Hill (174m AOD) where a vista occurs through gaps in vegetation.				
O124	Rowantree (Picnic areas, parking, footpath and toilets) (Recreational)	Baseline view: An old turnpike road that links Rowantree to the Bennachie Centre and an alternative route back from Mither Tap (518m AOD). Panoramic views at Hosie's Well. Predicted effect; Significant views to the route option are extremely unlikely due to distance and intervening vegetation.	High sensitivity receptor No change	No change	n/a	No change
O125	Old A'Deen Turnpike Back O' Bennachie – Essons (Recreational)	Baseline view: This path is approximately 5km long and runs north along the eastern edge of Bennachie. The path is at a low elevation similar to the surrounding land. This reduces the opportunity for long-range views. Predicted effect: Views to route option are not possible due to the distance and topography.	High sensitivity receptor No change	No change	n/a	No change
O126	Pittodrie House, Chapel of Garioch (commercial)	Baseline view: Pittodrie is a hotel complex, at the centre of a small country estate landscape, secluded by woodland. Surrounding woodland screens views to east towards existing A96.	High sensitivity receptor No change	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: Views to the route option will be restricted due to distance and screening by significant tree cover.				
O127	Oxen Craig Existing local route (Recreational)	Baseline view: This viewpoint is Bennachie's highest point at 528m AOD. It is very prominent and dominates the skyline. There are panoramic long-distance views. Predicted effect: Any significant views to the route option are unlikely due to distance and screening from existing vegetation.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M5, M7	Minor adverse
O128	Mither Tap Existing local route (Recreational)	Baseline view: This viewpoint is 518m AOD and has an iron age fort at its summit with good views to the north and east. There are also superb views of Bennachie's southern side, where The Gordon Way (O112) traverses the southern flank of Bennachie between the Visitor Centre in the east and Suie Car Park to the west. Predicted effect: Any significant views to the route option are unlikely due to distance and screening from existing vegetation.	High sensitivity receptor Negligible magnitude of change	Minor adverse	M5, M7	Minor adverse
O129	Gordon Way (West - Suie Option) & (East - Bennachie Option) (Recreational)	Baseline view: This path is approximately 18.6km long and runs west to east including a stretch along the southern side of Bennachie. Occasional long-distance views are expected from the route along Bennachie.	High sensitivity receptor No change	No change	n/a	No change

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Predicted effect: There is potential for long-range views toward the route option due to the elevation, however, the views will be partial, obscure and will not be intrusive.				
O130	Bennachie Forest (Recreational)	Baseline view: This path network is approximately 39.2km in length and crosses the Bennachie Hill range that runs west to east with a number of hill tops including Black Hill (430m AOD), Hermit Seat (478m AOD), Watch Craig (493m AOD), Oxen Craig (528m AOD), Garbert Tap (48m AOD), Craigshannoch (418m AOD) and Mither Tap (518m AOD). Predicted effect: Significant views to the route option are extremely unlikely due to distance and intervening vegetation.	High sensitivity receptor No change	No change	n/a	No change
O131	Existing local route: A96 Thainstone to Kintore Foot/Cycleway	Baseline view: This path section is between Port Elphinstone and Kintore, alongside the A96 in the eastbound verge. It is 2.0km long and is a shared use path which follows the route of the existing A96 over the majority of its length. Views towards the existing A96 are open mainly towards the carriageway and surrounding agricultural land to the south-west. Predicted effect: Close-range views of new SuDS basins, the access road to the south-west and	High sensitivity receptor High magnitude of change	Major adverse	M1, M2, M3, M5, M6, M7	**Major adverse**

Visual receptor		Description of baseline view and predicted effects	Combined sensitivity and magnitude	Predicted visual effect	Assumed secondary mitigation	Predicted residual visual effect
Ref.	Name					
		Thainstone junction with associated loss of vegetation.				

Appendix A16.1 **Gazetteer of Cultural Heritage Assets**

Appendix A16.1 **Gazetteer of Cultural Heritage Assets**

The cultural heritage assets identified within the Cyan route option study areas have been presented within Table 1.1. It also details the location, type, designation, and sensitivity value of the asset along with a description of the asset. The asset names provided within Tables 1.1 to 1.6 are the formal names provided by Historic Environment Scotland from the scheduling designation. The asset name cites the place name first and then provides a location. For example Colpy Cottage, palisaded enclosure 300m S of, means palisaded enclosure 300m S of Colpy Cottage.

Table 1.1 Cyan Route Option: Cultural Heritage Assets identified within the Study Areas (Volume 5, Figures 16.1-16.2)

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
SM11511	Colpy Cottage, palisaded enclosure 300m S of	Archaeological Remains	364161	832880	Scheduled Monument	High	This monument comprises an enclosed settlement of prehistoric date, visible as a cropmark on oblique aerial photographs. The monument is located on a shallow slope within a cultivated field 300m south of Colpy Cottages and west of the River Urie. The palisaded enclosure comprises a narrow ditch, circular on plan, with a diameter of 30m. To the north north-east a second palisaded ditch appears to run from the edge of the first. This ditch can be traced as a circular segment with a diameter of 28m. Such palisaded enclosures are characteristic of the first half of the first millennium BC. There is no visible evidence of internal features, but this type of site is likely to be a former settlement. The second palisaded ditch may either be an annexe to the first enclosure or an earlier palisaded enclosure.	Yes	Yes
SM11513	Woodside, hut circle 300m W of	Archaeological Remains	363754	833433	Scheduled Monument	High	This monument comprises the upstanding remains of several hut circles and associated banks of prehistoric date, visible as upstanding features. They are located on a natural terrace above a moderate to steep slope. Two of the hut circles stand to the south of an area of commercial forestry, while the other hut circles survive within a clearing within the forestry. Fragments of associated stone banks survive between the hut circles.	-	Yes
LB2960	Culsalmond Old Parish Church, Culsalmond Burial Ground	Historic Building	365007	832941	Category A Listed	High	Rectangular church dated 1791 with 17th century belfry. The church was abandoned in 1938 and is now roofless. Stands at the northern edge of small burial ground.	-	Yes
LB2964	Williamston House	Historic Building	364835	831698	Category B Listed	Medium	Two-storey Grecian style country house dated 1830 and with two wings added 1850. Forms part of Williamston House Inventory Garden and Designed Landscape (GDL386).	-	Yes
LB2965	Williamston Home Farm	Historic Building	364925	831790	Category B Listed	Medium	Courtyard plan farmstead with dovecot dated to the early 19th century. Forms part of Williamston House Inventory Garden and Designed Landscape (GDL386).	-	Yes
LB30	Mill-House of Williamston	Historic Building	364612	831092	Category C Listed	Low	Early 19th century two-storey mill. Forms part of Williamston House Inventory Garden and Designed Landscape (GDL386).	-	Yes
LB2961	Mort House Culsalmond Burial Ground	Historic Building	365051	832954	Category C Listed	Low	One storey on subterranean basement mort house dated to the 19th century. Stands to the east of Culsalmond Old Parish Church (LB2960) and within the north-east corner of a small burial ground.	-	Yes
GDL386	Williamston House	Historic Landscape	364836	831836	Inventory of Garden and Designed Landscape (GDL)	High	Designed landscape located on the south-west facing slopes above (north of) the River Urie covering an area of approximately 100ha. The designed landscape forms the setting for Category B Listed Williamston House and Williamston Home Farm, and Category C Listed Williamston Mill. Williamston House stands at the centre of the designed landscape surrounded by woodland, which provides a sheltered location for the house and its formal gardens and also provides some contrast to the surrounding arable farmland. The designed landscape, forming of parkland, woodland policies and enclosed formal gardens has high value as a rare example of the artist Theodore Haughton's garden design.	Yes	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
NJ53NE0009	Ram stone, Stone, Boundary Bank	Archaeological Remains	357323	836155	Regionally Significant Historic Environment Record (HER) Site	Medium	A large boulder (glacial erratic) which stands at the top of an embankment beside the main road and embedded in the possible remains of an ancient bank. The stone has markings on its south face in the form of vertical and horizontal grooves and the top of the stone has been hollowed out. Given the alignment of the bank with the current boundary between the two fields to the north its likely interpretation is as a medieval or later boundary.	-	Yes
NJ53NE0012	Slioch, Cropmark Site	Archaeological Remains	356112	838103	Regionally Significant HER Site	Medium	Three very small rectangular/square cropmarks.	Yes	Yes
NJ63SE0022	Hill of Tillymorgan, Slate Quarries	Archaeological Remains	365293	834742	Regionally Significant HER Site	Medium	The remains of former slate quarries and associated bothies surviving at the summit of Hill of Tillymorgan. The quarries were established in the 18th century and continued to operate into the late 19th century. In the early to mid 19th century there were eight quarries in full operation on the hill, the best slate found at a depth of 4.5m to 9.1m.	Yes	Yes
NJ63SW0045	Foudland, Slate Quarries	Archaeological Remains	360867	833619	Regionally Significant HER Site	Medium	The remains of former slate quarries spread across the summit of Hill of Foudland. The area is pocketed with small quarry pits with associated trackways and a number of small bothies (or shelters) surviving beside the quarries. The slate quarries were opened in 1754 and they were at their peak in the mid 18th century, producing almost one million hand-split slates per year. The turn of the 20th century saw a slump in the building industry and the Foudland slate quarries closed 100 years ago. The quarries supplied slate for buildings within a 50 mile radius (the limit for a horse and cart), including Balmoral Castle.	-	Yes

The cultural heritage assets identified within the Red route option study areas have been presented within Table 1.2. It also details the location, type, designation, and sensitivity value of the asset along with a description of the asset.

Table 1.2 Red Route Option: Cultural Heritage Assets identified within the Study Areas (Volume 5, Figures 16.3-16.4)

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/ Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
SM11511	Colpy Cottage, palisaded enclosure 300m S of	Archaeological Remains	364161	832880	Scheduled Monument	High	The remains of an enclosed settlement of prehistoric date, visible as a cropmark on oblique aerial photographs. The monument is located on a shallow slope within a cultivated field 300m south of Colpy Cottages and west of the River Urie. The palisaded enclosure comprises a narrow ditch, circular on plan, with a diameter of 30m. To the north north-east a second palisaded ditch appears to run from the edge of the first. This ditch can be traced as a circular segment with a diameter of 28m. Such palisaded enclosures are characteristic of the first half of the first millennium BC. There is no visible evidence of internal features, but this type of site is likely to be a former settlement. The second palisaded ditch may either be an annexe to the first enclosure or an earlier palisaded enclosure.	Yes	Yes
SM11513	Woodside, hut circle 300m W of	Archaeological Remains	363754	833433	Scheduled Monument	High	The earthwork remains of two hut circles and associated banks of prehistoric date, located on a natural terrace above a moderate to steep slope. Two of the hut circles stand to the south of an area of commercial forestry, while the other hut circles survive within a clearing within the forestry. Fragments of associated stone banks survive between the hut circles.	-	Yes
LB2960	Culsalmond Old Parish Church, Culsalmond Burial Ground	Historic Building	365007	832941	Category A Listed	High	Rectangular church dated 1791 with 17th century belfry. The church was abandoned in 1938 and is now roofless. Stands at the northern edge of small burial ground.	-	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/ Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
LB2964	Williamston House	Historic Building	364835	831698	Category B Listed	Medium	Two-storey Grecian style country house dated 1830 and with two wings added 1850. Forms part of Williamston House Inventory Garden and Designed Landscape (GDL386).	-	Yes
LB2965	Williamston Home Farm	Historic Building	364925	831790	Category B Listed	Medium	Courtyard plan farmstead with dovecot dated to the early 19th century. Forms part of Williamston House Inventory Garden and Designed Landscape (GDL386).	-	Yes
LB30	Mill-House of Williamston	Historic Building	364612	831092	Category C Listed	Low	Early 19th century two-storey mill. Forms part of Williamston House Inventory Garden and Designed Landscape (GDL386).	-	Yes
LB2961	Mort House Culsalmond Burial Ground	Historic Building	365051	832954	Category C Listed	Low	One storey on subterranean basement mort house dated to the 19th century. Stands to the east of Culsalmond Old Parish Church (LB2960) and within the north-east corner of a small burial ground.	-	Yes
GDL386	Williamston House	Historic Landscape	364836	831836	GDL	High	Designed landscape located on the south-west facing slopes above (north of) the River Urie covering an area of approximately 100ha. The designed landscape forms the setting for Category B Listed Williamston House and Williamston Home Farm, and Category C Listed Williamston Mill. Williamston House stands at the centre of the designed landscape surrounded by woodland which provides a sheltered location for the house and its formal gardens and also provides some contrast to the surrounding arable farmland. The designed landscape, forming of parkland, woodland policies and enclosed formal gardens has high value as a rare example of the artist Theodore Haughton's garden design.	Yes	Yes
NJ53NE0009	Ram stone, Stone, Boundary Bank	Archaeological Remains	357323	836155	Regionally Significant HER Site	Medium	A large boulder (glacial erratic) which stands at the top of an embankment beside the main road and embedded in the possible remains of an ancient bank. The stone has markings on its south face in the form of vertical and horizontal grooves and the top of the stone has been hollowed out. Given the alignment of the bank with the current boundary between the two fields to the north its likely interpretation is as a medieval or later boundary.	-	Yes
NJ53NE0012	Slioch, Cropmark Site	Archaeological Remains	356112	838103	Regionally Significant HER Site	Medium	Three very small rectangular/square cropmarks.	Yes	Yes
NJ63SW0045	Foudland, Slate Quarries	Archaeological Remains	360867	833619	Regionally Significant HER Site	Medium	The remains of former slate quarries spread across the summit of Hill of Foudland. The area is pocketed with small quarry pits with associated trackways and a number of small bothies (or shelters) surviving beside the quarries. The slate quarries were opened in 1754 and they were at their peak in the mid 18th century, producing almost one million hand-split slates per year. The turn of the 20th century saw a slump in the building industry and the Foudland slate quarries closed 100 years ago. The quarries supplied slate for buildings within a 50 mile radius (the limit for a horse and cart), including Balmoral Castle.	Yes	Yes

The cultural heritage assets identified within the Pink route option study areas have been presented within Table 1.3. It also details the location, type, designation, and sensitivity value of the asset along with a description of the asset.

Table 1.3 Pink Route Option: Cultural Heritage Assets identified within the Study Areas (Volume 5, Figures 16.5-16.6)

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/ Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
SM13	Candle Hill, stone circle 600m SE of Old Rayne	Archaeological Remains	367988	827999	Scheduled Monument	High	The disturbed remains of a recumbent stone circle standing on the north-east side of a public road and a little to the east side of the summit of Candle Hill. In the early 19th century the circle comprised of at least ten stones, but today only eight remain. The recumbent has fallen onto its back on the south	-	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/ Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
							side of the ring and the two flankers which have suffered at the hands of stone-breakers and are lying prostrate. The single orthostat (upright stone) that remains standing is on the south-east arc, while the other four orthostats are displaced and now lie immediate north of the western flanker.		
SM83	Newton House, inscribed stone and symbol stone 90m E of	Archaeological Remains	366239	829728	Scheduled Monument	High	Two early Pictish symbol-bearing stones, both re-used prehistoric standing stones that have been erected close to the east side of Newton House. The first known as 'Newton Stone' is of blue gneiss c. 2m high and bears two inscriptions, a Pictish mirror symbol and a spiral. The second stone is a roughly, pillar-shaped blue-grey gneiss, c. 2m high bearing a notched double-sic over a serpent and Z-rod. Prior to its move to its present location this stone is said to have been located on the march between Newton and Rothney.	-	Yes
SM4123	Durno, Roman temporary camp, 420m ESE of Westerton	Archaeological Remains	369860	827187	Scheduled Monument	High	This monument comprises the cropmark remains of a Roman temporary camp, surviving as the buried deposits of the camp's defences, visible on aerial photography and the interior area bounded by them. The camp at Durno covers a substantial area currently used mainly for arable farming, but also with some plantation forestry, stock fields and paddocks. It lies across the summits of three small hills on the east bank of the River Urie. The camp represents the largest Roman temporary camp north of the Antonine wall and although its south-east corner is yet to be accurately located, projections of the surviving ditch features give measurements of c. 980m by c. 700m, enclosing an area of up to 59ha. There are five known entrances to the interior of the camp, each with a traverse, in the form of a short section of bank and ditch a few metres outside the entrance gap, blocking any direct route to the interior of the camp. Excavations of the camp have revealed a 3.5m wide ditch enclosing the camp on its south end.	Yes	Yes
SM12113	The Law, cairn 175m NNW of East Law	Archaeological Remains	370170	828041	Scheduled Monument	High	The earthwork remains of a Bronze Age burial cairn that stands at the summit of The Law. The cairn, which measures c. 16m in diameter and 0.8m high, and the remains of a kerb are visible on its southern arc.	Yes	Yes
SM12137	Newton of Lewesk, enclosure 165m ESE of	Archaeological Remains	369479	827914	Scheduled Monument	High	The remains of a rectilinear enclosure, with some evidence for a second similar enclosure, surviving as cropmarks visible on aerial photographs. The rectilinear enclosure lies on the south slope of an unnamed hill in an area of cultivated land. It measures c. 80m by c. 60m within a ditch c. 2m wide. Entrances are visible midway along the north and south sides of the enclosure. It is likely to be of prehistoric or early historic date. A possible second enclosure of similar dimensions is present around 15m to the north-west from the first.	Yes	Yes
SM12302	Pitscurry, cairn 410m N of	Archaeological Remains	372590	827231	Scheduled Monument	High	The earthwork remains of a Bronze Age burial cairn that survives as a brash-covered mound standing at the summit of an unnamed hill. The caim measures c. 6m in diameter and 0.5m high. There are only a few stones of the cairn visible and there is no evidence for any distinctive features such as a kerb.	Yes	Yes
SM12924	Old Rayne, Episcopal manse and moat 45m ENE of Old Rayne School	Archaeological Remains	367541	828470	Scheduled Monument	High	The low-relief earthwork remains of a moat that encloses the buried remains of an Episcopal manor house. The remains are located in a formerly cultivated field c. 30m east of Old Rayne School. The complex dates to the later medieval period, with occupation possibly from the mid 12th to mid 16th centuries. The moated enclosure is c. 90m north to south and up to 80m east to west, although the western parts of the site have been built upon by the village school and housing. Excavations of the monument in 1990 and 2008 identified the course of the moat and revealed the remains of buildings on top of the mound.	-	Yes
LB16019	Market Cross, Old Rayne	Historic Building	367467	828308	Category A Listed	High	17th century market cross comprising an octagonal shaft (with wrought iron final) on five circular steps.	-	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/ Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
LB2962	Newton House	Historic Building	366148	829723	Category B Listed	Medium	Three-storey country house dated to the late 17th century (doorway inscribed AD/JD 1778) with front doorway and two wings to the rear. Forms part of Newton House Inventory Garden and Designed Landscape (GDL300).	-	Yes
LB2963	Garden Walls, Newton House	Historic Building	366452	829700	Category B Listed	Medium	Garden wall constructed from brick with stone cope, three (formerly four) walls dividing the garden; terminating in stone piers. Back-wall of former greenhouse dated 1846. Forms part of Newton House Inventory Garden and Designed Landscape (GDL300).	-	Yes
LB2964	Williamston House	Historic Building	364835	831698	Category B Listed	Medium	Two-storey Grecian style country house dated 1830 and with two wings added 1850. Forms part of Williamston House Inventory Garden and Designed Landscape (GDL386).	-	Yes
LB2965	Williamston Home Farm	Historic Building	364925	831790	Category B Listed	Medium	Courtyard plan farmstead with dovecot dated to the early 19th century. Forms part of Williamston House Inventory Garden and Designed Landscape (GDL386).	-	Yes
LB16002	Mill of Bonnyton	Historic Building	368305	829331	Category B Listed	Medium	Early 19th century two-storey and attic, L-plan Meal Mill built into the bank. Single frame 6-spoke mid-breast iron wheel dated "1835 Grandholm Foundry" in west gable. Gabled loft entrance opening to bank at north. Small lean-to on south. Still retains 2 pairs of meal stones, oat bruiser, pearl barley machine and drying kiln.	Yes	Yes
LB16003	The Ploughman's Society Hall	Historic Building	367546	829341	Category B Listed	Medium	Two-storey, 5-bay range probably built c. 1830 for the Ploughman's Society. Squared granite with door off-centre left, 2 windows to right one to left, 4 in first floor with plaque between 2 centre windows. Windows in gables; gable-end stacks, straight skews, slate roof.	Yes	Yes
LB30	Mill-House of Williamston	Historic Building	364612	831092	Category C Listed	Low	Early 19th century two-storey mill. Forms part of Williamston House Inventory Garden and Designed Landscape (GDL386).	Yes	Yes
LB2825	Logie Durno Church and Churchyard	Historic Building	370433	826398	Category C Listed	Low	Foundations of rectangular church abandoned in 1599.One granite tablet dated 1720 in north wall, few other stones of note.	-	Yes
GDL300	Newton House	Historic Landscape	366284	829632	GDL	High	This designed landscape stands on rising ground overlooking the River Urie which flows through the park. It forms the setting for Category B Listed Newton House and associated walled garden. The house stands at the centre of the designed landscape overlooking parkland to the south. The gardens were originally laid out in the 18th and 19th centuries, but the house was occupied by troops during World War II who caused some devastation and the gardens were restored in the 1950s. The design of the walled garden by the artist Alec Parkin-Moore gives the designed landscape outstanding value as a Work of Art and the woodland policies and open parkland provide some scenic value to the surrounding landscape.	Yes	Yes
GDL386	Williamston House	Historic Landscape	364836	831836	GDL	High	Designed landscape located on the south-west facing slopes above (north of) the River Urie covering an area of approximately 100ha. The designed landscape forms the setting for Category B Listed Williamston House and Williamston Home Farm, and Category C Listed Williamston Mill. Williamston House stands at the centre of the designed landscape surrounded by woodland which provides a sheltered location for the house and its formal gardens and also provides some contrast to the surrounding arable farmland. The designed landscape, forming of parkland, woodland policies and enclosed formal gardens has high value as a rare example of the artist Theodore Haughton's garden design.	Yes	Yes
NJ62NE0025	Lawfolds, Cropmark Site	Archaeological Remains	369757	827906	Regionally Significant HER Site	Medium	Cropmark of a ring ditch.	Yes	Yes
NJ72NW0010	Whiteford, Moated Enclosure	Archaeological Remains	372361	826255	Regionally Significant HER Site	Medium	Remains of a motte or medieval moated enclosure. Very little recognisable now remains, but an old castle is said to have stood here at one time. The	-	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/ Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
							foundations of an old building, together with a portion of the earthwork, were removed some years before 1867. There is a tradition of it having been a Roman camp, however there is nothing obviously Roman at the site. The north and west 'ramparts' are two hollows which probably represent the spread remains of artificial ditches c.20m wide; the south-east 'rampart' appears to be merely a natural scarp and there is no trace of south 'rampart'.		
NJ72NW0055	Glenlogie, Cropmark Site	Archaeological Remains	372009	827020	Regionally Significant HER Site	Medium	Linear cropmarks are visible on aerial photographs in this area, including one corner of a possible rectilinear enclosure. Initially thought to be potentially be Roman in date, however, the cropmarks may have been created by more recent drainage.	Yes	Yes
NJ72NW0162	Ferniebrae, Gilmore Stone	Archaeological Remains	371333	826940	Regionally Significant HER Site	Medium	A rock with a 19th century inscription dedicated to Alexander Gilmore, who previously farmed at Ferniebrae. The inscription reads 'A GILMORE 1893' accompanied by a bow and arrow symbol alongside the lettering. The bow and arrow is the symbol of the Order of the Secret Monitor, a masonic order. The carver, Alexander Gilmore, worked as a quarrier stonemason at Pitcaple as well as a ploughman at Old Rayne. The symbol may indicate a link with the Masonic Freefield Aberdeenshire Plough Society.	Yes	Yes
NJ63SE0059	Freefield House	Historic Landscape	367521	831030	Non-Inventory Designed Landscape (NIDL)	Medium	The remains of a 17th to 19th century designed landscape forming the setting for Category B Listed Freefield House. The designed landscape comprises of a long avenue that runs from the house to the south south-west and small areas of woodland that surrounds Freefield House.	Yes	Yes
NJ72NW0102	Pitcaple Castle	Historic Landscape	372656	826047	NIDL	Medium	The remains of a designed landscape associated with Category A Listed Pitcaple Castle. The designed landscape includes fragmentary parkland, veteran trees, woodland policies and avenues. The castle and possibly the estate boundaries date back to the medieval period.	-	Yes
NJ72NW0106	Logie House	Historic Landscape	370512	826223	NIDL	Medium	The remains of a 17th to 19th century designed landscape associated with Category B Listed Logie House Hotel. The designed landscape includes fragmentary parkland and woodland policies that surround several listed structures associated with Logie House, including Logie House Walled Garden, Logie House Dovecot and Logie House Lodge.	-	Yes

The cultural heritage assets identified within the Brown route option study areas have been presented within Table 1.4. It also details the location, type, designation, and sensitivity value of the asset along with a description of the asset.

Table 1.4 Brown Route Option: Cultural Heritage Assets identified within the Study Areas (Volume 5, Figures 16.7-16.8)

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/ Category	Value / Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
SM13	Candle Hill, stone circle 600m SE of Old Rayne	Archaeological Remains	367988	827999	Scheduled Monument	High	The disturbed remains of a recumbent stone circle standing on the north-east side of a public road and a little to the east side of the summit of Candle Hill. In the early 19th century the circle comprised of at least ten stones, but today only eight remain. The recumbent has fallen onto its back on the south side of the ring and the two flankers which have suffered at the hands of stone-breakers and are lying prostrate. The single orthostat (upright stone), that remains standing, is on the south-east arc, while the other four orthostats are displaced and now lie immediate north of the western flanker.	-	Yes
SM66	Logie House, 3 symbol stones 160m W of	Archaeological Remains	370334	825889	Scheduled Monument	High	Three carved slabs of whinstone, which formerly lay horizontally near to one another on the Moor of Carden; subsequently they were built into a plantation wall, and then eventually were moved to their present position in the garden of Logie House, c. 160m west of the house. The stones are all inscribed with Pictish symbols.	-	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/ Category	Value / Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
SM83	Newton House, inscribed stone and symbol stone 90m E of	Archaeological Remains	366239	829728	Scheduled Monument	High	Two early Pictish symbol-bearing stones, both re-used prehistoric standing stones that have been erected close to the east side of Newton House. The first known as 'Newton Stone' is of blue gneiss c. 2m high and bears two inscriptions, a Pictish mirror symbol and a spiral. The second stone is a roughly pillar-shaped blue-grey gneiss, c. 2m high bearing a notched double-sic over a serpent and Z-rod. Prior to its move to its present location this stone is said to have been located on the march between Newton and Rothney.	-	Yes
SM4123	Durno, Roman temporary camp, 420 ESE of Westerton	Archaeological Remains	369860	827187	Scheduled Monument	High	This monument comprises the cropmark remains of a Roman temporary camp, surviving as the buried deposits of the camp's defences, visible on aerial photography and the interior area bounded by them. The camp at Durno covers a substantial area currently used mainly for arable farming, but also with some plantation forestry, stock fields and paddocks. It lies across the summits of three small hills on the E bank of the River Urie. The camp represents the largest Roman temporary camp north of the Antonine wall and although its south-east corner is yet to be accurately located, projections of the surviving ditch features give measurements of c. 980m by c. 700m, enclosing an area of up to 59ha. There are five known entrances to the interior of the camp, each with a traverse, in the form of a short section of bank and ditch a few metres outside the entrance gap, blocking any direct route to the interior of the camp. Excavations of the camp have revealed a 3.5m wide ditch enclosing the camp on its south end.	Yes	Yes
SM12115	Wester Shevock, cairn 385m S of	Archaeological Remains	366456	828281	Scheduled Monument	High	The earthwork remains of a Bronze Age burial cairn situated on a low rise at the northeast end of a ridge in an area of uncultivated scrubland just north of Pitmachie village. The cairn comprises a turf-covered mound measuring c. 9m in diameter and c. 0.5m high.	-	Yes
SM12116	Brownhills, cairns 120m N of	Archaeological Remains	365971	827972	Scheduled Monument	High	The earthwork remains of two Bronze Age burial cairns, of conspicuously small size, sited in an area of cultivated land to the south of the summit of a small, unnamed hill. The cairns are both small turf-covered mounds, sited about 10m apart. The south-west of the pair measures c. 5m in diameter and 0.4m high. The other measures c. 4m in diameter and 0.3m high.	-	Yes
SM12302	Pitscurry, cairn 410m N of	Archaeological Remains	372590	827231	Scheduled Monument	High	The earthwork remains of a Bronze Age burial cairn that survives as a brash-covered mound standing at the summit of an unnamed hill. The cairn measures c. 6m in diameter and 0.5m high. There are only few stones of the cairn visible and there is no evidence for any distinctive features such as a kerb.	Yes	Yes
SM12924	Old Rayne, Episcopal manse and moat 45m ENE of Old Rayne School	Archaeological Remains	367541	828470	Scheduled Monument	High	The low-relief earthwork remains of a moat that encloses the buried remains of an Episcopal manor house. The remains are located in a formerly cultivated field c. 30m east of Old Rayne School. The complex dates to the later medieval period, with occupation possibly from the mid 12th to mid 16th centuries. The moated enclosure is c. 90m north to south and up to 80m east to west, although the western parts of the site have been built upon by the village school and housing. Excavations of the monument in 1990 and 2008 identified the course of the moat and revealed the remains of buildings on top of the mound.	-	Yes
LB16019	Market Cross, Old Rayne	Historic Building	367467	828308	Category A Listed	High	17th century market cross comprising an octagonal shaft (with wrought iron final) on five circular steps.	-	Yes
LB16134	Westhall House	Historic Building	367343	826397	Category A Listed	High	16th century L plan house extended at east end in 17th century with round tower at south-east angle. Mostly three-storeys with 19th century additions at east end and rear.	-	Yes
LB2826	Logie Durno Churchyard, Dalrymple Horn	Historic Building	370408	826652	Category B Listed	Medium	Square enclosure dated to c.1798. Gothic west front with archway.	Yes	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/ Category	Value / Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
	Elphinstone Burial Enclosure								
LB2827	Mill of Durno, Grain Mill	Historic Building	371622	825680	Category B Listed	Medium	Circa 1800, three-fstorey in bank, embankment to top floor. Rectangular in plan, brick kiln with vent at south end. Double-framed 10' start and awe wheel west.	-	Yes
LB2857	Logie House Hotel	Historic Building	370508	825859	Category B Listed	Medium	Three-storey house with circular angle tower originally constructed 1680, with two-storey building added to north side of court c.1740. Original block then extended c. 1760, a south-east wing was added slightly later, a two-store drawing room wing was added c. 1770-80 and a north-west dining room wing added at south-west c.1785.	-	Yes
LB2859	Logie House, Walled Garden	Historic Building	370229	825929	Category B Listed	Medium	Brick, English garden bond, east and west walls in courses sloping with ground. Dated to c.1770/80. Granite dressings at doorways, circular Chine 'Moon arch' in the centre of the south wall and two pairs of Chinese dragons in upper terrace. Outhouse at back of north wall.	-	Yes
LB2860	Logie House, Doocot	Historic Building	370180	826157	Category B Listed	Medium	18th century dovecot.	-	Yes
LB2962	Newton House	Historic Building	366148	829723	Category B Listed	Medium	Three-storey country house dated to the late 17th century (doorway inscribed AD/JD 1778) with front doorway and two wings to the rear. Forms part of Newton House Inventory Garden and Designed Landscape (GDL300).	-	Yes
LB2963	Garden Walls, Newton House	Historic Building	366452	829700	Category B Listed	Medium	Garden wall constructed from brick with stone cope, three (formerly four) walls dividing the garden; terminating in stone piers. Back-wall of former greenhouse dated 1846. Forms part of Newton House Inventory Garden and Designed Landscape (GDL300).	-	Yes
LB2964	Williamston House	Historic Building	364835	831698	Category B Listed	Medium	Two-storey Grecian style country house dated 1830 and with two wings added 1850. Forms part of Williamston House Inventory Garden and Designed Landscape (GDL386).	-	Yes
LB2965	Williamston Home Farm	Historic Building	364925	831790	Category B Listed	Medium	Courtyard plan farmstead with dovecot dated to the early 19th century. Forms part of Williamston House Inventory Garden and Designed Landscape (GDL386).	-	Yes
LB16135	Pitmachie Farmhouse (Formerly Pitmachie Inn) and Stables	Historic Building	367149	828213	Category B Listed	Medium	Two-storey farmhouse, originally Inn, dated 1710, with single-storey annexe to west.	Yes	Yes
LB30	Mill- House of Williamston	Historic Building	364612	831092	Category C Listed	Low	Early 19th century two-storey mill. Forms part of Williamston House Inventory Garden and Designed Landscape (GDL386).	Yes	Yes
LB2825	Logie Durno Church and Churchyard	Historic Building	370433	826398	Category C Listed	Low	Foundations of rectangular church abandoned in 1955.One granite tablet dated 1720 in north wall, few other stones of note.	Yes	Yes
LB2829	Bridge of Pitcaple over River Urie	Historic Building	372160	825992	Category C Listed	Low	Circa 1800. Single segmental arch with slight curve at approaches.	-	Yes
LB2856	Logie House Lodge	Historic Building	369980	825666	Category C Listed	Low	Single-storey T-plan lodge dated c. 1790 with simple gatepiers.	-	Yes
LB18983	Westhall House, East Lodge, Including Boundary Wall and Gatepiers	Historic Building	368811	826525	Category C Listed	Low	Later 19th century single-storey L-plan gate lodge in the style of London's 1840 picturesque lodge and cottage designs with pair of ashlar gatepiers and boundary wall.	Yes	Yes
GDL300	Newton House	Historic Landscape	366284	829632	GDL	High	This designed landscape stands on rising ground overlooking the River Urie which flows through the park. It forms the setting for Category B Listed Newton House and associated walled garden. The house stands at the centre of the designed landscape overlooking parkland to the south. The gardens were originally laid out in the 18th and 19th centuries, but the house was occupied by troops during World War II who caused some devastation	Yes	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/ Category	Value / Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
							and the gardens were restored in the 1950s. The design of the walled garden by the artist Alec Parkin-Moore gives the designed landscape outstanding value as a Work of Art and the woodland policies and open parkland provide some scenic value to the surrounding landscape.		
GDL386	Williamston House	Historic Landscape	364836	831836	GDL	High	Designed landscape located on the south-west facing slopes above (north of) the River Urie covering an area of approximately 100ha. The designed landscape forms the setting for Category B Listed Williamston House and Williamston Home Farm, and Category C Listed Williamston Mill. Williamston House stands at the centre of the designed landscape surrounded by woodland which provides a sheltered location for the house and its formal gardens and also provides some contrast to the surrounding arable farmland. The designed landscape, forming of parkland, woodland policies and enclosed formal gardens has high value as a rare example of the artist Theodore Haughton's garden design.	Yes	Yes
NJ62NE0026	Kirkton of Oyne, Cairn	Archaeological Remains	368116	825873	Regionally Significant HER Site	Medium	Earthwork remains of a burial cairn measuring c. 23m in diameter and 0.7m high. There is no evidence to suggest that it was a ring cairn. Ploughing has created an irregular plan and the cairn has been subjected to some robbing and dumping of stones on its edges.	-	Yes
NJ72NW0010	Whiteford, Moated enclosure	Archaeological Remains	372361	826255	Regionally Significant HER Site	Medium	Remains of a motte or medieval moated enclosure. Very little recognisable now remains, but an old castle is said to have stood here at one time. The foundations of an old building, together with a portion of the earthwork, were removed some years before 1867. There is a tradition of it having been a Roman camp, however there is nothing obviously Roman at the site. The north and west 'ramparts' are two hollows which probably represent the spread remains of artificial ditches c.20m wide; the south-east 'rampart' appears to be merely a natural scarp and there is no trace of south 'rampart'.	-	Yes
NJ72NW0055	Glenlogie, Cropmark Site	Archaeological Remains	372009	827020	Regionally Significant HER Site	Medium	Linear cropmarks are visible on aerial photographs in this area, including one corner of a possible rectilinear enclosure. Initially thought to be potentially be Roman in date, however, the cropmarks may have been created by more recent drainage.	Yes	Yes
NJ72NW0053	Logie, Cropmark Site	Archaeological Remains	370481	825682	Regionally Significant HER Site	Medium	Cropmark of a ring ditch.	-	Yes
NJ72NW0056	Bridgend, Cropmark Site	Archaeological Remains	372503	826287	Regionally Significant HER Site	Medium	Cropmarks of a circular enclosure and linear cropmarks. They may be associated with the motte/homestead moat (NJ72NW0010), but probably of an earlier date	-	Yes
NJ72NW0162	Ferniebrae, Gilmore Stone	Archaeological Remains	371333	826940	Regionally Significant HER Site	Medium	A rock with a 19th century inscription dedicated to Alexander Gilmore, who previously farmed at Ferniebrae. The inscription reads 'A GILMORE 1893' accompanied by a bow and arrow symbol alongside the lettering. The bow and arrow is the symbol of the Order of the Secret Monitor, a masonic order. The carver, Alexander Gilmore, worked as a quarrier stonemason at Pitcaple as well as a ploughman at Old Rayne. The symbol may indicate a link with the Masonic Freefield Aberdeenshire Plough Society.	Yes	Yes
NJ62NE0132	Westhall	Historic Landscape	367642	826599	NIDL	Medium	The remains of a designed landscape dating to the 17th to the 19th centuries associated with Category A Listed Westhall House (LB16134). The designed landscape includes fragmentary woodland that surrounds the house and former avenues. The house dates back to the 16th century.	Yes	Yes
NJ62NE0133	Petmathen House	Historic Landscape	366944	826280	NIDL	Medium	The remains of a designed landscape that formed the setting for former Petmathen House which was demolished in 1955. The designed landscape originates from the 17th century, potentially laid out around an earlier house. The designed landscape includes former parkland, woodland policies and avenues once associated with the Petmathen House.	-	Yes
NJ62SE0044	Pittodrie House	Historic Landscape	370145	824136	NIDL	Medium	The remains of an extensive designed landscape associated with Category B Listed Pittodrie House. The designed landscape includes fragments of	-	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/ Category	Value / Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
							woodland policies, veteran trees, and avenues. The estates date back to the 1600s.		
NJ72NW0102	Pitcaple Castle	Historic Landscape	372656	826047	NIDL	Medium	The remains of a designed landscape associated with Category A Listed Pitcaple Castle. The designed landscape includes fragmentary parkland, veteran trees, woodland policies and avenues. The castle and possibly the estate boundaries date back to the medieval period.	-	Yes
NJ72NW0106	Logie House	Historic Landscape	370512	826223	NIDL	Medium	The remains of a 17th to 19th century designed landscape associated with Category B Listed Logie House Hotel. The designed landscape includes fragmentary parkland and woodland policies that surround several listed structures associated with Logie House, including Logie House Walled Garden, Logie House Dovecot and Logie House Lodge.	Yes	Yes
Assets outwith the 1km study area specifically requested to be assessed by HES									
SM90210	Maiden Stone Cross Slab	Archaeological Remains	370377	824714	Scheduled Monument/ Property in Care (PIC)	High	Pictish cross slab standing in arable farmland. It comprises a red granite slab, c. 3m high, with a number of carvings, including: a ring-headed cross, a man between two fish monsters, ornate patterns including key-pattern and knotwork, and a Pictish beast. The symbol stone probably dates to the 9th century AD.	-	-

The cultural heritage assets identified within the Violet route option study areas have been presented within Table 1.5. It also details the location, type, designation, and sensitivity value of the asset along with a description of the asset.

Table 1.5 Violet Route Option: Cultural Heritage Assets identified within the Study Areas (Volume 5, Figures 16.9-16.11)

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
SM18	Broomend, henge, standing stones and symbol stone	Archaeological Remains	377944	819614	Scheduled Monument	High	The upstanding remains of a henge and avenue of stones of prehistoric date (probably late 3rd to early 2nd millennia BC) which lies on an east facing slope in a much altered landscape, c. 175m north north-east of Broom Lodge. The henge measures 33.5m from crest to crest of its bank, with entrances gaps to the north and south. Close to the inner lip of the ditch there was once a concentric circle of six standing stones, of which only two survives. The henge was excavated in 1855 revealing a central inhumation in a deep pit, abundant cremations and cinerary urns, and a number of artefacts. A cremation burial was found at the base of each of the two surviving stones. A Pictish symbol stone has been located (in antiquity) to the centre of the henge. The northern portion of an avenue recorded as running from the destroyed concentric circles north of the henge, to a point c. 400m south of the henge. It has been suggested that the avenue consisted of forty stones on either side, but only four remain.	-	Yes
SM76	Kintore, symbol stone near church	Archaeological Remains	379301	816284	Scheduled Monument	High	A symbol stone which was dug up in Kintore churchyard and was erected on a new stone base in 1854. The stone now stands cemented into its stone base just inside the gateway to the churchyard.	-	Yes
SM92	Castle of Hallforest	Historic Building	377718	815430	Scheduled Monument	High	The remains of the Castle of Hallforest, an early tower house. The remains stand in fairly level farmland with a prominent stony bank about 10m to the north. The castle was constructed within the old royal forest of Kintore. It was probably built by 1361 and was abandoned in 1665. The walls of the north, south and west elevations stand almost to wallhead height (20m), while the upper parts of the east elevation have collapsed. The tower is constructed of random rubble roughly brought to courses, using large rounded granite field gatherings, well pinned and set in a hard mortar, with granite dressing. The walls have traces of lime render, showing that it was once harled. Internally the tower is vaulted above the basement level, which would have been	-	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
							divided by an entresol floor which appears to have functioned as a kitchen, and also above the first floor hall. There would have originally been a first floor doorway served by an external staircase in the now ruinous east wall, as there was no internal access between the basement and floors and the upper floors. Access between the upper floors was via a staircase in the south-east corner. The tower would originally have been surrounded by a courtyard and other buildings. Although there is no trace of structures today, a drawing by Giles in 1840 shows what maybe the remains of a barmkin wall. The stony bank to the north of the castle may represent the remains of this outer wall or enclosure.		
SM6448	Ratch-hill, settlement, field system & enclosures S and SE of	Archaeological Remains	377479	816886	Scheduled Monument	High	The remains of a later prehistoric settlement, comprising of at least six circular house stances, with a system of field banks and field clearance cairns around. There are also remains of two enclosures, one of which may be a small henge (Neolithic earthwork).	-	Yes
SM7920	Fullerton, ring ditches & cairn circle 420m SE of	Archaeological Remains	378404	818023	Scheduled Monument	High	A complex of prehistoric funerary remains, probably some 3500 years old. The remains of a cairn circle survive as a standing structure and the other remains are visible as cropmarks. The complex occupies part of a terrace of the River Don. The cairn circle now survives as a single standing stone about 1.9m high, standing on the south-west arc of a circular bank, enclosing a low central mound. Immediately to the north-east two ring-ditches appear on aerial photographs. These are probably ploughed-down burial mounds. The complex appears to be surrounded by an alignment of pits and there are other cropmarks in the area.	Yes	Yes
SM12302	Pitscurry, cairn 410m N of	Archaeological Remains	372590	827231	Scheduled Monument	High	The earthwork remains of a Bronze Age burial cairn that survives as a brash-covered mound standing at the summit of an unnamed hill. The cairn measures c. 6m in diameter and 0.5m high. There are only a few stones of the cairn visible and there is no evidence for any distinctive features such as a kerb.	Yes	Yes
SM12434	Hill of Selbie, cairn 440m SE of Little Hillbrae	Archaeological Remains	379782	822812	Scheduled Monument	High	The earthwork remains of a possible ring-cairn of probable Bronze Age date situated on the summit of Hill of Selbie. It survives as penannular stony bank, measuring 12m in diameter and 0.6m high, with possible kerbstones visible on the north-west and south-east. The cairn is surrounded by an extensive area of tumble and possible field clearance that measures 20m in diameter.	Yes	Yes
SM12443	Hogholm Cottage, hut circle 120m SW of	Archaeological Remains	380809	818208	Scheduled Monument	High	The remains of a hut circle of late Bronze Age or Iron Age date, visible as a low, grass-covered penannular stony bank situated on a gentle north-east facing slope. The hut circle measures 4.1m in diameter within a stony bank up to 1m thick, with an entrance on the ENE.	-	Yes
SM12465	Deer's Den, roundhouses 195m and 250m S of	Archaeological Remains	378393	816050	Scheduled Monument	High	The cropmark remains of at least seven roundhouses of probable Iron Age located in pasture to the west of the A96 at Kintore. There are no upstanding remains surviving of the roundhouses, but they are clearly defined as cropmarks on aerial photographs along with numerous other features that probably relate to the roundhouses.	Yes	Yes
SM12483	Greenlands, hut circles and cairns 380m S of	Archaeological Remains	381227	817763	Scheduled Monument	High	The remains of ten hut circles and numerous clearance cairns likely to date to the later prehistory. They survive as a series of turf, grass and tree covered mounds and ringworks in a mature conifer woodland, with a number of access paths crossing the site. The settlement remains are situated on an elevated ground north-east of Kintore, looking over the River Don to the south but views to and from the site are obscured by mature commercial forestry.	-	Yes
SM90188	Kinkell Church and burial ground	Historic Building / Archaeological Remains	378579	819058	Scheduled Monument/ PIC	High	The remains of Kinkell Church, a late medieval church which has been abandoned as a place of worship since 1771. Only the north wall and parts of the east, south and west walls of the church remain. Although a church at Kinkell is recorded from the early 13th century, the present building, with its large four-light traceried east windows, represents the result of a remodelling	-	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
							that occurred in the early 16th century. The church lies within a trapezoidal burial ground and enclosed by a stone wall.		
LB2819	Bourtie House	Historic Building	378544	824047	Category A Listed	High	Three-storey T-plan country house dated 1754, extended to H-plan in 1884.	-	Yes
LB9140	Balbithan House	Historic Building	381214	818877	Category A Listed	High	Three-storey 17th century L-plan country house.	-	Yes
LB36312	Kintore Town House, The Square	Historic Building	379238	816317	Category A Listed	High	Two-storey building with outside stair and clock tower, built c. 1740.	-	Yes
LB2820	Garden Cottage, Bourtie House	Historic Building	378549	824121	Category B Listed	Medium	Rubble built single-storey cottage, built c. 1800 with central door.	-	Yes
LB2832	East Balhalgardy Cottar Houses occupied by Dorward and Green (Old Farmhouse)	Historic Building	376112	823813	Category B Listed	Medium	18th century cottar house, west two-storey part built late 18th century, with later eastern part and outshot on south side.	-	Yes
LB9135	Keithhall and Kinkell Parish Church	Historic Building	380208	820960	Category B Listed	Medium	Rectangular parish church with belfry at west end, dated 1772. Forms part of Keith Hall Inventory Garden and Designed Landscape (GDL232).	-	Yes
LB9141	Friend's Meeting House and Friend's Cottage Kinmuck	Historic Building	381588	819895	Category B Listed	Medium	17th century meeting house comprising a rectangular building with mounting steps on boundary wall at gateway and an associated one-storey cottage.	-	Yes
LB9152	Thainstone House	Historic Building	377177	818666	Category B Listed	Medium	Two and three-storey 18th century country house with early 19th century additions. Currently used as a hotel.	-	Yes
LB9153	Thainstone Policies Gate Lodge and Gate Pilks on Kintore - Inverurie Road	Historic Building	377874	818603	Category B Listed	Medium	Early 19th century one and two-storey lodge.	-	Yes
LB13470	Hangar, Cairnhall, Near Kintore	Historic Building	378518	817582	Category B Listed	Medium	Corrugated iron building with arched roof, dated 1934.	Yes	Yes
LB36310	Kintore Parish Church, The Square	Historic Building	379307	816287	Category B Listed	Medium	Gothic style church dated 1819, containing 16th century sacrament house.	-	Yes
LB36311	The Square, Goosecroft House	Historic Building	379183	816343	Category B Listed	Medium	Originally two-storey and attic manse dated 1784 with later 19th century additions. Ceased to be a manse in 1963.	-	Yes
LB36313	Kintore Arms Hotel, The Square	Historic Building	379246	816272	Category B Listed	Medium	Two storey early 19th century hotel with L-plan wing.	-	Yes
LB36316	Kintore Bridge	Historic Building	379624	816207	Category B Listed	Medium	Single bowed truss span with curved link girders at the centre, surmounted by cast iron representations of the coat-of-arms of Kintore, dated 1882.	-	Yes
LB6708	Former Roadbridge over Lochter Burn	Historic Building	376682	823796	Category C Listed	Low	18th century single span three arched former road bridge over Lochter Burn. Said to be on the former route of the Pitcaple to Oldmeldrum road, now used only by farm vehicles.	Yes	Yes
LB45610	Keith Hall North Lodge	Historic Building	378129	22296	Category C Listed	Low	Single-storey L-plan lodge with small modern roof addition, dated 1854. Forms part of Keith Hall Inventory Garden and Designed Landscape (GDL232).	-	Yes
LB45611	Keith Hall East Lodge	Historic Building	379638	821292	Category C Listed	Low	Single-storey rectangular-plan lodge with two small additions to the rear, dated 1806-12. Forms part of Keith Hall Inventory Garden and Designed Landscape (GDL232).	-	Yes
LB45613	Keith Hall Home Farm Cottages	Historic Building	379227	821747	Category C Listed	Low	Mid 19th century single storey row of two cottages. Forms part of Keith Hall Inventory Garden and Designed Landscape (GDL232).	-	Yes
LB45614	Keith Hall Road Bridge at North Drive	Historic Building	378246	822168	Category C Listed	Low	Single span round-arch road bridge over field track, dated 1806-1812 and attributed to John Smith.	-	Yes
LB49868	North Street, Bridgend including Steading, Ancillary Building, Summer	Historic Building	378898	816779	Category C Listed	Low	Tall single storey and attic house built in the early 19th century and with later 19th century re-working along with associated ancillary building and summer house standing to the west of the house.	Yes	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
	House and Boundary Walls								
GDL232	Keith Hall	Historic Landscape	379010	821292	GDL	High	This designed landscape is situated on a gentle escarpment above the valley of the River Urie just north of its confluence with the River Don. The designed landscape was originally laid out in the 18th century around Keith Hall and then later extended during the 19th century in the informal style. The designed landscape forms the setting for several listed buildings, including: Category A Listed Keith Hall, Category B Listed walled garden, parish church, south lodge, former stables and coach house and Category C listed gardeners' cottages, icehouse and east lodge. Parkland extends to the south of Keith Hall and plantation woodland borders the designed landscape. An avenue runs south from Keith Hall to the lake which was created in 1895. Throughout the parkland of the designed landscape there are views out, particularly westwards across the River Urie to Inverurie. The woodland canopy of the designed landscape contributes to the scenery of the more open surrounding agricultural land and gives the designed landscape outstanding scenic value.	Yes	Yes
BTL11	Battle of Harlaw	Historic Landscape	375369	824300	Historic Battlefield	High	This battle was fought on 24 July 1411, between the Stewart dynasty, rulers of lowland Scotland, against the Lords of the Isles, the major power in northern Scotland, and is significant as one of the bloodiest medieval battles to take place in Scotland. The battle was fought between Domhnall MacDonald, with an army of somewhere between 6,000 and 10,000 soldiers, and the Earl of Mar, with an army of 1,500 to 2,000 soldiers. The general location of the battle is well established but as no contemporary accounts of the battle survive and the secondary sources are largely poetic in nature, the topographic details of the action are extremely vague. Domhnall appears to have advanced south-east from Moray down a route that largely matches the line of the modern A96. Mar had come east from his home at Kildrummy and mustered his army at Inverurie. They prepared for battle during the night and marched out to meet at dawn. The battle took place on a relatively flat area of high ground to the north of Inverurie. This plateau forms a natural arena approximately a mile in length and width, with steep slopes falling away on each side. This topography would have limited the spread of the fighting in an otherwise fairly open landscape. The landscape appears to be almost unaltered from the time of the battle, with the main changes being the removal of the fermtouns and their replacement by farms and field enclosures. The construction of Harlaw House and minor roads has also impacted on the landscape. Despite these changes, the landscape context of the battlefield is easily comparable to the period of the fighting. The views available to the combatants are largely the same as they were then, and it is easy to see how Domhnall would not have seen the arrival of Mar's army until they were on the plateau if he had no sentries.	Yes	Yes
BTL18	Battle of Barra	Historic Landscape	379623	826408	Historic Battlefield	High	The Battle of Barra was one of the many battles fought by Robert the Bruce in the period between his inauguration in 1306 and the Battle of Bannockburn in 1314. At Barra, the King engaged an army led by John Comyn outside Inverurie and the battle quickly turned into a rout, with much of Comyn's army captured or slaughtered as they ran. The Battle of Barra is significant as it marks the end of any coordinated opposition to King Robert I (the Bruce) within Scotland. The Comyn's had been Bruce's most notable Scottish adversary up to this point, and with the destruction of their power base, both in the battle and the subsequent ravaging of Comyn lands in Buchan, they were no longer able to resist the King. Accounts of the battle are sparse and offer little detail about the fighting. Following the death of Edward I in 1307, Bruce took the opportunity presented by a lack of attention from the new	-	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
							English King, Edward II, to reduce internal opposition to his rule and take full control of the kingdom. In the autumn and winter of 1307, Bruce attacked the strongholds of the Comyns and their supporters in the north-east but fell ill at Christmas 1307. By May, he was still unwell and quartered outside Inverurie, with John Comyn, Earl of Buchan, mustering at Oldmeldrum. The first hostile action was in the early morning of 23 May (the more probable date of the battle), when Sir David de Brechin attacked a detachment of Bruce's men that were in Inverurie, although most of Bruce's men were outside the town. Bruce's army formed up and marched towards Oldmeldrum, where Comyn and Sir John Mowbray were drawn up below Barra Hill on the road between Inverurie and Oldmeldrum. Comyn and his men were aware of Bruce's illness and seem to have assumed that he would not be present in the fighting. However, as Bruce's army arrived, they could see Bruce on horseback in the midst of his army. According to the sources, this unexpected appearance of Bruce so discomfited Comyn and his supporters that they started to edge back; this small movement was enough to cause the levies to break and they scattered. Bruce's army charged what was left of Comyn's line, and the fighting very rapidly became a complete rout. Comyn fled towards Fyvie and then Turriff, finally making his way to England where he subsequently died. The landscape within which the battlefield took place is reasonably well preserved and can be reasonably well understood, though there has been a wholesale change in land boundaries and Oldmeldrum has increased dramatically in size since 1308. Key characteristics of the terrain at the time of the battle can normally still be identified, enabling events to be more fully understood and interpreted in their landscape context. Specific land features that played an important part in the battle include: Barr Hiil, the line of the modern B9170 between Oldmeldrum and Inverurie along which Bruce's army marched, The Bruce field, which has traditionally been associated with the fighting, the land west of the B9170 where the fighting is mostly likely to have taken place, land to the south and north of the A920 that covers the likely route and killing during the pursuit and land to the east of the battlefield that covers potential routes of escape along Meadow Burn.		
NJ71NE0014	Cairnhill, Stone Circle	Archaeological Remains	378500	817589	Regionally Significant HER Site	Medium	The remains of a former stone circle, all of which remains is a single stone in a contractor's yard.	Yes	Yes
NJ71NE0055	Deers Den, Cropmark Site (Roman Camp)	Archaeological Remains	378735	816197	Regionally Significant HER Site	Medium	Roman camp dating to Severan period. Most of the north and south sides of the camp and fragmentary stretches of the west and east sides show as cropmarks on aerial photographs. No upstanding remains of the camp survive. Archaeological investigations have revealed two possible field ovens in the interior of the camp, fragments of perimeter ditch, a series of pits and a dense spread of plough truncated features of various periods, including a spread of Neolithic pits and the remains of four possible structures. An evaluation by archaeologists in 2002 on a c. 1ha proposed development site at Henderson Drive recorded archaeological remains ranging in date from Neolithic to the Roman period, including a possible henge, five possible ring ditch houses and 13 Roman ovens.	Yes	Yes
NJ71NE0059	Fullerton Cottage, Cropmark Site	Archaeological Remains	378288	818182	Regionally Significant HER Site	Medium	Cropmark of a ring ditch, now covered by earth mound.	Yes	Yes
NJ71NE0061	Ardmurdo, Cropmark Site	Archaeological Remains	379297	819064	Regionally Significant HER Site	Medium	Cropmarks of three circular enclosures and an area of rig and furrow cultivation.	-	Yes
NJ71NE0070	Fullerton, Cropmark Site	Archaeological Remains	378181	818415	Regionally Significant HER Site	Medium	Cropmarks of two arcs plus other curvilinear cropmarks and two possible ring ditches within enclosures. Tentatively identified as a possible promontory fort.	Yes	Yes
NJ71NE0110	Ardenlea, School Road, Milestone	Historic Building	379246	816096	Regionally Significant HER Site	Medium	Milestone from the old Aberdeenshire to Inverurie canal. Milestone 14 and a half is a round column, 0.30m in diameter and 0.5m high, with a rounded top on which the mileage is inscribed on a sloping circular panel.		Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
NJ71NE0112	Bridgend House, Milestone	Historic Building	378922	816783	Regionally Significant HER Site	Medium	A canal milestone of the Aberdeenshire Canal Navigation, or Aberdeen-Inverurie Canal. It is numbered No.15, and it is a rounded column, 0.3m in diameter and 0.5m high, with a rounded top on which the mileage is inscribed on a sloping circular panel.	Yes	Yes
NJ72NW0052	Mill of Pitcaple, Cropmark Site	Archaeological Remains	373583	825814	Regionally Significant HER Site	Medium	Cropmarks of an enclosure with possible internal structures, and other possible features visible, including crescent shaped cropmarks, visible on aerial photographs to the west and south.	-	Yes
NJ72NW0055	Glenlogie, Cropmark Site	Archaeological Remains	372009	827020	Regionally Significant HER Site	Medium	Linear cropmarks are visible on aerial photographs in this area, including one corner of a possible rectilinear enclosure. Initially thought to be potentially be Roman in date, however, the cropmarks may have been created by more recent drainage.	-	Yes
NJ72SE0001	West Balhalgardy, Remains of Stone Circle	Archaeological Remains	375989	824314	Regionally Significant HER Site	Medium	Remains of a stone circle now represented by a single standing stone. On the north side of the stone are 24 cup-marks, some almost invisible.	-	Yes
NJ72SE0003	East Balhalgardy, Pictish Stone	Archaeological Remains	376086	823796	Regionally Significant HER Site	Medium	The remains of a Class I[1] Pictish symbol stone, built into a north facing wall as a lintel over a window in the old farmhouse, next to the road through the farm. It bears a disc, probably double disc and a Z-rod. Above the stone is another of same type of stone with a deep score in it and this may be part of the sculptured stone.	-	Yes
NJ72SE0042	Keith Hall, Site of church	Archaeological Remains	379746	821288	Regionally Significant HER Site	Medium	Site of church which is said to have stood upon a mound in the middle of a basin-shaped hollow, surrounded by a marsh, and known as 'Monkeigie'. There is a level platform tapering into the natural slope in the west which may be the foundations of the old kirk.	-	Yes
NJ72SE0043	Kirkton Village, Site of medieval village	Archaeological Remains	379850	821230	Regionally Significant HER Site	Medium	Site of the medieval village of Kirkton. The church at Keith Hall stood in a little Kirkton of which there is now no trace. Within the designed landscape of Keith Hall (GDL232).	-	Yes
NJ72SE0045	Ingliston, Medieval Village (Site of)	Archaeological Remains	379400	822200	Regionally Significant HER Site	Medium	The former site of a medieval village recorded as being present to the north of Keith Hall policies. No trace of the village is visible and nothing significant has been discovered during cultivation. A settlement, named as 'Englistoun', is depicted on General Roy's Military Survey (1747-55).	-	Yes
NJ72SE0115	Boynds, Cropmark Site	Archaeological Remains	377938	823056	Regionally Significant HER Site	Medium	Several cropmarks visible on aerial photographs of at least two groups of two ring ditches, possible souterrains and pits and a square barrow. Archaeological investigation has revealed the remains of a possible hearth, a ditch and post-holes indicating at least five structures, three of which were roundhouses, numerous pits and evidence for metal working. One of the structures was rectangular on plan with a large amount of charred grain recovered from the area suggesting its use for grain processing.	-	Yes
NJ71NE0161	Thainstone House	Historic Landscape	377191	818608	NIDL	Medium	The remains of a designed landscape dating to the 17th to the 19th centuries and associated with Category B Listed Thainstone House. The landscape appears to have been laid out c.1840 when Thainstone House was extensively modified. The designed landscape includes woodland policies that surround the house and a long approach drive to the house.	-	Yes
NJ72NW0101	House of Daviot	Historic Landscape	374151	828267	NIDL	Medium	Remains of a designed landscape associated with Category B Listed Old House of Glack (House of Daviot Hospital) and House of Daviot (Formerly New House of Glack). The landscaped parkland and woodlands date back to the 1700s. The designed landscape comprises fragmentary parkland, woodland policies and avenues. Old House of Glack dates back to the early 18th century. A modern housing estate has been built within the designed landscape.	-	Yes
NJ72NW0102	Pitcaple Castle	Historic Landscape	372656	826047	NIDL	Medium	The remains of a designed landscape associated with Category A Listed Pitcaple Castle. The designed landscape includes fragmentary parkland,	-	Yes

[1] Class I: Unworked Pictish stones which had only been incised with no cross on either side dating back to the 6th century before the spread of Christianity', Allen, J.R and Anderson, J (1903) The early Christian monuments of Scotland.

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
							veteran trees, woodland policies and avenues. The castle and possibly the estate boundaries date back to the medieval period.		
NJ72NW0107	Legatesden	Historic Landscape	374012	825877	NIDL	Medium	The remains of a designed landscape associated with Legatesden House, comprising of woodland policies surrounding the house and a number of associated buildings including Legatesden Farm and Gardeners Cottages.	Yes	Yes
NJ72SE0213	Bourtie House	Historic Landscape	378576	824053	NIDL	Medium	The remains of an 18th to19th century designed landscape associated with Category A Bourtie House. The designed landscape comprises of fragmentary parkland and woodland polices that surround the house and other associated buildings, including Category B Listed Gardeners Cottages.	Yes	Yes

The cultural heritage assets identified within the Orange route option study areas have been presented within Table 1.6. It also details the location, type, designation, and sensitivity value of the asset along with a description of the asset.

Table 1.6 Orange Route Option: Cultural Heritage Assets within the Study Areas (Volume 5, Figures 16.12-16.13)

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
SM18	Broomend, henge, standing stones and symbol stone	Archaeological Remains	377944	819614	Scheduled Monument	High	The upstanding remains of a henge and avenue of stones of prehistoric date (probably late 3rd to early 2nd millennia BC) which lies on an east facing slope in a much altered landscape, c. 175m north north-east of Broom Lodge. The henge measures 33.5m from crest to crest of its bank, with entrances gaps to the north and south. Close to the inner lip of the ditch there was once a concentric circle of six standing stones, of which only two survives. The henge was excavated in 1855 revealing a central inhumation in a deep pit, abundant cremations and cinerary urns, and a number of artefacts. A cremation burial was found at the base of each of the two surviving stones. A Pictish symbol stone has been located (in antiquity) to the centre of the henge. The northern portion of an avenue recorded as running from the destroyed concentric circles north of the henge, to a point c. 400m south of the henge. It has been suggested that the avenue consisted of forty stones on either side, but only four remain.	Yes	Yes
SM70	Drimmies, symbol stone	Archaeological Remains	374259	823503	Scheduled Monument	High	Remains of a Pictish symbol stone Class I. Built into a garden wall of Drimmies Farm, facing the road on the east side of the entrance. It is a slab of red granite bearing the symbols of a mirror and comb above which is a curvilinear symbol and possible horseshoe symbol, the latter two truncated.	Yes	Yes
SM74	Inverurie Cemetery, four symbol stones	Archaeological Remains	378019	820621	Scheduled Monument	High	The remains of four Class I Pictish symbol stones located in Inverurie Cemetery. The symbol stones are arranged in a row with three other stones at the west end of the cemetery. The stones are believed to have been built into the walls of the old parish church, which stood in the north-west corner of what is now the cemetery. The kirk went out of use in 1775, and its walls were used as a quarry to construct or repair the dykes of the kirkyard in the early 19th century. The kirkyard was expanded in the late 19th century to take in the old burial ground and the Castle Yards surrounding the Bass of Inverurie. Stones nos. 2, 3 and 4 were later removed from the dykes, while stone no. 1 was rescued when the walls were being constructed.	-	Yes
SM76	Kintore, symbol stone near church	Archaeological Remains	379301	816284	Scheduled Monument	High	A symbol stone which was dug up in Kintore churchyard and was erected on a new stone base in 1854. The stone now stands cemented into its stone base just inside the gateway to the churchyard.	-	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
SM90	Balquhain Castle	Historic Building; Archaeological Remains	373151	823605	Scheduled Monument	High	The remains of a tower house, additional buildings and associated barmkin of later medieval date, surviving as a series of upstanding walls and earthworks at the top of a steep slope leading down to Strathnaterick Burn. The medieval tower house consists of a quadrangular crenellated tower, a substantial stone range and two additional buildings, added to the north and west walls of the tower respectively. Remains of the barmkin and series of low earthworks survive around the main buildings. The tower house is located in woodland, but the remains of the ancillary buildings are visible in the paddock immediately west. A spring or well is located at the north end of the scheduled area.	Yes	Yes
SM99	The Bass and Little Bass, motte-and-bailey castle	Archaeological Remains	378111	820602	Scheduled Monument	High	A 12th century motte and bailey castle known as the 'Bass of Inverurie' and 'Little Bass' now visible as substantial earthworks adjacent to the River Urie and surrounded by a cemetery. The monument comprises two large earthen mounds, the west being the motte and the east the bailey. They were joined in antiquity but landscaping work in the late 19th century cut a path between the two, as well as levelling the top of the motte. The west mound is conical in shape, c.12m high and 18m in diameter across its top. It appears to have originally been a natural hillock, the sides of which were scarped to form the motte. The bailey is a flat-topped, oval mound measuring around 30m east to west by c. 23m transversely and c. 5m high. Upon the bailey are two slightly raised rectangular platforms which are potentially the remains of buildings such as a hall and chamber. The motte and bailey were formerly surrounded by a ditch, of which no remains are now visible on the surface.	-	Yes
SM3961	Mains of Balquhain, stone circle 715m NE of	Archaeological Remains	373499	824086	Scheduled Monument	High	The remains of a recumbent stone circle which probably originally consisted of twelve stones of which now six survive. The stone circle is situated on the south-east slope of Gallows Hill. The fallen east flanker has four cup-marks on its horizontal upper surface and there are fifteen cup-marks on the stone next to this flanker. Limited excavation in front of the stone facing the recumbent revealed a rough paving of boulders, themselves lying on top of larger rough stones and slabs; what this was for is not clear. Field visit in April 1993 following ploughing adjacent to the site recorded a few fragments of white quartz, but no worked pieces or other archaeological artefacts.	Yes	Yes
SM6448	Ratch-hill, settlement, field system & enclosures S and SE of	Archaeological Remains	377479	816886	Scheduled Monument		The remains of a later prehistoric settlement, comprising of at least six circular house stances, with a system of field banks and field clearance cairns around. There are also remains of two enclosures, one of which may be a small henge.	-	Yes
SM7920	Fullerton, ring ditches & cairn circle 420m SE of	Archaeological Remains	378404	818023	Scheduled Monument	High	A complex of prehistoric funerary remains, probably some 3500 years old. The remains of a cairn circle survive as a standing structure and the other remains are visible as cropmarks. The complex occupies part of a terrace of the river Don. The cairn circle now survives as a single standing stone about 1.9m high, standing on the south-west arc of a circular bank, enclosing a low central mound. Immediately to the north-east two ring-ditches appear on aerial photographs. These are probably ploughed-down burial mounds. The complex appears to be surrounded by an alignment of pits and there are other cropmarks in the area.	Yes	Yes
SM12110	East Blairbowie, standing stone 250m ENE of	Archaeological Remains	373007	822861	Scheduled Monument	High	A single standing stone of likely Neolithic or Bronze Age date, located on the grass verge between a minor public road and the fence line.	-	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
SM12118	St Apolinaris' Chapel and burial ground	Historic Building	375171	820270	Scheduled Monument	High	The remains of a chapel dating from earlier than the 13th century. The chapel stands within a small area of mature woodland on a terrace on the west bank of the River Don. The church has been largely reduced to rubble spread, although all four sides display lengths of external facing and stand up to around 1m high. An entrance is visible towards the west end of the south wall. The church was adapted in the 19th century as a burial enclosure. At the east end of the burial enclosure is the large mural monument and tomb of James Gordon of Manar (d. 1874), flanked by four smaller 17th century headstones. Towards the centre of the enclosure are two further tombstones commemorating members of the family of Manar and are dates 1838 and 1850 respectively. The church is surrounded by a roughly rectangular, walled burial ground with an entrance in the north.	Yes	Yes
SM12195	Dilly Hill, enclosure 510m WNW of	Archaeological Remains	374427	822171	Scheduled Monument	High	A prehistoric circular enclosure with a concentric internal feature, visible as a cropmark on aerial photographs and survives as a very slight earthwork. The enclosure is situated at the bottom of a gentle east facing slope. The enclosure is broadly circular in shape, measuring 45m at its widest external diameter, defined by a roughly circular ditch, 8m wide and with a causeway or possible entrance in its south-east quadrant. There is no evidence for a bank created from the fill of the ditch. Aerial photographs show an inner, narrower, circular feature, which is roughly concentric to the ditch, and this includes a bulbous feature orientated towards the south-east also, but offset from the break in the outer ditch. Early aerial photographs suggest a possible second entrance in the north-west.	Yes	Yes
SM12302	Pitscurry, cairn 410m N of	Archaeological Remains	372590	827231	Scheduled Monument	High	The earthwork remains of a Bronze Age burial cairn that survives as a brash-covered mound standing at the summit of an unnamed hill. The cairn measures c. 6m in diameter and 0.5m high. There are only few stones of the cairn visible and there is no evidence for any distinctive features such as a kerb.	Yes	Yes
SM12523	Bruce's Camp, hillfort	Archaeological Remains	376845	819000	Scheduled Monument	High	This comprises of a fort of later prehistoric date situated on the summit of Shaw Hill (also known as Hill of Crichie). The fort encloses an area of about 2.5ha enclosed by a stony rampart that measures c. 5m thick and up to 1.5m high with some evidence for vitrification. There are other ramparts extending along the south south-west side of the fort and around the west north-west end; probably the remains of an earlier perimeter. This rampart has been reduced to little more than a scarp. Near to the centre of the fort is a granite cup-marked boulder. Limited excavation of the monument in 2005 indicated that there are walls, postholes and pits surviving within the interior of the fort.	Yes	Yes
SM90188	Kinkell Church and burial ground	Historic Building, Archaeological Remains	378579	819058	Scheduled Monument/PIC	High	The remains of Kinkell Church, a late medieval church which has been abandoned as a place of worship since 1771. Only the north wall and parts of the east, south and west walls of the church remain. Although a church at Kinkell is recorded from the early 13th century, the present building, with its large four-light traceried east windows, represents the result of a remodelling that occurred in the early 16th century. The church lies within a trapezoidal burial ground and enclosed by a stone wall.	-	Yes
LB2830	Pitcaple Castle	Historic Building	372730	826084	Category A Listed	High	Late 15th century tower house originally with open parapet, reconstructed as Z-plan house with round angles towers and south east angle turret in the early 17th century. Entrance in south-west stair tower. Two-storey south-west addition with new entrance porch and turret in angle.	-	Yes
LB36312	Kintore Town House, The Square	Historic Building	379238	816317	Category A Listed	High	Two-storey building with outside stair and clock tower built c. 1740.	-	Yes
LB2790	Old House of Glack, House of Daviot Hospital	Historic Building	374212	828415	Category B Listed	Medium	Dated 1723, altered 1889 as Nurse's Home and again in 1934 with addition of 2-storey and attic wing to rear.	-	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
LB2792	House of Daviot, Formerly House of Glack	Historic Building	374237	828336	Category B Listed	Medium	Dated 1876, 3-storey and attic with tower and turrets. Converted to hospital and extended.	-	Yes
LB2850	Inveramsay Bridge over River Urie	Historic Building	374134	824648	Category B Listed	Medium	Dated c. 1845/55 with main span supported on three perforated arched girders cast in two pieces and bolted in middle.	Yes	Yes
LB9075	Manar Home Farm	Historic Building	374159	820150	Category B Listed	Medium	Courtyard plan farmsteading dated late 18th century.	-	Yes
LB9076	Manar Policies, East Gate Lodge including Gatepier and Gates	Historic Building	374553	820125	Category B Listed	Medium	Pattern block circular lodge and gates dated c.1800. Single-storey with conical slated roof with single square-plan ashlar gatepier and cast-iron gates.	-	Yes
LB9152	Thainstone House	Historic Building	377177	818666	Category B Listed	Medium	Two and three-storey 18th century country house with early 19th century additions. Currently used as a hotel.	Yes	Yes
LB9153	Thainstone Policies Gate Lodge and Gate Pilks on Kintore - Inverurie Road	Historic Building	377874	818603	Category B Listed	Medium	Early 19th century one and two-storey lodge.	Yes	Yes
LB13470	Hangar, Cairnhall, near Kintore	Historic Building	378518	817582	Category B Listed	Medium	Corrugated iron building with arched roof dated 1934.	Yes	Yes
LB36310	Kintore Parish Church, The Square	Historic Building	379307	816287	Category B Listed	Medium	Gothic style church dated 1819, containing 16th century sacrament house.	-	Yes
LB36311	The Square, Goosecroft House	Historic Building	379183	816343	Category B Listed	Medium	Originally two-storey and attic manse dated 1784 with later 19th century additions. Ceased to be a manse in 1963.	-	Yes
LB36313	Kintore Arms Hotel, The Square	Historic Building	379246	816272	Category B Listed	Medium	Two-storey early 19th century hotel with L-plan wing.	-	Yes
LB2788	Parish Church of Daviot (St Colm)	Historic Building	374947	82858	Category C Listed	Low	Dated 1798, rectangular plan with ball-capped birdcage bellcote and built-up door west cable.	-	Yes
LB2789	Parish Church of Daviot, Churchyard	Historic Building	374969	828252	Category C Listed	Low	Plain rubble-walled enclosure, stones from late 18th century.	-	Yes
LB2791	Old House of Glack, Gatepiers to NW	Historic Building	374183	828447	Category C Listed	Low	Presumably 1723, on axis of house. Walls of forecourt and gates unfortunately gone. Diagonally set rusticated piers with moulder tops and ball-finials.	-	Yes
LB2851	Harlaw House	Historic Building	374714	824771	Category C Listed	Low	Two-storey building constructed as Free Church Manse c. 1843 with four-storey granite ashlar tower added 1883 as Harlaw memorial for Alexander Collie.	-	Yes
LB35408	Old Sluice Bridges over Aberdeen Canal, Canal Road	Historic Building	377808	820382	Category C Listed	Low	One larger segmental arch with sluices, one smaller arch with iron plated voussoirs, one small arch with remains of sluice at right angles. Dated 1796/1805.	-	Yes
LB49868	North Street, Bridgend including Steading, Ancillary Building, Summer House and Boundary Walls	Historic Building	378898	816779	Category C Listed	Low	Tall single storey and attic house, built in the early 19th century and with later 19th century re-working along with associated ancillary building and summer house standing to the west of the house.	-	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
GDL232	Keith Hall	Historic Landscape	379010	821292	GDL	High	This designed landscape is situated on a gentle escarpment above the valley of the River Urie just north of its confluence with the River Don. The designed landscape was originally laid out in the 18th century around Keith Hall and then later extended during the 19th century in the informal style. The designed landscape forms the setting for several listed buildings, including: Category A Listed Keith Hall, Category B Listed walled garden, parish church, south lodge, former stables and coach house and Category C listed gardeners' cottages, icehouse and east lodge. Parkland extends to the south of Keith Hall and plantation borders the designed landscape. An avenue runs south from Keith Hall to the lake which was created in 1895. Throughout the parkland of the designed landscape there are views out, particularly westwards across the River Urie to Inverurie. The woodland canopy of the designed landscape contributes to the scenery of the more open surrounding agricultural land and gives the designed landscape outstanding scenic value.	-	Yes
BTL11	Battle of Harlaw	Historic Landscape	375369	824300	Historic Battlefield	High	This battle was fought on 24 July 1411, between the Stewart dynasty, rulers of lowland Scotland, against the Lords of the Isles, the major power in northern Scotland, and is significant as one of the bloodiest medieval battles to take place in Scotland. The battle was fought between Domhnall MacDonald, with an army of somewhere between 6,000 and 10,000 soldiers, and the Earl of Mar, with an army of 1,500 to 2,000 soldiers. The general location of the battle is well established but as no contemporary accounts of the battle survive and the secondary sources are largely poetic in nature, the topographic details of the action are extremely vague. Domhnall appears to have advanced south-east from Moray down a route that largely matches the line of the modern A96. Mar had come east from his home at Kildrummy and mustered his army at Inverurie. They prepared for battle during the night and marched out to meet at dawn. The battle took place on a relatively flat area of high ground to the north of Inverurie. This plateau forms a natural arena approximately a mile in length and width, with steep slopes falling away on each side. This topography would have limited the spread of the fighting in an otherwise fairly open landscape. The landscape appears to be almost unaltered from the time of the battle, with the main changes being the removal of the fermtouns and their replacement by farms and field enclosures. The construction of Harlaw House and minor roads has also impacted on the landscape. Despite these changes, the landscape context of the battlefield is easily comparable to the period of the fighting. The views available to the combatants are largely the same as they were then, and it is easy to see how Domhnall would not have seen the arrival of Mar's army until they were on the plateau if he had no sentries.	Yes	Yes
NJ71NE0014	Cairnhill, Stone Circle	Archaeological Remains	378500	817589	Regionally Significant SMR Site	Medium	The remains of a former stone circle, all of which remains is a single stone in a contractor's yard.	Yes	Yes
NJ71NE0055	Deers Den, Cropmark Site (Roman Camp)	Archaeological Remains	378735	816197	Regionally Significant SMR Site	Medium	Roman camp dating to Severan period. Most of the north and south sides of the camp and fragmentary stretches of the west and east sides show as cropmarks on aerial photographs. No upstanding remains of the camp survive. Archaeological investigations have revealed two possible field ovens in the interior of the camp, fragments of perimeter ditch, a series of pits and a dense spread of plough truncated features of various periods, including a spread of Neolithic pits and the remains of four possible structures. An evaluation by AOC in 2002 on a c. 1ha proposed development site at Henderson Drive recorded archaeological remains ranging in date from Neolithic to the Roman period, including a possible henge, five possible ring ditch houses and 13 Roman ovens.	-	Yes
NJ71NE0059	Fullerton Cottage, Cropmark Site	Archaeological Remains	378288	818182	Regionally Significant SMR Site	Medium	Cropmark of a ring ditch, now covered by earth dumping.	Yes	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
NJ71NE0070	Fullerton, Cropmark Site	Archaeological Remains	378181	818415	Regionally Significant SMR Site	Medium	Cropmarks of two arcs plus other curvilinear cropmarks and two possible ring ditches within enclosures. Tentatively identified as a possible promontory fort.	Yes	Yes
NJ71NE0112	Bridgend House	Historic Building	378922	816783	Regionally Significant SMR Site	Medium	A canal milestone of the Aberdeenshire Canal Navigation, or Aberdeen-Inverurie Canal. It is numbered No.15, and it is a rounded column, 0.3m in diameter and 0.5m high, with a rounded top on which the mileage is inscribed on a sloping circular panel.	-	Yes
NJ72NW0052	Mill of Pitcaple, Cropmark Site	Archaeological Remains	373583	825814	Regionally Significant SMR Site	Medium	Cropmarks of an enclosure with possible internal structures, and other possible features visible, including crescent shaped cropmarks, visible on aerial photographs to the west and south.	Yes	Yes
NJ72NW0055	Glenlogie, Cropmark Site	Archaeological Remains	372009	827020	Regionally Significant SMR Site	Medium	Linear cropmarks are visible on aerial photographs in this area, including one corner of a possible rectilinear enclosure. Initially thought to be potentially be Roman in date, however, the cropmarks may have been created by more recent drainage.	-	Yes
NJ72NW0056	Bridgend, Cropmark Site	Archaeological Remains	372503	826287	Regionally Significant SMR Site	Medium	Cropmarks of a circular enclosure and linear cropmarks. They may be associated with the motte/homestead moat (NJ72NW0010) but are probably of an earlier date.	-	Yes
NJ72SE0020	Dilly Hill, Cairn	Archaeological Remains	375051	822322	Regionally Significant SMR Site	Medium	Site of a Bronze Age cairn, now overlain by a modern cairn, erected in the memory of a Mr Stephan in 1954.	Yes	Yes
NJ72SE0038	Old Hall of Ardtannes	Archaeological Remains	375874	820112	Regionally Significant SMR Site	Medium	The site of an old hall said to have existed before the 17th Century. When a spring was being sunk near the site, it struck a platform of black oak logs underneath which was a species of draw well. There is now no trace of buildings in the pasture field.	Yes	Yes
NJ72SE0048	Ardtannes, Flints, Flint working area.	Archaeological Remains	376200	820100	Regionally Significant SMR Site	Medium	Site of a flint working 'factory', using Buchan flint. The present whereabouts of these flints are not known.	-	Yes
NJ72SE0100	West Balhalgardy, Cropmark Site	Archaeological Remains	375157	823645	Regionally Significant SMR Site	Medium	Cropmark of a large enclosure.	-	Yes
NJ72SE0101	West Balhalgardy, Cropmark Site	Archaeological Remains	375134	823533	Regionally Significant SMR Site	Medium	Cropmarks of up to five small square enclosures, possible square barrows.	-	Yes
NJ72SW0008	Liggars' Stane, Memorial stone	Archaeological Remains	372638	824869	Regionally Significant SMR Site	Medium	Memorial stone; originally at NJ 7457, 2485. A large piece of whinstone is said to mark the burial place of the female camp-followers who were slain at the Battle of Harlaw in 1411. A test excavation (NJ72SW0085) was carried out in advance of development in the field adjacent to Liggars' Stane. Three 20m by 4m trenches were dug, revealing the vestigial remains of an early modern farmstead. Nothing further of archaeological interest was recovered.	-	Yes
NJ72SW0040	Dilly Hill, Cropmark Site	Archaeological Remains	374314	822449	Regionally Significant SMR Site	Medium	Cropmark of a circular enclosure.	Yes	Yes
NJ71NE0161	Thainstone House	Historic Landscape	377191	818608	NIDL	Medium	The remains of a designed landscape dating to the 17th to the 19th centuries and associated with Category B Listed Thainstone House. The landscape appears to have been laid out c.1840 when Thainstone House was extensively modified. The designed landscape includes woodland policies that surround the house and a long approach drive to the house.	Yes	Yes
NJ71NW0205	Manar House	Historic Landscape	373803	819893	NIDL	Medium	Remains of a designed landscape dating back to the 1700s associated with Category B Manar House. The designed landscape includes woodland policies and fragmentary parkland surrounding Manar House and a number of associated buildings including Manar Dovecot, West and East Lodges and Manar Home Farm.	Yes	Yes
NJ72NW0101	House of Daviot	Historic Landscape	374151	828267	NIDL	Medium	Remains of a designed landscape associated with Category B Listed Old House of Glack (House of Daviot Hospital) and House of Daviot (Formerly New House of Glack). The landscaped parkland and woodlands date back to the 1700s. The designed landscape comprises fragmentary parkland, woodland policies and avenues. Old House of Glack dates back to the early 18th century. A modern housing estate has been built within the designed landscape.	Yes	Yes

Asset no	Asset name	DMRB Category	Easting	Northing	Designation/Category	Value/ Sensitivity	Asset Description	Within 300m of route option	Within 1km of route option
NJ72NW0102	Pitcaple Castle	Historic Landscape	372656	826047	NIDL	Medium	The remains of a designed landscape associated with Category A Listed Pitcaple Castle. The designed landscape includes fragmentary parkland, veteran trees, woodland policies and avenues. The castle and possibly the estate boundaries date back to the medieval period.	Yes	Yes
NJ72NW0107	Legatesden	Historic Landscape	374012	825877	NIDL	Medium	The remains of a designed landscape associated with Legatesden House, comprising of woodland policies surrounding the house and a number of associated buildings including Legatesden Farm and Gardeners Cottages.	Yes	Yes
Assets outwith the 1km study area specifically requested to be assessed by HES									
SM90126	East Aquhorthies Stone Circle	Archaeological Remains	373233	820797	Scheduled Monument/PIC	High	The remains of a recumbent stone circle of prehistoric date standing in arable farmland some 300m north-west of East Aquhorthies. It comprises a circle of eleven erect stones, with a large recumbent stone in the south-west arc. The recumbent stone is flanked by two upright stones and the western flanker has four cup marks. Immediately to the inside of the recumbent stone, at right angles to the circumference of the circle, there are three further stone slabs. A slightly raised area at the centre of the stone circle indicates the probable presence of a central ring cairn. The stone wall around the perimeter of the stone circle is almost certainly a later feature.	-	-

Appendix A16.2 **Summary of the Number of Cultural Heritage Assets Identified within each Study Area, by Route Option**

Appendix A16.2 **Summary of the Number of Cultural Heritage Assets Identified within each Study Area, by Route Option**

The following table lists the type and number of cultural heritage assets which have been identified within each study area by route option.

Table 1.1 Summary of the Number of Cultural Heritage Assets identified within each Study Area, by Route Option

Cultural Heritage Assets	East of Huntly to Colpy				Colpy to Pitcaple				Pitcaple to Kintore			
	Cyan Route Option		Red Route Option		Pink Route Option		Brown Route Option		Violet Route Option		Orange Route Option	
	300m study area	1km study area	300m study area	1km study area	300m study area	1km study area	300m study area	1km study area	300m study area	1km study area	300m study area	1km study area
Scheduled Monuments	1	2	1	2	4	7	2	8	4	11	9	15
Category A Listed Buildings	0	1	0	1	0	1	0	2	0	3	0	2
Category B Listed Buildings	0	2	0	3	2	6	2	10	1	11	4	11
Category C Listed Buildings	0	2	0	1	1	2	3	5	2	6	0	6
Inventory Garden and Designed Landscape	1	1	1	1	2	2	2	2	1	1	0	1
Inventory Historic Battlefield	0	0	0	0	0	0	0	0	1	2	1	1
Conservation Areas	0	0	0	0	0	0	0	0	0	0	0	0
Regionally Significant Archaeological Site	2	4	2	3	3	4	2	6	5	15	7	15
Non-Inventory Designed Landscape	0	0	0	0	1	3	2	5	2	5	5	5

Appendix A16.3 **Potential Impacts on Cultural Heritage Assets**

Appendix A16.3 Potential Impacts on Cultural Heritage Assets

Table 1.1 provides a summary of the potential impacts on individual cultural heritage assets. It conveys the sensitivity of the asset, the magnitude of impact predicted and the significance of effects for each asset identified within the search radius of the Cyan route option. Effects that are considered to be 'significant' (effects of 'moderate' significance and above) are highlighted in bold.

Table 1.1 Tabulated Summary of the Potential Impacts on Individual Cultural Heritage Assets from the Cyan Route Option (Volume 5, Figures 16.1-16.2)

Asset no	Asset name	Designation/Category	Within 300m of route option	Within 1km of route option	Value / Sensitivity	Impact Type	Potential Impact	Impact Magnitude	Adverse/Beneficial	Significance of Effect
SM11511	Colpy Cottage, palisaded enclosure 300m S of	Scheduled Monument	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Major**
SM11513	Woodside, hut circle 300m W of	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB2960	Culsalmond Old Parish Church Culsalmond Burial Ground	Category A Listed	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB2964	Williamston House	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB2965	Williamston Home Farm	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB30	Mill- House of Williamston	Category C Listed	-	Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB2961	Mort House Culsalmond Burial Ground	Category C Listed	-	Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
GDL386	Williamston House	GDL	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
NJ53NE0009	Ram stone, Stone, Boundary Bank	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
NJ53NE0012	Slioch, Cropmark Site	Regionally Significant HER Site	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Negligible
NJ63SE0022	Hill of Tillymorgan, Slate Quarries	Regionally Significant HER Site	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
NJ63SW0045	Foudland, Slate Quarries	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor

Table 1.2 provides a summary of the potential impacts on individual cultural heritage assets. It conveys the sensitivity of the asset, the magnitude of impact predicted and the significance of effects for each asset identified within the search radius of the Red route option. Effects that are considered to be 'significant' (effects of 'moderate' significance and above) are highlighted in bold.

Table 1.2 Tabulated Summary of the Potential Impacts on Individual Cultural Heritage Assets from the Red Route Option (Volume 5, Figures 16.3-16.4)

Asset no	Asset name	Designation/Category	Within 300m of route option	Within 1km of route option	Value / Sensitivity	Impact Type	Potential Impact	Impact Magnitude	Adverse/Beneficial	Significance of Effect
SM11511	Colpy Cottage, palisaded enclosure 300m S of	Scheduled Monument	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
SM11513	Woodside, hut circle 300m W of	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB2960	Culsalmond Old Parish Church Culsalmond Burial Ground	Category A Listed	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor

Asset no	Asset name	Designation/Category	Within 300m of route option	Within 1km of route option	Value / Sensitivity	Impact Type	Potential Impact	Impact Magnitude	Adverse/Beneficial	Significance of Effect
LB2964	Williamston House	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB2965	Williamston Home Farm	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB30	Mill- House of Williamston	Category C Listed	-	Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB2961	Mort House Culsalmond Burial Ground	Category C Listed	-	Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
GDL386	Williamston House	GDL	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
NJ53NE0009	Ram stone, Stone, Boundary Bank	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
NJ53NE0012	Slioch, Cropmark Site	Regionally Significant HER Site	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
NJ63SW0045	Foudland, Slate Quarries	Regionally Significant HER Site	Yes	Yes	Medium	Direct& Indirect	Damage to and loss of aspects of asset from construction	Moderate	Adverse	**Moderate**
							Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Moderate**

Table 1.3 provides a summary of the potential impacts on individual cultural heritage assets. It conveys the sensitivity of the asset, the magnitude of impact predicted and the significance of effects for each asset identified within the search radius of the Pink route option. Effects that are considered to be 'significant' (effects of 'moderate' significance and above) are highlighted in bold.

Table 1.3 Tabulated Summary of the Potential Impacts on Individual Cultural Heritage Assets from the Pink Route Option (Volume 5, Figures 16.5-16.6)

Asset no	Asset name	Designation/Category	Within 300m of route option		Within 1km of route option	Value / Sensitivity	Impact Type	Potential Impact	Impact Magnitude	Adverse/ Beneficial	Significance of Effect
SM13	Candle Hill, stone circle 600m SE of Old Rayne	Scheduled Monument	-		Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Minor
SM83	Newton House, inscribed stone and symbol stone 90m E of	Scheduled Monument	-		Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
SM4123	Durno, Roman temporary camp, 420m ESE of Westerton	Scheduled Monument	Yes		Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Moderate**
SM12113	The Law, cairn 175m NNW of East Law	Scheduled Monument	Yes		Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Moderate**
SM12137	Newton of Lewesk, enclosure 165m ESE of	Scheduled Monument	Yes		Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Moderate**
SM12302	Pitscurry, cairn 410m N of	Scheduled Monument	Yes		Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Moderate**
SM12924	Old Rayne, Episcopal manse and moat 45m ENE of Old Rayne School	Scheduled Monument	-		Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Minor

Asset no	Asset name	Designation/Category	Within 300m of route option		Within 1km of route option	Value / Sensitivity	Impact Type	Potential Impact	Impact Magnitude	Adverse/ Beneficial	Significance of Effect
LB16019	Market Cross, Old Rayne	Category A Listed	-		Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2962	Newton House	Category B Listed	-		Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Minor
LB2963	Garden Walls, Newton House	Category B Listed	-		Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2964	Williamston House	Category B Listed	-		Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Minor
LB2965	Williamston Home Farm	Category B Listed	-		Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB16002	Mill of Bonnyton	Category B Listed	Yes		Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB16003	The Ploughman's Society Hall	Category B Listed	Yes		Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB30	Mill- House of Williamston	Category C Listed	Yes		Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB2825	Logie Durno Church and Churchyard	Category C Listed	-		Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
GDL300	Newtown House	GDL	Yes		Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
GDL386	Williamston House	GDL	Yes		Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
NJ62NE0025	Lawfolds, Cropmark Site	Regionally Significant HER Site	Yes		Yes	Medium	Direct	Damage to and loss of aspects of asset from construction	Major	Adverse	**Major**
NJ72NW0010	Whiteford, Moated Enclosure	Regionally Significant HER Site	-		Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ72NW0055	Glenlogie, Cropmark Site	Regionally Significant HER Site	Yes		Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
NJ72NW0162	Ferniebrae, Gilmore Stone	Archaeological Remains	Yes		Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ63SE0059	Freefield House	NIDL	Yes		Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
NJ72NW0102	Pitcaple Castle	NIDL	-		Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ72NW0106	Logie House	NIDL	-		Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral

Table 1.4 provides a summary of the potential impacts on individual cultural heritage assets. It conveys the sensitivity of the asset, the magnitude of impact predicted and the significance of effects for each asset identified within the search radius of the Brown route option. Effects that are considered to be 'significant' (effects of 'moderate' significance and above) are highlighted in bold.

Table 1.4 Tabulated Summary of the Potential Impacts on Individual Cultural Heritage Assets from the Brown Route Option (Volume 5, Figures 16.7-16.8)

Asset no	Asset name	Designation/Category	Within 300m of route option	Within 1km of route option	Value / Sensitivity	Impact type	Potential Impact	Impact Magnitude	Adverse/ Beneficial	Significance of Effect
SM13	Candle Hill, stone circle 600m SE of Old Rayne	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
SM66	Logie House, 3 symbol stones 160m W of	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral

Asset no	Asset name	Designation/Category	Within 300m of route option	Within 1km of route option	Value / Sensitivity	Impact type	Potential Impact	Impact Magnitude	Adverse/ Beneficial	Significance of Effect
SM83	Newton House, inscribed stone and symbol stone 90m E of	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated	No change	n/a	Neutral
SM4123	Durno, Roman temporary camp, 420 ESE of Westeron	Scheduled Monument	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Moderate**
SM12115	Wester Shevock, cairn 385m S of	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
SM12116	Brownhills, cairns 120m N of	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
SM12302	Pitscurry, cairn 410m N of	Scheduled Monument	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Moderate**
SM12924	Old Rayne, Episcopal manse and moat 45m ENE of Old Rayne School	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB16019	Market Cross, Old Rayne	Category A Listed	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB16134	Westhall House	Category A Listed	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2826	Logie Durno Churchyard, Dalrymple Horn Elphinstone Burial Enclosure	Category B Listed	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB2827	Mill of Durno, Grain Mill	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2857	Logie House Hotel	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2859	Logie House, Walled Garden	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2860	Logie House, Doocot	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2962	Newton House	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB2963	Garden Walls, Newton House	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2964	Williamston House	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB2965	Williamston Home Farm	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and infrastructure	No change	n/a	Neutral
LB16135	Pitmachie Farmhouse (Formerly Pitmachie Inn) and Stables	Category B Listed	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB30	Mill- House of Williamston	Category C Listed	Yes	Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB2825	Logie Durno Church and Churchyard	Category C Listed	Yes	Yes	Low	indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB2829	Bridge of Pitcaple over River Urie	Category C Listed	-	Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2856	Logie House Lodge	Category C Listed	-	Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB18983	Westhall House, East Lodge, Including	Category C Listed	Yes	Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Negligible

Asset no	Asset name	Designation/Category	Within 300m of route option	Within 1km of route option	Value / Sensitivity	Impact type	Potential Impact	Impact Magnitude	Adverse/ Beneficial	Significance of Effect
	Boundary Wall and Gatepiers									
GDL300	Newton House	GDL	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
GDL386	Williamston House	GDL	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
NJ62NE0026	Kirkton of Oyne, Cairn	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ72NW0010	Whiteford, Moated enclosure	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ72NW0055	Glenlogie, Cropmark Site	Regionally Significant HER Site	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
NJ72NW0053	Logie, Cropmark Site	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ72NW0056	Bridgend, Cropmark Site	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ72NW0162	Ferniebrae, Gilmore Stone	Regionally Significant HER Site	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
NJ62NE0132	Westhall	NIDL	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associate infrastructure	Negligible	Adverse	Negligible
NJ62NE0133	Petmathen House	NIDL	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associate infrastructure	No change	n/a	Neutral
NJ62SE0044	Pittodrie House	NIDL	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associate infrastructure	No change	n/a	Neutral
NJ72NW0102	Pitcaple Castle	NIDL	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ72NW0106	Logie House	NIDL	Yes	Yes	Medium	Direct & Indirect	Damage to and loss of aspects of asset	Moderate	Adverse	**Moderate**
							Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Moderate**
Assets outwith the 1km study area specifically requested to be assessed by HES										
SM90210	Maiden Stone Cross Slab	Scheduled Monument /PIC	-	-	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral

Table 1.5 provides a summary of the potential impacts on individual cultural heritage assets. It conveys the sensitivity of the asset, the magnitude of impact predicted and the significance of effects for each asset identified within the search radius of the Violet route option. Effects that are considered to be 'significant' (effects of 'moderate' significance and above) are highlighted in bold.

Table 1.5 Tabulated Summary of the Potential Impacts on Individual Cultural Heritage Assets from the Violet Route Option (Volume 5, Figures 16.9-16.11)

Asset no	Asset name	Designation/Category	Within 300m of route option	Within 1km of route option	Value / Sensitivity	Impact Type	Potential Impact	Impact Magnitude	Adverse/ Beneficial	Significance of Effect
SM18	Broomend, henge, standing stone and symbol stone	Archaeological Remains	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	N/a	Neutral
SM76	Kintore, symbol stone near church	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
SM92	Castle of Hallforest	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
SM6448	Ratch-hill, settlement, field system & enclosures S and SE of	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral

Asset no	Asset name	Designation/Category	Within 300m of route option	Within 1km of route option	Value / Sensitivity	Impact Type	Potential Impact	Impact Magnitude	Adverse/ Beneficial	Significance of Effect
SM7920	Fullerton, ring ditches & cairn circle 420m SE of	Scheduled Monument	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Minor
SM12302	Pitscurry, cairn 410m N of	Scheduled Monument	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Moderate**
SM12434	Hill of Selbie, cairn 440m SE of Little Hillbrae	Scheduled Monument	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
SM12443	Hogholm Cottage, hut circle 120m SW of	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
SM12465	Deer's Den, roundhouses 195m and 250m S of	Scheduled Monument	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
SM12483	Greenlands, hut circles and cairns 380m S of	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
SM90188	Kinkell Church and burial ground	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB2819	Bourtie House	Category A Listed	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Moderate**
LB9140	Balbithan House	Category A Listed	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB36312	Kintore Town House The Square	Category A Listed	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2820	Garden Cottage, Bourtie House	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2832	East Balhalgardy Cottar Houses occupied by Dorward and Green (Old Farmhouse)	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
LB9135	Keithhall and Kinkell Parish Church	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
LB9141	Friend's Meeting House and Friend's Cottage Kinmuck	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
LB9152	Thainstone House	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB9153	Thainstone Policies Gate Lodge and Gate Pilks on Kintore - Inverurie Road	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB13470	Hangar, Cairnhall, Near Kintore	Category B Listed	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB36310	Kintore Parish Church The Square	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB36311	The Square Goosecroft House	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB36313	Kintore Arms Hotel The Square	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB36316	Kintore Bridge	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
LB6708	Former Road bridge over Lochter Burn	Category C Listed	Yes	Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	Minor
LB45610	Keith Hall North Lodge	Category C Listed	-	Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible

Asset no	Asset name	Designation/Category	Within 300m of route option	Within 1km of route option	Value / Sensitivity	Impact Type	Potential Impact	Impact Magnitude	Adverse/ Beneficial	Significance of Effect
LB45611	Keith Hall East Lodge	Category C Listed	-	Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
LB45613	Keith Hall Home Farm Cottages	Category C Listed	-	Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
LB45614	Keith Hall Road Bridge at North Drive	Category C Listed	-	Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
LB49868	North Street, Bridgend including Steading, Ancillary Building, Summer House and Boundary Walls	Category C Listed	Yes	Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
GDL232	Keith Hall	GDL	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
BTL11	Battle of Harlaw	Historic Battlefield	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
BTL18	Battle of Barra	Historic Battlefield	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
NJ71NE0014	Cairnhill, Stone Circle	Regionally Significant HER Site	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
NJ71NE0055	Deers Den, Cropmark Site (Roman Camp)	Regionally Significant HER Site	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
NJ71NE0059	Fullerton Cottage, Cropmark Site	Regionally Significant HER Site	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ71NE0061	Ardmurdo, Cropmark Site	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
NJ71NE0070	Fullerton, Cropmark Site	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ71NE0110	Ardenlea, School, Milestone	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ71NE0102	Bridgend House, Milestone	Regionally Significant HER Site	Yes	Yes	Medium	Indirect	Impact on setting from proximity or route option and associated infrastructure	No change	n/a	Neutral
NJ72NW0052	Mill of Pitcaple, Cropmark Site	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ72NW0055	Glenlogie, Cropmark Site	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
NJ72SE0001	West Balhalgardy, Remains of Stone Circle	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
NJ72SE0003	East Balhalgardy, Pictish Stone	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ72SE0042	Keith Hall, Site of church	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ72SE0043	Kirkton Village, Site of medieval village	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ72SE0045	Ingliston, Medieval Village (Site of)	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
NJ72SE0115	Boynds, Cropmark Site	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
NJ71NE0161	Thainstone House	NIDL	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ72NW0101	House of Daviot	NIDL	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral

Asset no	Asset name	Designation/Category	Within 300m of route option	Within 1km of route option	Value / Sensitivity	Impact Type	Potential Impact	Impact Magnitude	Adverse/ Beneficial	Significance of Effect
NJ72NW0102	Pitcaple Castle	NIDL	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ72NW0107	Legatesden	NIDL	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
NJ72SE0213	Bourtie House	NIDL	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Moderate**

Table 1.6 provides a summary of the potential impacts on individual cultural heritage assets. It conveys the sensitivity of the asset, the magnitude of impact predicted and the significance of effects for each asset identified within the search radius of the Orange route option. Effects that are considered to be 'significant' (effects of 'moderate' significance and above) are highlighted in bold.

Table 1.6 Tabulated Summary of the Potential Impacts on Individual Cultural Heritage Assets from the Orange Route Option (Volume 5, Figures 16.12-16.13)

Asset no	Asset name	Designation/Category	Within 300m of route option	Within 1km of route option	Value / Sensitivity	Impact Type	Potential Impact	Impact Magnitude	Adverse/ Beneficial	Significance of Effect
SM18	Broomend, henge, standing stones and symbol stone	Scheduled Monument	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
SM70	Drimmies, symbol stone	Scheduled Monument	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Minor
SM74	Inverurie Cemetery, four symbol stones	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
SM76	Kintore, symbol stone near church	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
SM90	Balquhain Castle	Scheduled Monument	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Moderate**
SM99	The Bass and Little Bass, motte-and-bailey castle	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Minor
SM3961	Mains of Balquhain, stone circle 715m NE of	Scheduled Monument	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Major	Adverse	**Major**
SM6448	Ratch-hill, settlement, field system & enclosures S and SE of	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity or route option and associated infrastructure	No change	n/a	Neutral
SM7920	Fullerton, ring ditches & cairn circle 420m SE of	Scheduled Monument	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
SM12110	East Blairbowie, standing stone 250m ENE of	Scheduled Monument	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
SM12118	St Apolinaris' Chapel and burial ground	Scheduled Monument	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Major	Adverse	**Major**
SM12195	Dillyhill, enclosure 510m WNW of	Scheduled Monument	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Moderate**
SM12302	Pitscurry, cairn 410m N of	Scheduled Monument	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Moderate**
SM12523	Bruce's Camp, hillfort	Scheduled Monument	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Moderate**
SM90188	Kinkell Church and burial ground	Scheduled Monument/PIC	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Minor
LB2830	Pitcaple Castle	Category A Listed	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Minor

Asset no	Asset name	Designation/Category	Within 300m of route option	Within 1km of route option	Value / Sensitivity	Impact Type	Potential Impact	Impact Magnitude	Adverse/ Beneficial	Significance of Effect
LB36312	Kintore Town House The Square	Category A Listed	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2790	Old House of Glack, House of Daviot Hospital	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2792	House of Daviot Formerly House of Glack	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2850	Inveramsay Bridge over River Urie	Category B Listed	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB9075	Manar Home Farm	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB9076	Manar Policies, East Gate Lodge including Gatepier and Gates	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB9152	Thainstone House	Category B Listed	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Moderate**
LB9153	Thainstone Policies Gate Lodge and Gate Pilks on Kintore - Inverurie Road	Category B Listed	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
LB13470	Hangar, Cairnhall, near Kintore	Category B Listed	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB36310	Kintore Parish Church The Square	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB36311	The Square Goosecroft House	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB36313	Kintore Arms Hotel The Square	Category B Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2788	Parish Church of Daviot (St Colm)	Category C Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2789	Parish Church of Daviot, Churchyard	Category C Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2791	Old House of Glack Gatepiers to NW	Category C Listed	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB2851	Harlaw House	Category C Listed	-	Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
LB35408	Old Sluice Bridges over Aberdeen Canal, Canal Road	Category C Listed	-	Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
LB49868	North Street, Bridgend including Steading, Ancillary Building, Summer House and Boundary Walls	Category C Listed	-	Yes	Low	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
GDL232	Keith Hall	GDL	-	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Minor
BLT11	Battle of Harlaw	Historic Battlefield	Yes	Yes	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
NJ71NE0014	Cairnhill, Stone Circle	Regionally Significant HER Site	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ71NE0055	Deers Den, Cropmark Site (Roman Camp)	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral

Asset no	Asset name	Designation/Category	Within 300m of route option	Within 1km of route option	Value / Sensitivity	Impact Type	Potential Impact	Impact Magnitude	Adverse/ Beneficial	Significance of Effect
NJ71NE0059	Fullerton Cottage, Cropmark Site	Regionally Significant HER Site	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
NJ71NE0070	Fullerton, Cropmark Site	Regionally Significant HER Site	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
NJ71NE0112	Bridgend House, Milestone	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ72NW0052	Mill of Pitcaple, Cropmark Site	Regionally Significant HER Site	Yes	Yes	Medium	Direct	Damage to and loss of aspects of asset	Major	Adverse	**Major**
NJ72NW0055	Glenlogie, Cropmark Site	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
NJ72NW0056	Bridgend, Cropmark Site	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	No change	n/a	Neutral
NJ72SE0020	Dilly Hill, Cairn	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
NJ72SE0038	Old Hall of Ardtannes	Regionally Significant HER Site	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
NJ72SE0048	Ardtannes, Flints, Flint working area.	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
NJ72SE0100	West Balhalgardy, Cropmark Site	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
NJ72SE0101	West Balhalgardy, Cropmark Site	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
NJ72SW0008	Liggar's Stone, Memorial stone	Regionally Significant HER Site	-	Yes	Medium	Indirect	Impact on setting from proximity or route option and associated infrastructure	Negligible	Adverse	Negligible
NJ72SW0040	Dilly Hill, Cropmark Site	Regionally Significant HER Site	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
NJ71NE0161	Thainstone House	NIDL	Yes	Yes	Medium	Direct & Indirect	Damage to and loss of aspects of asset	Moderate	Adverse	**Moderate**
							Impact on setting from proximity of route option and associated infrastructure	Moderate	Adverse	**Moderate**
NJ71NW0205	Manar House	NIDL	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
NJ72NW0101	House of Daviot	NIDL	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Negligible
NJ72NW0102	Pitcaple Castle	NIDL	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
NJ72NW0107	Legatesden	NIDL	Yes	Yes	Medium	Indirect	Impact on setting from proximity of route option and associated infrastructure	Minor	Adverse	Minor
Assets outwith the 1km study area specifically requested to be assessed by HES										
SM90126	East Aquhorthies Stone Circle	Archaeological Remains	-	-	High	Indirect	Impact on setting from proximity of route option and associated infrastructure	Negligible	Adverse	Minor

Appendix A17.1 **Landscape Assessment Methodology**

Appendix A17.1 **Landscape Assessment Methodology**

Introduction

This Appendix describes the methodology for the Landscape Impact Assessment (LIA) for the proposed dualling of the A96 from East of Huntly to Aberdeen. This is summarised in Volume 2, Part 3, Chapter 17 Landscape, Section 17.3. Landscape impact assessment is a constituent part of the LVIA process and, as it is linked to the Visual Impact Assessment, the methodology for this element as outlined in Volume 4, Appendix A15.1 is also relevant.

This methodology follows the processes outlined in:

- The Guidelines for Landscape and Visual Impact Assessment 3rd Edition (GLVIA3[1]) produced by the Landscape Institute and the Institute of Environmental Assessment; and
- The Design Manual for Roads and Bridges Volume 11, Section 3, Part 5 Landscape Effects (DMRB[2]) updated by Interim Advice Note 135/10 Landscape and Visual Effects.

These published documents do not provide a prescriptive template for assessment[3], they provide principles on the approach and methodology. This appendix provides additional clarification regarding the scope and methodology of the Landscape Impact Assessment following a combination of the guidelines in GVLIA3 and DMRB Volume 3, Section 3, Part 5, Landscape effects. The assessment must provide a level of detail that allows the reasonable assessment of the significance of landscape and visual effects. GLVIA3 explains this is necessary because 'the level of detail provided should be that which is reasonably required to assess the likely significant effects. It should be appropriate and proportional to the scale and type of development and the type and significance of the landscape and visual effects likely to occur'.

DMRB describes the scope required to fulfil DMRB Stage 2 of the assessment as:

'Undertake sufficient assessment to identify the landscape and visual factors and the effects upon them to be taken into account by the Design Organisation in developing and refining route sections.[4]'

There are differences in focus between GLVIA3 and DMRB because of their approaches to the subject and dates of publication. This assessment has taken a precautionary approach throughout and aligns with the guidance that is the more robust, following GLVIA3 where this

1 Landscape Institute and Institute of Environmental Management and Assessment, *Guidelines for Landscape and Visual Impact Assessment*, 2013, third revised edition, Routledge.
2 Design Manual for Roads and Bridges (DMRB), *Volume 11, Section 3, Part 5, Landscape Effects*, June 1993, and Interim Advice Note 135/10 *Landscape and Visual Effects Assessment*, November 2010.
3 As stated in section 1.20 of GVLIA3.
4 The Design Manual for Roads and Bridges (DMRB), *Volume 11, Section 3, Part 5 Landscape Effects*, June 1993, Page 9/2 Section 9.6.

provides more information and/or requires more detail and DMRB where this provides more information and/or requires more detail.

For details on the sources of information, establishment of the study area and consultation see Volume 2, Part 3, Chapter 17, Section 17.2.

Process of LIA

The landscape assessment process follows these key stages:

- Initial identification of those aspects of the proposed development that may give rise to significant impacts;
- Identification and assessment of the landscape baseline conditions to include key characteristics;
- Assessment of the sensitivity of landscape receptors;
- Development of design objectives relating to the specific sensitivities of the landscape and visual receptors;
- Identification and incorporation of potential mitigation measures, from primary measures embedded in the standard construction and management practices to secondary measures included as part of the landscape design;
- Assessment of the predicted impacts and the result of mitigation measures. The predicted residual landscape effects are based on a combination of sensitivity and magnitude of change; and
- The significance of any residual impacts.

This process, following GLVIA3, is iterative, requiring continual review and reflection as the design develops. Each element listed above has been repeated and revisited as part of the process.

This assessment considers the mitigation and residual impacts of each route option appropriate for a DMRB Stage 2 scope of works. In accordance with GLVIA3, the process needs to be transparent and understandable. This assessment follows a standard methodology for evaluating sensitivity, magnitude of change and significance of effects. The following section describes the criteria for judgement of these with terminology and values

summarised in Appendix A17.2 Tables 1.5, 1.6 and 1.7. In accordance with GLVIA3, these specific criteria relating to the scheme have been predefined.

Landscape Baseline

GLVIA3 defines landscape receptors as 'the constituent elements of the landscape, its specific aesthetic or perceptual qualities and the character of the landscape in different areas[5]'.

Paragraph 17.2.15 in Chapter 17 explains that landscape receptors are elements that can be affected including the nature of the landscape pattern, qualities of spatial enclosure, or the shape and scale of the landform.

For this LIA, landscape receptors are defined as Local Landscape Character Areas (LLCAs). These are listed in Volume 4, Appendix A17.2, Table 1.1 and shown in Volume 5, Figures 17.14 to 17.19. These have been based on the key landscape characteristics of the study area, how these are experienced and their sensitivity to this type of development.

How sensitive landscape receptors are to change, depends on their susceptibility and their value. Consideration is also given when deciding the level of sensitivity to the type of development proposed. Landscape value is determined by referring to statutory designations and published material which illustrate how people experience the landscape. This may include popular attractions, walks or features; places that have distinct character or where people go to experience the qualities of the landscape.

In accordance with GLVIA3, the susceptibility of the landscape was evaluated based on its ability to absorb changes likely to be the result of the scheme. While there is a link between landscape susceptibility and value, GLVIA notes that 'there can be complex relationships between the value attached to landscape receptors and their susceptibility to change[6].' This means the correlation between susceptibility and value can differ from LLCA to LLCA and from route option to route option. High value landscapes can be robust while low value landscapes may not have the capacity to absorb change.

The assessment of landscape sensitivity included the following:

- Landscape character, including scale, enclosure, openness, land cover and built structures, landform, pattern and texture, and tranquillity;
- Landscape value, including local, regional or national landscape designations;
- Distribution and type of receptors; and
- Scope for mitigation.

[5] Landscape Institute and Institute of Environmental Management and Assessment, *Guidelines for Landscape and Visual Impact Assessment*, 2013, third revised edition, Routledge, Section 3.21, page 36.
[6] Landscape Institute and Institute of Environmental Management and Assessment, *Guidelines for Landscape and Visual Impact Assessment*, 2013, third revised edition, Routledge, Section 5.46, page 90.

In accordance with DMRB, the value and susceptibility of the landscape receptors were combined to give one value for sensitivity.

Table 1.1 provides a summary of the different levels of sensitivity based on these characteristics. It is recognised that at this level of assessment receptors are placed in the category that fits best rather than one where all criteria apply.

Table 1.1 Criteria for Levels of Landscape Sensitivity

Level	Description
High	Susceptibility Key characteristics and features that are very sensitive to the siting of a new road scheme, such as simple or indistinct pattern, few existing built features or foci, sense of intimacy and shelter, or sense of tranquillity, and these contribute significantly to the distinctiveness of the LLCA and how this is experienced. Value The key characteristics that would be affected by the Scheme contribute significantly to the perceived value of the landscape at regional or national level. This is likely to be recognised by landscape designations, for example, GDL.
Medium	Susceptibility Key characteristics and features that are sensitive to the siting of a new road scheme and/or with which this may relate, such as a landscape with a distinct pattern, prominent linear features, large-scale built structures, a broad sense of enclosure and a landform to which the proposed development could fit. The characteristics of the landscape may contribute to the distinctiveness of the LLCA but are experienced mainly locally or when moving through the landscape. Value The key characteristics that would be affected by the Scheme contribute to the perceived value of the landscape at a regional or local level. This may be recognised by landscape designations, for example, GDL or Area of Great Landscape Value (AGLV).
Low	Susceptibility Key characteristics and features which are not particularly sensitive to the siting of a new road scheme and/or with which this may relate. This may be easily accommodated subject to careful design. Value The key landscape characteristics that would be affected by the Scheme do not contribute to the perceived value of the landscape at a national or regional level. The landscape is valued mainly at a local level only and not designated or obviously recognised for its value.

Magnitude of Change

In accordance with GLVIA3, the magnitude of landscape change has been assessed in terms of:

- The nature of the landscape change with specific reference to the key landscape characteristics and the experience of these;
- The scale or size of the change;

- The geographical extent of the area over which the change would be experienced;
- The duration of the change;
- Whether the change would be adverse or beneficial; and
- The reversibility of the change.

Whilst the magnitude of change can be quantified in terms of distance or areas, landscape effects do not lend themselves to empirical evaluation. For example, in certain landscape types the impact of a development is not significantly lessened by distance. It is more important to assess if the effect changes the key characteristics of the landscape that are critical to its distinctive character. This is because the magnitude of effect depends on the degree of change and the effectiveness of integration of the development.

Consequently, the magnitude of landscape change for this LIA was assessed based on 'whether the effect changes the key characteristics of the landscape, which are critical to its distinctive character'... and 'the nature of the view of the proposed development' (GVLIA3 paragraphs 5.49 and 6.39).

Using a standard methodology, the predicted magnitude of landscape change for each route option was judged at four levels as summarised in Table 1.2. These are high, medium, low and negligible.

Table 1.2 Criteria for Levels of Landscape Magnitude of Change

Level	Description
High	Fundamental change to the characteristics of the landscape resource.
Medium	Material and important change to the characteristics of the landscape resource
Low	Detectable and notable change to the characteristics of the landscape resource
Negligible / No change	No change or detectable change in typical circumstances (for example exceptional weather conditions) or not influencing the key characteristics of the landscape resource

Significance of Effects

In judging the significance of landscape effects, GLVIA3 states (paragraph 5.54) 'significance can only be defined in relation to each development and its specific location. It is for each assessment to determine how the judgements about the landscape receptors and landscape effects should be combined to arrive at significance and to explain how the conclusions have been derived'.

The predicted significance of landscape effects is based on two elements;

- The sensitivity of the receptor; and
- The predicted magnitude of change.

Taking all the above evaluations into consideration an 'overall profile' approach was taken to accord with GLVIA3. This combined judgement reflects the importance of each individual landscape receptor and its sensitivity, allowing the significance of all influential landscape effects to be considered in combination with the magnitude, as described above. The key requirement in evaluating the combined judgement is not to average the different sensitivities and measures of magnitude because the average impact might not account for those individual effects that are of lesser or greater significance. As this is a complex process where the combination of differing sensitivities and magnitude of change results in effects with often different levels of significance, each receptor is evaluated separately.

Table 1.3 summarises these complex findings using a recognised four-point scale to aid interpretation. These are major, moderate, low and negligible/no change. As described in Chapter 17 Landscape, paragraph 17.2.21, all landscape effects that are moderate or major are considered significant.

Table 1.3 Criteria for Levels of Significance of Landscape Effects

Level	Description
Major	The proposed development becomes a key characteristic of the landscape and/or changes the intrinsic landscape character of the area. Fundamental change to the landscape resource or material, important or notable change to a sensitive or valued landscape.
Moderate	The proposed development affects the character of the landscape, but of a nature, scale or extent that does not change the intrinsic landscape character of the area. Fundamental, material or important change to the landscape resource or notable change to a sensitive or valued landscape.
Minor	The proposed development introduces new element(s) into the landscape but does not affect the intrinsic landscape character of the area. Material, important or notable change to the landscape resource or barely perceptible change to a sensitive or valued landscape
Negligible / No change	Negligible or no change

Assumptions

The scope of this LIA satisfies the requirements of a DMRB Stage 2 assessment described in DMRB Volume 11, Part 5, Section 3, Paragraph 9.1. There is a significant amount of additional information in Volume 4, Appendix 17.2 supporting the figures provided in Volume 5.

Following a standard approach, the baseline conditions have been assessed as those currently existing. Consideration has been taken of the likely changes in this baseline between now and the anticipated date of opening in 2030. This includes likely development sites and changes to land-use.

Landscape effects have been assessed based on whether they are beneficial or adverse in accordance with GLVIA3. This is based on how well the scheme relates to the existing character as follows:

- Adverse – the quality or value of the landscape is diminished by the proposals which may appear incompatible with the baseline conditions; and

- Beneficial – the quality or value of the landscape is enhanced by the development which appears compatible with the baseline conditions.

For this level of assessment (DMRB Stage 2), indirect effects have not been considered as part of the assessment. Additional assumptions are described in Chapter 17, paragraphs 17.2.22 to 38.

Appendix A17.2 **Landscape Baseline and Effects**

Appendix A17.2 **Landscape Baseline and Effects**

Introduction

This appendix forms part of the Landscape Impact Assessment (LIA) reported within Volume 2, Part 3, Chapter 17 Landscape, of the Design Manual for Roads and Bridges (DMRB) Stage 2 Scheme Assessment Report, Part 3 (Environmental Assessment).

As part of the baseline assessment, the Landscape Character Types identified in the Scottish Natural Heritage 2019 LCT map[7] provided the basis for further evaluation of Local Landscape Character Areas (LLCA's). For each of these LLCA's assessment was carried out of:

- The key characteristics and qualities;
- The sensitivity to the route options;
- The magnitude of landscape effects of the route options;
- The significance of landscape effects of the route options; and
- The significance of residual landscape effects of the route options after mitigation has been incorporated.

A list of all the LLCA's is included in Table 1.1 and plans of all LLCA's within the study area are included in Volume 5, Figures 17.14 to 17.19.

The findings of the landscape assessment are summarised within the following three tables set out in this appendix:

- Table 1.5 - Landscape Baseline and Predicted Landscape Effects for East of Huntly to Colpy. Cyan and Red Route Options;
- Table 1.6 - Landscape Baseline and Predicted Landscape Effects for Colpy to Pitcaple. Pink and Brown Route Options; and
- Table 1.7 - Landscape Baseline and Predicted Landscape Effects for Pitcaple to Kintore. Violet and Orange Route Options.

These tables note the potential impacts of each route option on the Strategic Landscape Objectives outlined in the Landscape Appraisal Approach Technical Note found in Appendix A17.3.

The tables also refer to mitigation measures (M1 to M7) which are described in Volume 2, part 3, Chapter 17 Landscape, Section 17.5. These landscape mitigation measures broadly define

[7] Available at: https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions,

the types of mitigation required for the route options. These will be refined during DMRB Stage 3 following further design development.

For certain locations, more detailed mitigation measures are proposed. These are described in Tables 1.2, 1.3 and 1.4 where they have been applied to specific locations of each route option.

Table 1.1 List of Local Landscape Character Areas within the study area

Local Landscape Character Areas (LLCA's)		
LLCA	1	Huntly
LLCA	2	A97 Corridor
LLCA	3	Ba' Hill and Surrounds
LLCA	4	Strath Bogie Corridor
LLCA	5	Mains of Newtongarry
LLCA	6	Dummuies to Stonefield
LLCA	7	Ridge from Gartly to Hill of Tillymorgan
LLCA	8	Bissett Moss
LLCA	9	Ythanwells
LLCA	10	Insch Basin
LLCA	11	Low Area from Colpy to Fisherford
LLCA	12	Hill of Rothmaise to Hill of Easterton
LLCA	13	Old Rayne to Harlaw
LLCA	14	Bennachie and Surrounds
LLCA	15	Pitcaple to Daviot
LLCA	16	Wooded Farmland South of Chapel of Garioch
LLCA	17	River Don Wooded Corridor
LLCA	18	Wooded Farmland around Kemnay
LLCA	19	Inverurie and Settlement Corridor
LLCA	20	Oldmeldrum and Surrounds
LLCA	21	Keith Hall and Surrounds
LLCA	22	Farmland East of Newmachar
LLCA	23	Hill of Marcus
LLCA	24	River Don Open Corridor
LLCA	25	Open Farmland South of Kintore

Landscape Mitigation at DMRB Stage 2

Table 1.2 Landscape Mitigation Measures Assumed at DMRB Stage 2 - East of Huntly to Colpy

No.	Location	Description of Assumed Mitigation Measures	LLCA
East of Huntly to Colpy – Cyan Route Option			
1	Leys of Dummuies to Den of Bogside	Replant trees removed alongside carriageway and avenue at Adamston. Shape landform to screen route option in cutting. Planting of cuttings and embankments where possible, to integrate into setting. Add small blocks of trees to improve setting.	LLCA5, LLCA6
2	Den of Bogside to Broomhill	Replant trees removed alongside carriageway and avenue at Hillhead and hedgerows between fields. Shape landform to screen route option in cutting and embankment. Planting of cuttings and embankments where possible, to integrate into setting.	LLCA6
3	Broomhill to Fordmouth	Replant trees and gorse removed alongside carriageway. Planting of cuttings and embankments where possible, to integrate into setting. Add small blocks of trees, mainly conifers, to improve setting at Hill of Skares.	LLCA6, LLCA7
4	Fordmouth to Woodside	Replant trees removed along carriageway. Planting of cuttings and embankments where possible, to integrate into setting. Add small blocks of trees, mainly conifers, to improve setting at Hill of Skares.	LLCA7
5	Woodside to Colpy	Replant trees removed along carriageway. Shape landform to screen route option and plant up cuttings & embankments to integrate into landscape e.g. at Fallow Hill. Add small blocks of trees, mainly conifers, to improve setting around Jericho and planting of embankments at Colpy to integrate into setting.	LLCA10
East of Huntly to Colpy – Red Route Option			

No.	Location	Description of Assumed Mitigation Measures	LLCA
1	Leys of Dummuies to Den of Bogside	Replant trees removed alongside carriageway and avenue at Adamston. Shape landform to screen route option in cutting. Add small blocks of trees to improve setting.	LLCA5, LLCA6
2	Den of Bogside to Broomhill	Replant any trees removed alongside carriageway at Hillhead and hedgerows separating fields. Shape landform to screen route option in cutting and embankment. Add small blocks of trees to maintain tree cover at Rack Moss. Planting to cuttings and embankments to integrate into setting.	LLCA6, LLCA7
3	Broomhill to Hill of Skares	Replant trees removed alongside carriageway and hedgerows between fields. Add small blocks of trees, mainly conifers, to improve setting at Hill of Skares. Add native shrub planting to embankment at Hill of Foudland. Shape landform to screen route option in cutting.	LLCA7
4	Hill of Skares to Colpy	Replant trees removed alongside carriageway and hedgerows between fields. Add small blocks of trees, mainly conifers, to improve setting at Hill of Skares and to improve setting around Jericho. Plant up cuttings & embankments to integrate into landscape e.g. at Fallow Hill. Plant small blocks of woodlands to embankments at Colpy to improve setting. Shape landform to screen route option on embankment.	LLCA7, LLCA10

Table 1.3 Landscape Mitigation Measures Assumed at DMRB Stage 2 – Colpy to Pitcaple

No.	Location	Description of Assumed Mitigation Measures	LLCA
Colpy to Pitcaple – Pink Route Option			
1	Colpy to Loch Insch Fishery	Replant trees removed alongside carriageway and hedgerows between fields and at field boundaries. Plant up cuttings & embankments to integrate into landscape at Fallow Hill. Add small blocks of trees to improve setting at Old Inn Farm. Reinstate stone walls alongside carriageway.	LLCA10
2	Loch Insch Fishery to Mellenside	Replant trees removed alongside carriageway and hedgerows between fields and at field boundaries. Reinstate stone walls alongside carriageway.	LLCA11
3	Mellenside to St. Cloud	Replant trees removed alongside carriageway. Add small blocks of trees to improve setting at Mellenside, and the junction by St. Cloud, south of Freefield House. Shape landform to screen route option in cutting and embankment as well as access road at junction. Plant embankments with native shrubs to integrate into setting. Use low lighting levels at junction.	LLCA11
4	St Cloud to East Law	Replant trees removed alongside carriageway and hedgerows between fields and at field boundaries. Add small blocks of trees to improve setting at the junction by St. Cloud, south of Freefield House, East Law and at Lawrence Rd. Shape landform to screen route option in cutting and embankment as well as access road at junction. Use low lighting levels at junction.	LLCA11, LLCA13
5	East Law to Pitscurry Wood	Replant trees removed alongside carriageway and hedgerows between fields and at field boundaries. Add small blocks of trees to improve setting at East Law and the junction south of Durno. Replant woodland along Woodend and Pitscurry to maintain tree cover. Shape landform to screen route option in cutting and embankment as well as access road at junction. Use low lighting levels at junction.	LLCA15
Colpy to Pitcaple – Brown Route Option			
1	Colpy to Loch Insch Fishery	Replant trees removed alongside carriageway and hedgerows between fields and at field boundaries. Plant up cuttings & embankments to integrate into landscape at Fallow Hill.	LLCA10

No.	Location	Description of Assumed Mitigation Measures	LLCA
		Add small blocks of trees to improve setting at Old Inn Farm. Reinstate stone walls alongside carriageway.	
2	Loch Insch Fishery to Little Lediken	Replant trees removed alongside carriageway and hedgerows between fields and at field boundaries. Add small blocks of trees to improve setting at The Kellock and at Little Lediken. Shape landform to screen route option in cutting and embankment as well as access roads and plant up cuttings & embankments to integrate into landscape at Kellockbank Junction by Little Lediken. Use low lighting levels at junction.	LLCA10
3	Little Lediken to Pitmachie/Old Rayne	Replant trees removed alongside carriageway and hedgerows between fields and at field boundaries. Add small blocks of trees to improve setting at Little Lediken and East Lediken. Reinstate and consider new stone walls by Pitmachie. Shape landform to screen route option in cutting and embankment as well as access road at junction by Little Lediken. Plant up embankments at Shevock underbridge to integrate into landscape. Use low lighting levels at junction.	LLCA10, LLCA13
4	Pitmachie/Old Rayne to Over Carden	Replant trees removed alongside carriageway and access roads and hedgerows between fields and at field boundaries. Add small blocks of trees to improve setting at Carden Junction east of Mains of Pitmedden. Reinstate and consider new stone walls by Pitmachie. Shape landform to screen route option in cutting and embankment as well as access road at junction east of Mains of Pitmedden and along River Urie. Use lower lighting levels at the junction.	LLCA13
5	Over Carden to Pitscurry Wood	Replant trees removed alongside carriageway and access roads and hedgerows between fields and at field boundaries. Add small blocks of trees to improve setting and maintain tree cover at junction east of Mains of Pitmedden, the overbridge crossing over River Urie, north of Logie estate (Home Farm), east of Ferniebrae and at the junction south of Durno. Shape landform to screen route option in cutting and embankment as well as access road along the full length of the route. Use low lighting levels at junction.	LLCA13, LLCA15

Table 1.4 Landscape Mitigation Measures Assumed at DMRB Stage 2 – Pitcaple to Kintore

No.	Location	Description of Assumed Mitigation Measures	LLCA
Pitcaple to Kintore – Violet Route Option			
1	Pitscurry Wood to Lethenty	Replant trees removed alongside carriageway and access roads and hedgerows between fields and at field boundaries. Add small blocks of trees to improve setting and maintain tree cover at Pitscurry and Mossfield, Daviot Junction and the adjacent access roads. Shape landform to screen route option in cutting and embankment as well as access road along the full length of the route. Use low lighting levels at Daviot Junction as well as the junction south of Durno and to the east of Hill of Den.	LLCA15, LLCA13
2	Lethenty to Hillbrae	Replant trees removed alongside carriageway and access roads and hedgerows between fields and at field boundaries. Add small blocks of trees to improve setting at Uryside Junction(s), underbridges, Hillbrae, the adjacent access roads and tree planting to the south of Bourtie House to integrate into the setting. Shape landform to screen route option in cuttings and embankments as well as access road along the full length of the route. Use low lighting levels at the junction west of Roundhaugh.	LLCA13
3	Hillbrae to Altons	Replant trees removed alongside carriageway and access roads and hedgerows between fields and at field boundaries. Add small blocks of trees to improve setting (and maintain tree cover) at Hillbrae and the adjacent access road, to the north and east of Ingliston, at Ordiefauld and the embankments and side road north of Isaacstown and at Ashlea Grange. Shape landform to screen route option in cutting and embankment as well as access road along the full length of the route. Reinstate stone walls south of Hillbrae and north of Ingliston.	LLCA20, LLCA21
4	Altons to North of Balbithan	Replant trees removed alongside carriageway and access roads and hedgerows between fields and at field boundaries. Add small blocks of trees to improve setting to the south of Alton and to the adjacent side road, the embankments west of Balbithan House and to the cutting north of Balbithan. Shape landform to screen route option in cutting and embankment as well as access road along the full length of the route.	LLCA21
5	North of Balbithan to Kintore	Replant trees removed alongside carriageway and access roads and hedgerows between fields and at field boundaries. Add small blocks of trees to improve setting at Tavelty Junction and Kintore. Shape landform to screen route option in cutting and embankment as well as access	LLCA21, LLCA24, LLCA19

No.	Location	Description of Assumed Mitigation Measures	LLCA
		road along the full length of the route. Add small blocks of trees to viaduct embankments to help integrate into the setting. Use low lighting levels at Tavelty Junction.	
Pitcaple to Kintore – Orange Route Option			
1	Pitscurry Wood to Mill of Pitcaple	Replant trees removed alongside carriageway and access roads and hedgerows between fields and at field boundaries. Add small blocks of trees to improve setting at Pitscurry Junction, Mossfield and Mill of Pitcaple and adjacent access roads. Shape landform to screen route option in cutting and embankment as well as access road along the full length of the route.	LLCA15
2	Mill of Pitcaple to Drimmies	Replant trees removed alongside carriageway and access roads and hedgerows between fields and at field boundaries. Add small blocks of trees to improve setting at Mill of Pitcaple, the embankments of River Urie underbridge to integrate into setting and Milton of Inveramsay. Shape landform to screen route option on embankment from Milton of Inveramsay to Drimmies. Use low lighting levels at the junction by Drimmies.	LLCA15, LLCA16
3	Drimmies to Dilly Hill	Replant trees removed alongside carriageway and access roads and hedgerows between fields and at field boundaries. Shape landform to screen route option cutting along the full length of the route as well as access roads. Plant embankments with low maintenance native shrub mix to integrate into setting. Add small blocks of trees to improve setting at Drimmies Junction. Use low lighting levels at the junction by Drimmies.	LLCA16
4	Dilly Hill to Polinar Dam	Replant trees removed alongside carriageway and access roads and hedgerows between fields and at field boundaries. Add small blocks of trees to improve setting at junction by Alton and at Polinar Dam. Shape landform to screen route option in Blackhall Road Junction by Alton and west of Polinar Dam. Plant embankments with low maintenance native shrub mix to integrate Blackhall Road Junction into setting. Use low lighting levels at the junction by Alton.	LLCA16, LLCA17
5	Polinar Dam to Crichie	Replant trees removed alongside carriageway and access roads and hedgerows between fields and at field boundaries. Add small blocks of trees to improve setting at Polinar Dam, at St. Apollinaris chapel, B993 north of Bruce's Camp and at cuttings and embankments along the full stretch of the route. Shape landform to screen route option west of Polinar Dam and from B993 to Crichie.	LLCA17, LLCA18
6	Crichie to Kintore Business Park	Replant trees removed alongside carriageway and access roads and hedgerows between fields and at field boundaries. Add small blocks of trees to improve setting at Crichie, at Thainstone Junction and along the full stretch of the route and side roads by Thainstone and the cemetery near B987 junction. Plant embankments with low maintenance native shrub mix to integrate	LLCA18, LLCA19

No.	Location	Description of Assumed Mitigation Measures	LLCA
		Thainstone Junction into setting. Shape landform to screen route option from Crichie to Thainstone Junction. Use low lighting levels at the Thainstone Junction.	

Landscape Baseline and Predicted Effects

Table 1.5 Landscape Baseline and Predicted Landscape Effects for East of Huntly to Colpy (Cyan and Red Route Options)

<table>
<tr><th>Sub Topic / Criteria</th><th colspan="2">Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)</th><th>LLCA Sensitivity and Magnitude of impact</th><th>Predicted Landscape Effects</th><th>Assumed Priority Secondary Mitigation</th><th>Predicted Residual Landscape Effects</th></tr>
<tr><td rowspan="4">LLCA 1: Huntly

Includes landscape units: 1</td><td colspan="5">Landscape baseline:

• Huntly is a large town with a simple grid pattern surrounding an historic core. It contains many fine stone buildings.
• Huntly has peripheral trading estates and superstores to the east, west and south-west. These are associated with large car parks and significant infrastructure.
• The existing A96 contains the town along its south and western borders. The area between the road and the historic core is where larger development has occurred.
• Huntly lies within the Deveron Valley Special Landscape Area.</td></tr>
<tr><td colspan="2">Cyan route option predicted landscape effects:

Due to distance and intervening topography, or landscape features providing an effective screen, this route option has no impact on this LLCA.</td><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td>Cyan route option strategic landscape objective risk</td><td colspan="2">Predicted impact on SLO's</td><td colspan="3">Residual impact on SLO's</td></tr>
<tr><td></td><td colspan="2">No Impact</td><td colspan="3">No Impact</td></tr>
</table>

<table>
<tr><th>Sub Topic / Criteria</th><th colspan="2">Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)</th><th>LLCA Sensitivity and Magnitude of impact</th><th>Predicted Landscape Effects</th><th>Assumed Priority Secondary Mitigation</th><th>Predicted Residual Landscape Effects</th></tr>
<tr><td rowspan="3"></td><td colspan="2">Red route option predicted landscape effects:

Due to distance and intervening topography, or landscape features providing an effective screen, this route option has no impact on this LLCA.</td><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td>Red route option strategic landscape objective risk</td><td>Predicted impact on SLO's</td><td colspan="3">Residual impact on SLO's</td></tr>
<tr><td>No Impact</td><td colspan="3">No Impact</td></tr>
<tr><td>LLCA 2: A97 Corridor

Includes landscape units: 2, 3, 4, 5,16, 17</td><td colspan="6">Landscape baseline:

• This area lies to the north of the existing A96 and runs either side of the A97. The lower lying areas next to the road are rough grazing bounded by post and wire fences. The rough grass to the edges of the fields gives the area an unkempt feel. The presence of reeds in the grassland is evidence of poor drainage. Where soils are better due to elevation there are occasional arable fields.
• The area is contained by ridges to the north-west and south-east. The north-west ridge is formed by Battle Hill and Kinnoir Wood. These wooded hills are a distinctive skyline feature with continuous conifer woodlands. The compartments and rides indicate that this is a working forest.
• Below the wooded hills are bare slopes which form the transition between the hills and the valley floor. These are also rough grazing, slightly unkempt and untidy.
• The broader slopes from the road to the south-east ridge at Newtongarry Hill are defined by post and wire fences with occasional stone walls that run distinctively uphill. The ridge from Robins Height and Reams Hill, includes a mature tree belt and forms a recognisable skyline feature that separates the landscape and allows elevated views across the landscape.
• The existing A96 sits slightly above this area, forming a visual barrier to the south. Cairn Hill is visible above the road looking south.
• This landscape falls within the Deveron Valley Special Landscape Area and high sensitivity area 1 and is therefore highly sensitive.</td></tr>
</table>

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Cyan route option predicted landscape effects: The route option follows the line of the existing A96 from the very edge of this area. As such the impact will be mitigated by the distance from the site. The difference between the existing road and the route option at this point will be marginal.	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M5	Minor
	Cyan route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		Where the existing corridor is widened this may require existing roadside planting to be removed (SLO10). This may affect existing roadside laybys (SLO11).	By replacing any lost corridor planting and ensuring landform provides natural screening the impact will be lessened.		
		Minor negative	No impact		
	Red route option predicted landscape effects: The two route options are aligned at this point along the route of the existing A96. Therefore, the impacts are similar.	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M5	Minor
	Red route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		Where the existing corridor is widened this may require existing roadside planting to be removed (SLO10). This may affect existing roadside laybys (SLO11).	By replacing any lost corridor planting and ensuring landform provides natural screening the impact will be lessened.		
		Minor negative	No impact		

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
LLCA 3: Ba' Hill and Surrounds Includes landscape units 6, 7, 8, 9, 10, 11:	**Landscape baseline:** • This area consists of mostly large arable fields within a gently undulating landscape. Fields are defined by post and wire fences with occasional hedges. There is an open aspect with wider views and a general sense of order. To the south the looming presence of Gartly Moor contains views. To the east views are contained by the Hill of Dummuies. • Within the landscape there are a few pockets of woodland and a distinctive ridge line that runs from the Belts of Shanquhar to Ba' Hill. Ba' Hill is a wooded knoll forming a counterpoint to Cairn Hill. Cairn Hill sits at the northern edge of this area, close to the existing A96. Cairn Hill is an open hill, visible from some distance. It has a cluster of telecoms masts on the summit and individual mature trees on its slopes giving it a parkland appearance. At its base, there are a number of individual farm buildings set in small blocks of woodland. • The dark green coniferous edges of Ba' Hill follow straight field boundaries creating a man-made feel to the landscape. To the north of the hill a series of large overhead pylons add to the intrusion. • The Belts of Shanquhar begins as a typical tree belt or avenue and culminates in a rough gorse covered rocky outcrop. This is very different from the surrounding managed farmscape, providing rough grazing for cattle. The ridge line of Ba' Hill and the Belts of Shanquhar provides a visual threshold. To the south of the ridge, views of the existing and proposed roads are restricted. From the ridge line north, limited views of proposals are possible. • To the west the land slopes down towards the River Bogie. There is a lower, flatter area around Backburn that has evidence of poorer drainage. Fields are smaller, bounded by small stone walls and post and wire fences along the roadside. This gives a sense of openness. This area is bounded by the slopes and woodland at Risquehouse which as an outcrop of Gartly Moor creates a distinctive skyline feature.				

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Cyan route option predicted landscape effects: There may be oblique views of the route option from the ridge line but as it follows the existing corridor and is screened by the Hill of Dummuies, the widening will have a minimal impact.	Sensitivity = Medium Magnitude = Low	Minor	Not required	Minor
	Cyan route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		Due to intervening screening features there will be no noticeable impact.	N/A		
		No Impact	No Impact		
	Red route option predicted landscape effects: There may be oblique views of the route option from the ridge line but as it follows the existing corridor and is screened by the Hill of Dummuies, the widening will have a minimal impact.	Sensitivity = Medium Magnitude = Low	Minor	Not required	Minor
	Red route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		Due to intervening screening features there will be no noticeable impact.	N/A		
		No Impact	No Impact		
LLCA 4: Strath Bogie Corridor Includes landscape units:	**Landscape baseline:** • This area is a linear corridor containing the old military road (A97), the River Bogie and the railway line. It is contained by hills along both sides of the valley and is tree lined in part. The natural meander of the river creates small compartments				

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
2, 11, 12	which are often farmed. The corridor is an active space with regular vehicle movements and a regular distribution of properties. • The wooded hill at Risquehouse overlooks the corridor providing a distinctive skyline feature. It comprises a large coniferous plantation with evidence of forest management and compartment felling. • The small village of Gartly sits on the river, bracketed between the A97 and the rail line. It is a linear settlement with a mix of well-kept single and double storey houses. There is a level crossing in the village.				
	Cyan route option predicted landscape effects: Due to distance and intervening topography, or landscape features providing an effective screen, this route option has no impact on this LLCA.	N/A	N/A	N/A	N/A
	Cyan route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		No Impact	No impact		
	Red route option predicted landscape effects: Due to distance and intervening topography, or landscape features providing an effective screen, this route option has no impact on this LLCA.	N/A	N/A	N/A	N/A
	Red route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		No Impact	No impact		
LLCA 5: Mains of Newtongarry Includes landscape units: 15, 16, 17	**Landscape baseline:** • This area is a gently sloping valley between the Newtongarry ridge and the encircling hills to the south and east from Hill of Dummuies to Meikle Begshill. It is a broad sloping landscape with arable fields mainly on the south facing slopes. Field boundaries generally run up the slope and are of post and wire fence with some stone walls.				

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	• The north-western boundary is formed of the ridge line from Robins Height through Newtongarry Hill to Reams Hill. The distinctive skyline of Newtongarry Wood's mature trees creates an obvious visual threshold. • The south and eastern boundary is similarly contained by the open hills of Chapelton and Dummuies. This area is a broad open landscape formed of subtle undulating hills. From here long views are afforded, including views of man-made infrastructure including roads, wind turbines and overhead pylons. • The wide-open landscape is well maintained with farmsteads and blocks of trees scattered throughout. This gives a comfortable feeling. • This area is partially in high sensitivity area 2				
	Cyan route option predicted landscape effects: A large part of this LLCA sits lower than the route option which follows the existing A96 alignment. The route option will become more visible from the side slopes of the valley.	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M5, M7	**Moderate**
	Cyan route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		Where the existing corridor is widened this may require existing roadside planting to be removed (SLO10). This may affect existing roadside laybys (SLO11).	By replacing any lost corridor planting and ensuring landform provides natural screening the impact will be lessened.		
		Minor negative	No impact		
	Red route option predicted landscape effects: A large part of this LLCA sits lower than the route option which follows the existing A96 alignment. The route option will become more visible from the side slopes of the valley.	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M5, M7	**Moderate**
		Predicted impact on SLO's	**Residual impact on SLO's**		

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Red route option strategic landscape objective risk	Where the existing corridor is widened this may require existing roadside planting to be removed (SLO10). This may affect existing roadside laybys (SLO11).		By replacing any lost corridor planting and ensuring landform provides natural screening the impact will be lessened.		
		Minor negative		No impact		
LLCA 6: Dummuies to Stonefield Includes landscape units: 15, 18, 19, 21, 25	**Landscape baseline:** • This western edge of this area comprises a series of open hills; from Meilkle Begshill to the Hill of Dummuies. This group of hills straddle the existing A96 that passes in a valley between the Hill of Chapelton and Saddle Hill. These open hills are made up of a mix of grazing and arable fields with rough grazing at higher levels. The openness allows long views across the surrounding landscape including views of the road infrastructure, overhead pylons and wind turbines. • Due to the series of hills, this landscape is perceived as more intricate with hillside fields being smaller. There are a number of individual farm buildings and pockets of woodland on these hill slopes. Where the ground is rougher there are pockets of gorse giving the feeling of a wilder landscape. • The Hill of Stoneyfield stands out among the surrounding open hills due to the conifer plantation. The dark mass of the trees forms a prominent landscape feature. • There is also planting on the adjacent Hill of Bainshole but on the southern aspect this hill is open. It accommodates the Glens of Foudland windfarm whose towering wind turbines are a distinctive feature within this area. As the area also contains the existing road corridor at its southern edge, the overall perception is of an intricate landscape which has been influenced by the introduction of large-scale infrastructure and forestry. • From elevated ground there are views north to the lower lying Bisset Moss. This large area of heather and birch scrub with gorse is distinctly different from any other landscapes within this area. • This LLCA forms part of landscape high sensitivity areas 2 and 3.					

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Cyan route option predicted landscape effects: The route option runs through this LLCA, cutting through Ramstone Hill and to the north of Saddle Hill before re-joining the existing alignment. The section north of Saddle Hill will be on embankment making it more visible. As it passes Broom Hill, the route option follows the existing alignment making it less intrusive.	Sensitivity = High Magnitude = High	Major	M1, M2, M5	**Moderate**
	Cyan route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		This route option will impact on SLO2 as it requires considerable earthworks with the road on embankment.	Ensuring that the earthworks tie into the existing topography will help to mitigate the impact.		
		Major negative	Negative		
	Red route option predicted landscape effects: This route option departs from the above by passing to the south of Saddle Hill. The side slope cutting will be visible from the surrounding area until vegetation cover establishes. Departing from the existing alignment means this option will be visible on the side slopes of the Hill of Foudland.	Sensitivity = High Magnitude = High	Major	M1, M2, M5	**Major**
	Red route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		This route option will require large scale earthworks which will be visible. SLO2 will be affected as well as SLO5 as these earthworks will change the shape of the side slopes of the hill.	Careful design of the earth shaping beyond a purely technical solution will mitigate the impact slightly.		
		Major negative	Negative		

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
LLCA 7: Ridge from Gartly to Hill of Tillymorgan Includes landscape units: 7, 13, 14, 20, 22, 23, 24, 33, 34, 42	**Landscape baseline**: • This area consists of a defined ridge of hills running south west to north-east. It starts from the Hill of Corskie, which is part of Gartly Moor, and extends to the Hill of Tillymorgan. Linking these hills is the distinctive ridge of the Hill of Foudland and the wooded Hill of Skares. • Gartly Moor is a large coniferous forest on a series of hills. The skyline is broken by a number of telecoms masts. Within the forest there are car parks for recreational use and the area is popular with walkers and mountain bikers. Throughout the forest there are open rides which compartmentalise the landscape. Felled and replanted areas show this is a working forest. Due to the scale and enclosure, this is a quiet landscape where birdsong is noticeable. • The slopes around Gartly Moor provide rough grazing with a mix of open areas and smaller fields. Farmsteads are highlighted by small groups of trees. This is an intricate landscape which lacks clarity. There are occasional longer views afforded from elevated positions. • The Hill of Foudland is a distinctive open hill with a broken ridgeline which is evidence of former quarrying operations. The upper slopes are a harsh exposed landscape with occasional pockets of gorse. The gorse forms a defined band between the hill and the lower northern slopes. These slopes are shaded with fields defined by hedges running up the slope. A line of large overhead pylons runs across the slope, dominating views from the existing road corridor. The southern slopes, known as the Skirts of Foudland, comprises smaller grazed fields with stone walls and occasional pockets of gorse. • The existing road corridor follows a low-lying valley between the Hill of Bainshole and the Hill of Foudland. The small grazed fields found here are contained between the hills, the road and the Glen Water and show evidence of poor drainage. There has been significant tree planting along this corridor which strengthens the linear pattern. • The existing A96 swings around the Hill of Skares. Due to the steep slopes and proximity this wooded hill is a distinctive skyline feature. The woodland continues to the north of the existing road corridor and clothes the southern slopes of the Hill of Tillymorgan. The upper parts of this hill are open with a rough, quarried skyline with occasional pockets of gorse. The open hill is rough grazing. • The slopes around the Hill of Skares and the Hill of Tillymorgan are an intricate landscape of small grazed fields generally orientated up the hill. There are occasional breaks in the slopes where pockets of gorse have grown. There are also a number of shelterbelts which suggest the area can become very windy.				

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	• This area sits in landscape high sensitivity areas 3 and 4.				
	Cyan route option predicted landscape effects: This route option follows the existing road alignment. There will be an increase in the infrastructure along this corridor, increasing the impact.	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M5, M7	Minor
	Cyan route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		As this route option follows the existing corridor, this is widened and may require existing roadside planting to be removed (SLO10). This may also affect existing roadside laybys (SLO11).	By retaining as much planting as possible and providing new hedges, trees and small blocks of woodland the impact will be mitigated.		
		Minor negative	No impact		
	Red route option predicted landscape effects: This route option runs along the side slope of the Hill of Foudland. It requires extensive earthworks which increase the impact from those areas that overlook it. The route option runs along the side of the Hill of Foudland before cutting through the gap between it and the Hill of Skares. This LLCA will be impacted by the proximity of the route option and the change from an agricultural landscape to a distinct road corridor with associated roadworks seen from above.	Sensitivity = High Magnitude = High	Major	M1, M2, M3, M5, M7	**Moderate**
		Predicted impact on SLO's	**Residual impact on SLO's**		

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Red route option strategic landscape objective risk	This route option runs across the slopes of the Hill of Foudland impacting SLO1,2 and 5. It then separates the Hill of Foudland from the Hill of Skares with large scale earthworks (SLO2) and after passing through woodland (SLO3), emerges into a quiet agricultural valley near Jericho. It will divide this intact landscape (SLO1).		This route option will require considerable mitigation to reduce its impact. Vegetation should be retained where possible and new woodland planting introduced. Earthworks will need to be sensitively designed to ensure the impact from these works does not increase the overall impact of the proposals.		
		Major negative		Negative		
LLCA 8: Bissett Moss Includes landscape units: 25	**Landscape baseline:** • Bisset Moss comprises a series of boggy fields which are rough grazing and a large expanse of heather and gorse which is not grazed. Within this wilder area there is emerging birch scrub with some naturally regenerating pine. Overall, there is a sense of wildness giving a peaceful feel where birdsong is obvious. • The area sits between the Hill of Bainshole and Broom Hill and forms part of the flatter catchment from the surrounding hills. The catchment flows into the Mill Burn which flows towards the existing road corridor forming a valley that allows longer views to the south-east. • The lower boggy areas blend into the side slopes of the Hill of Bainshole becoming dryer and better maintained as grazing.					
	Cyan route option predicted landscape effects: This route option is screened by the Hill of Bainshole. Fleeting views of larger vehicles may be seen along the Mill Burn.		Sensitivity = Medium Magnitude = Negligible	Negligible	Not required	Negligible
	Cyan route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		No impact		No impact		

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Red route option predicted landscape effects: This route option is screened by the Hill of Bainshole and the Hill of Skares.	Sensitivity = Medium Magnitude = Negligible	Negligible	Not required	Negligible
	Red route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		No impact	No impact		

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
LLCA 9: Ythanwells Includes landscape units: 19, 26, 27, 28, 29, 31	**Landscape baseline:** • This is a wide-open landscape with well-maintained fields. The open hillsides of Wether Hill and Broom Hill form the backbone of this area with the gradual slopes and large arable fields falling away to each side. The Hill of Tillymorgan overlooks the south-eastern edge, providing a visual stop at this point. • Ythanwells is a small settlement at the north of this area. It is bracketed by the woodlands at Meadowhead and Broomhill. The surrounding farmland is broad and sweeping with large grazed and arable fields. The River Ythan forms an incised river valley through the woodland at Meadowhead as it flows east. The steep sided, often wooded slopes are at odds with the gently undulating landscape. • Meadowhead is a conifer plantation on a distinct hill. It is a commercial forest with evidence of woodland management. It forms a distinctive skyline feature where the dark tree horizon and large overhead pylons can be seen from some distance. • The south-western edge of this area is also a large conifer plantation. Millburn Wood follows the field boundaries on the south-west side of Wether Hill. In scale it has sweeping shapes, but the roadside edges are indistinct with outbreaks of gorse and heather. The woodland is formed in parcels, appearing as an obvious man-made element in the landscape. • Overall, the landscape here has an open and gently undulating appearance, with large well-maintained fields. This flows from the area surrounding Ythan Wells over the higher central area across Wether Hill and to the upslopes of the Hill of Tillymorgan. • The southern section of this area falls within landscape high sensitivity area 3.				
	Cyan route option predicted landscape effects: This route option follows the existing alignment and so will be visible from properties and fields alongside the road. There will be a slight increase in the impact of the road corridor as it skirts around Hill of Skares.	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3	Minor

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Cyan route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		Additional excavation to accommodate the widened carriageway on the Hill of Skares will be noticeable in the short term (SLO2).		Retaining roadside planting, adding additional planting and considered earthworks will help to mitigate the impact.		
		Minor negative		No impact		
	Red route option predicted landscape effects: Due to the topography this route option will be largely screened from this LLCA.		Sensitivity = High Magnitude = Low	Minor	Not needed	Minor
	Red route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		No impact		No impact		
LLCA 10: Insch Basin Includes landscape units: 37, 38, 39, 40, 41, 48, 49, 50, 51, 52, 56, 57	**Landscape baseline:** • This area is dominated by the large expanse of undulating farmland with differing field sizes of mostly grazing with some arable and a scattering of farmsteads. There are occasional beech lined roads giving the area an historic setting and a sense of grandeur. Within the landscape there is evidence of historic features providing interest. Field boundaries consist of deciduous shelterbelts, drystane dykes and post and wire fences. • The wider flatter area is overlooked by the surrounding hills; to the north the Hill of Foudland and Gartly Moor and to the south Bennachie. The Hill of Dunnideer, with its fort, provides a distinctive skyline feature that can be viewed from across the area. From the top of the hill, which is popular with walkers, there are expansive views. Behind this the wooded Hill of Christ's Kirk is of different character. • The area surrounds the main village of Insch. This large village has an historic core with good facilities including a leisure centre and golf course. A large linear park runs into the centre. The golf course stands out with its manicured tree lined					

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	fairways. There is a flatter area east of Insch that shows evidence of poor drainage. This area links with the Oyne Corridor, which is unkempt, presenting a contrast to the surrounding well-maintained farmland. • Further south are the hills of Netherhall and Westfield and the distinctive shelterbelts at the Knappie. These together with Auchleven, a sprawling linear village, are too far away from the route option to be affected. • The area around Insch has been identified as a highly sensitive landscape area (7). This includes the village itself, surrounding fields and hills. Other sensitive areas in this LLCA include the foothills of the Hill of Foudland (4) and the Bennachie Special Landscape Area (11). Because of these features, the overall sensitivity of this LLCA is high. • There are no Inventory Gardens and Designed Landscapes within this LLCA.				
	Cyan route option predicted landscape effects: From most of this LLCA, the Cyan route option will not be visible as it runs behind the Hill of Foudland. From elevated views, the embankment near Colpy may be visible at some distance	Sensitivity = High Magnitude = Low	Minor	M1, M2, M5, M6	Minor
	Cyan route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		No impact	No impact		
	Red route option predicted landscape effects: From this LLCA, the Red route option may be visible from higher vantage points as it runs south of the Hill of Skares to the new embankment near Colpy.	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M4	Minor
		Predicted impact on SLO's	**Residual impact on SLO's**		

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Red route option strategic landscape objective risk	This route option will require earthworks along the northern section and it also becomes visible at Colpy.		Integrating the landform and providing additional tree planting will mitigate the impact.		
		Minor negative		No impact		
LLCA 11: Low Area from Colpy to Fisherford Includes landscape units: 31, 32, 35, 36, 42, 44, 47, 61, 62, 64, 65	**Landscape baseline:** • This generally low-lying area runs from the existing A96 road corridor north between the Hill of Tillymorgan and the Hill of Rothmaise. It is a subtle undulating landscape that combines gentle hill slopes and undulating farmland, eventually becoming flatter in the lower areas. In the southern part there are a number of settlements and historic policies. • The northern section sits between the hills and is a generally wide-open landscape with well managed grazed and arable fields. East of Ythanwells the fields are large with post and wire fences. There are also small pockets of woodland. Around Mains of Tillymorgan the landscape is similar with scattered farmsteads and more grazing. Between these two areas the lower lying Moss of Redhills is flatter and suffers from poor drainage. There are noticeable drainage dykes, ditches and evidence of reeds in the grazing. Because the area is so flat and expansive the overhead pylons that run through it are made obvious. There is also a distinctive shelterbelt north of Fisherford that in its maturity and scale provides a dramatic intervention in the landscape. • Colpy sits on the edge of this area, close to the existing A96. Colpy has a range of single and two storey houses, well screened from the surroundings by mature trees. Its proximity to the existing road means it is affected by traffic noise. There are footpath links throughout the area because of the proximity of a number of settlement groups. The local community see these links as important. • There are three designed landscapes close by. Williamston House is a mature estate with a significant boundary of mature beech trees and stone dykes. The estate has a framework of smaller gardens and contains a large pond. Newton House sits closer to the existing A96 from which the main house can be partly viewed through the trees that line the road. The historic gardens including a walled garden are effectively screened by a mature tree boundary. There is also a large decorative pond in the estate. North of Newton House lies Freefield House. The most distinctive feature of this house is the dramatic avenue of mature beech trees that leads to the main house. Extensive screen planting and shelterbelts limit views to the house.					

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	• Running centrally through this area there is a flatter wetter area of farmland. This area shows evidence of poor drainage over substantial areas. In the east, excavations have been made to create fishing ponds. Within this area there are significant blocks of broadleaved trees. The area sits at the base of the Hill of Rothmaise and extends from the existing A96 to Warthill House. This is a mature estate also known as Wardhill Castle. It is well screened with sheltered grazing fields creating a contained and calm landscape. • Included in landscape high sensitivity areas 3, 9 and 10.				
	Cyan route option predicted landscape effects: The route option follows the existing A96 to the north before diverging north of Colpy to a newly created embankment adjacent to Colpy. This will have a significant impact on this LLCA.	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M5	**Moderate**
	Cyan route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		The embankment at Colpy sits higher than the surrounding land and will require careful consideration of earthworks to fit into the landscape (SLO2).	Retaining the mature trees around Colpy village and providing additional screening will help mitigate the impact. The earth shaping around the route option needs to be considered to allow screening vegetation to be ultimately effective.		
		Negative	Negative		
	Red route option predicted landscape effects: The route option runs south of the Hill of Skares and through Jericho before passing over an access road north-west of Colpy. The significant earthworks and accommodation	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M5	**Moderate**

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	works mean there is a distinct change to the character of the area.					
	Red route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		The embankment at Colpy sits higher than the surrounding land and will require careful consideration of earthworks to fit into the landscape (SLO2).		Retaining the mature trees around Colpy and providing additional screening will help mitigate the impact. The earth shaping around the route option needs to be considered to allow screening vegetation to be ultimately effective.		
		Negative		Negative		

Table 1.6 Landscape Baseline and Predicted Landscape Effects for Colpy to Pitcaple (Pink and Brown Route Options)

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
LLCA10: Insch Basin Includes landscape units: 37, 38, 39, 40, 41, 48, 49, 50, 51, 52, 56, 57	**Landscape baseline:** • This area is dominated by the large expanse of undulating farmland with differing field sizes of mostly grazing with some arable and a scattering of farmsteads. There are occasional beech lined roads giving the area an historic setting and a sense of grandeur. Within the landscape there is evidence of historic features providing interest. Field boundaries consist of deciduous shelterbelts, drystane dykes and post and wire fences. • The wider flatter area is overlooked by the surrounding hills; to the north the Hill of Foudland and Gartly Moor and to the south Bennachie. The Hill of Dunnideer, with its fort, provides a distinctive skyline feature that can be viewed from across the area. From the top of the hill, which is popular with walkers, there are expansive views. Behind this the wooded Hill of Christ's Kirk is of different character. • The area surrounds the main village of Insch. This large village has an historic core with good facilities including a leisure centre and golf course. A large linear park runs into the centre. The golf course stands out with its manicured tree lined fairways. There is a flatter area east of Insch that shows evidence of poor drainage. This area links with the Oyne Corridor, which is unkempt, presenting a contrast to the surrounding well-maintained farmland. • Further south are the hills of Netherhall and Westfield and the distinctive shelterbelts at the Knappie. These together with Auchleven, a sprawling linear village are too far away from the route option to be affected. • The area around Insch has been identified as a highly sensitive landscape area (7). This includes the village itself, surrounding fields and hills. Other sensitive areas in this LLCA include the foothills of the Hill of Foudland (4) and the Bennachie Special Landscape Area (11). Because of these features the overall sensitivity of this LLCA is high. • There are no Inventory Gardens and Designed Landscapes within this LLCA.				

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Pink route option predicted landscape effects: This route option runs to the east of Newton House and Old Rayne and is, therefore, slightly remote from this LLCA. The impact is, therefore, reduced.		Sensitivity = High Magnitude = Negligible	Minor	Not required	Minor
	Pink route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		Additional excavation to accommodate the widened carriageway on the Hill of Skares will be noticeable in the short term (SLO2).		Retaining roadside planting, adding additional planting and considered earthworks will help to mitigate the impact.		
		No impact		No impact		
	Brown route option predicted landscape effects: This route option runs alongside the existing alignment after a significant junction at Little Lediken. The overall landscape is undulating at this point causing the new road to change along its length from embankment to cutting. This will create intermittent views of passing traffic.		Sensitivity = High Magnitude = Low	Minor	M3, M5, M7	Minor
	Brown route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		This route option will require significant earthworks along the northern section.		Integrating the landform, providing additional tree planting and consideration of low-level lighting at the junction will mitigate the impact.		
		Minor negative		No impact		
LLCA 11: Low Area from Colpy to Fisherford	**Landscape baseline:**					

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
Includes landscape units: 31, 32, 35, 36, 42, 44, 47, 61, 62, 64, 65	• This generally low-lying area runs from the existing A96 road corridor north between the Hill of Tillymorgan and the Hill of Rothmaise. It is a subtle undulating landscape that combines gentle hill slopes and undulating farmland, eventually becoming flatter in the lower areas. In the southern part there are a number of settlements and historic policies. • The northern section sits between the hills and is a generally wide-open landscape with well managed grazed and arable fields. East of Ythanwells the fields are large with post and wire fences. There are also small pockets of woodland. Around Mains of Tillymorgan the landscape is similar with scattered farmsteads and more grazing. Between these two areas the lower lying Moss of Redhills is flatter and suffers from poor drainage. There are noticeable drainage dykes, ditches and evidence of reeds in the grazing. Because the area is so flat and expansive, the overhead pylons that run through it are made obvious. There is also a distinctive shelterbelt north of Fisherford that in its maturity and scale provides a dramatic intervention in the landscape. • Colpy sits on the edge of this area, close to the existing A96. Colpy has a range of single and two storey houses, well screened from the surroundings by mature trees. Its proximity to the existing A96 means it is affected by traffic noise. Because of the proximity of a number of settlement groups in this area there are footpath links throughout. The local community see these links as important. • There are three designed landscapes close by. Williamston House is a mature estate with a significant boundary of mature beech trees and stone dykes. The estate has a framework of smaller gardens and contains a large pond. Newton House sits closer to the existing A96 from which the main house can be partly viewed through the trees that line the road. The historic gardens including a walled garden are effectively screened by a mature tree boundary. There is also a large decorative pond in the estate. North of Newton House lies Freefield House. The most distinctive feature of this house is the dramatic avenue of mature beech trees that leads to the main house. Extensive screen planting and shelterbelts limit views to the house. • Running centrally through this area there is a flatter wetter area of farmland. This area shows evidence of poor drainage over substantial areas. In the east, excavations have been made to create fishing ponds. Within this area there are significant blocks of broadleaved trees. The area sits at the base of the Hill of Rothmaise and extends from the existing A96 to Warthill House. This is a mature estate known as Wardhill Castle. It is well screened with sheltered grazing fields creating a contained and calm landscape. • Included in landscape high sensitivity areas 3, 9 and 10.				
	Pink route option predicted landscape effects:	Sensitivity = High	Major	M1, M2, M5	**Major**

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	This route option diverges just past Colpy and runs through cuttings on Mellenside to pass between Freefield House and Newton House. There is a significant embankment at this point situated in open farmland. It separates the two estates.		Magnitude = High			
	Pink route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		The embankment between Freefield House and Newton House will be highly visible (SLO2). Community comments about separation suggest SLO7 will be compromised.		Retaining as many trees as possible and careful landform design with new planting may soften the impact that this significant intervention has. However, the landscape impact will remain major.		
		Major negative		Negative		
	Brown route option predicted landscape effects: While this route option does not run through this LLCA, the raised junction at Little Lediken will be visible from the area around Mellenside.		Sensitivity = High Magnitude = Low	Minor	M3, M5, M7	Minor
	Brown route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		The visible raised junction will require careful landform integration (SLO2) to minimise the impact on this LLCA		By planting any redundant areas of land and including considered earthworks proposals the impact should be effectively mitigated.		
		Minor negative		**No impact**		
	Landscape baseline:					

<table>
<tr><th>Sub Topic / Criteria</th><th colspan="2">Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)</th><th>LLCA Sensitivity and Magnitude of impact</th><th>Predicted Landscape Effects</th><th>Assumed Priority Secondary Mitigation</th><th>Predicted Residual Landscape Effects</th></tr>
<tr><td rowspan="7">LLCA 12: Hill of Rothmaise to Hill of Easterton

Includes landscape units: 65, 77, 78</td><td colspan="6">• This ridge from the Hill of Rothmaise to the Hill of Easterton lies to the north of the study area. The open hills are partially wooded with pockets of conifers and areas of gorse. There are wind turbines sited in this area and these are prominent features in the landscape.
• There is a central portion of this area that has a large conifer plantation. Toddley Hill forms a separating element in the landscape sitting between the Hill of Meikle Folla and the Hill of Easterton. It sits lower and because of the covering of conifers is distinctly different from the adjacent hills.
• The Hill of Easterton is an open windswept hill. A large television transmitter is sited here which is very visible from a wide area. It is largely rough grazing with clumps of gorse.
• Included in landscape sensitivity areas 5 and 6.</td></tr>
<tr><td colspan="2">Pink route option predicted landscape effects:

Due to distance and intervening topography, or landscape features providing an effective screen, this route option has no impact on this LLCA.</td><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td rowspan="2">Pink route option strategic landscape objective risk</td><td>Predicted impact on SLO's</td><td colspan="3">Residual impact on SLO's</td></tr>
<tr><td>No impact</td><td colspan="3">No impact</td></tr>
<tr><td colspan="2">Brown route option predicted landscape effects:

Due to distance and intervening topography, or landscape features providing an effective screen, this route option has no impact on this LLCA.</td><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td></td><td>Predicted impact on SLO's</td><td colspan="3">Residual impact on SLO's</td></tr>
</table>

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Brown route option strategic landscape objective risk	No impact		No impact		
LLCA 13: Old Rayne to Harlaw Includes landscape units: 46, 56, 57, 58, 59, 61, 72, 75, 76, 79, 85, 86	**Landscape baseline:** • This area consists of a tract of generally undulating farmland starting at Candle Hill, running from Kirkton of Oyne across the existing A96, past Old Rayne and Meikle Wartle then turning south before Oldmeldrum and down to the north extension of Inverurie. It encompasses a number of subtly different landscape types. • In the south section it abuts the side slopes of Bennachie, which overlooks the majority of this area with the distinctive peak of Mither Tap, a well-known orientation point. The lower hills and slopes around Candle Hill fall away to the boggy farmland at the foot of Bennachie. This consists of boggy farmland of unimproved grassland with a preponderance of sedge. Broken stone walls and regenerating scrubby birch give this area an unkempt appearance. This area is separated from the Moor of Carden, a similar landscape, by the Oyne Corridor. • The Oyne Valley corridor has similarly boggy fields of rough grazing following the Gadie Burn and road and rail routes. Some of this corridor is tree lined, giving a more enclosed feeling. • The lower flat area around Moor of Carden contains the existing A96 corridor. To the north, Old Rayne and Pitmachie are linear settlements separated by the River Urie. Old Rayne has predominantly single storey dwellings with a central Mercat Cross. There is new housing at the edge of the village built in a more contemporary style. • Surrounding Old Rayne is a large expanse of undulating farmland with grazing and arable mixed in different field sizes and a number of scattered farmsteads. Roads lined with stone dykes and mature beech avenues give the area a sense of age and consistency. Within this area there are a number of stone circles and other historic features. • The undulating landscape extends to the wide-open expanses at Harlaw. The elevated landscape allows long views across the countryside as there are only modest tree belts at this point. From here, the Harlaw Monument is a defining feature. Human influence is apparent as views towards Gallows Hill with its wind turbines and the existing A96 are possible. • Within the undulating landscape there is a flatter area with poorer drainage around Mill of Lumphart. This area is lower lying and has areas of moss with regenerating willow and gorse. The fields are bounded by stone walls. Adjacent to this area, Mounie Castle stands out as a contained and screened mature estate. The mature beech trees and stone gateways contain a series of smaller internal fields for grazing.					

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	• This area stops before the River Urie corridor. At this point, there are two elements of interest. Bourtie House is another mature estate which consists of a large country house with surrounding broadleaved woodlands. There is a new large pond which is visible from across the landscape due to local topography. Close by is the new residential area of Inverurie. This area of extensive new housing is sited along the edge of the flood plain. It has been screened well with boundary planting and mature trees within the development. There are high levels of movement and noise at this point which contrasts with the relative peace of the elevated farmland. • Included in landscape high sensitivity areas 10 and 11.				
	Pink route option predicted landscape effects: This route option runs through part of this LLCA at grade and in cutting north-east of Old Rayne. There will be minor impacts associated with overbridges.	Sensitivity = High Magnitude = Low	Minor	M1, M2, M3, M5	Minor
	Pink route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		The woodland south of Mill of Bonnyton will be affected, compromising SLO3. As this is a connected landscape with a scattering of settlements, the route option will impact SLO7.	By replanting woodland blocks and replanting field boundaries the impact will be mitigated. Careful thought needs to be given to provide routes for vehicles, cyclists and pedestrians to maintain connectivity.		
		Minor negative	Negative		
	Brown route option predicted landscape effects: This route option follows the existing A96 road corridor, departing at a large raised junction at Over Carden. The embankments here will be extensive and visible.	Sensitivity = High Magnitude = High	Major	M1, M2, M3, M5, M7	**Major**
		Predicted impact on SLO's	**Residual impact on SLO's**		

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Brown route option strategic landscape objective risk	Tree removal along the existing corridor may be required to accommodate the wider road. The large-scale earthworks will compromise SLO2.		Careful design of the side slopes to minimise impact will be required together with new planting, both alongside the corridor and in considered blocks.		
		Major negative		Negative		
LLCA 14: Bennachie and Surrounds Includes landscape units: 53, 54, 55, 57, 60	**Landscape baseline:** • This area extends from the low lying Oyne corridor and the small village of Oyne up to the peaks of Bennachie. Oyne sits at the junction between this and LLCA13. It is a small village with a dispersed mix of modern houses with small business units on the periphery. The village has an untidy appearance, due to the differing house types and boundary treatments. • Berry Hill lies to the south of Oyne. It is an open topped hill with pockets of gorse. Berry Hill overlooks the village of Oyne but is shaded by the greater stature of the Bennachie range behind. • The wooded slopes to Bennachie consist of mature conifer forests with gorse scrub to the lower levels. Within the forest there are paths and open spaces indicating this is a popular recreation area. There is a visitor centre set within forest glades which are quiet with restricted views. Overall, the scale of the forest gives a sense of majesty. • Above the forest the hill opens up to become an exposed hillside with expansive and dramatic views across the wider countryside. The upper areas were once maintained as grouse moors with man-made butts spread across the moor. The distinctive shapes of the individual peaks, particularly Mither Tap, can be seen from a great distance and are a recognisable orientation point. • This area lies within the Bennachie Special Landscape Area and landscape high sensitivity area 11.					
	Pink route option predicted landscape effects: While this route option runs some 3km from this LLCA because of the elevation it will be visible, particularly around the lower lying areas by Newton of Lewesk. However, in the wider landscape the magnitude of the impact will be low.		Sensitivity = High Magnitude = Low	Minor	M1, M2	Minor

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Pink route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		Because of the sensitivity of this receptor, there is an impact on this Special Landscape Area (SLO1).		Corridor planting and replacement field boundary planting will help to mitigate any impacts.		
		Negative		Minor negative		
	Brown route option predicted landscape effects: This route option runs closer to, but not through this LLCA. The elevation of the receptor and the extensive earthworks associated with the junction at Over Carden increases the impact.		Sensitivity = High Magnitude = Medium	Moderate	M2, M3, M5, M7	**Moderate**
	Brown route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		There will be an impact on this Special Landscape Area due to the proximity and nature of the construction required for this route option. This impacts SLO1 and SLO2.		A considered earthworks strategy with slopes that blend into the landscape together with appropriate planting will mitigate the impact.		
		Major negative		Negative		
LLCA 15: Pitcaple to Daviot Includes landscape units: 66, 68, 70, 74	**Landscape baseline:** • This area consists of an area with smaller fields, mostly grazing pasture, surrounded by woodland edges and small blocks of woodland. From any point, the skyline will be interrupted by woodland. The presence of shelter belts suggests the area is windswept. Due to the topography, there are ridges and breaks which typically consist of rough grazing and gorse pockets.					

<table>
<tr><th>Sub Topic / Criteria</th><th colspan="2">Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)</th><th>LLCA Sensitivity and Magnitude of impact</th><th>Predicted Landscape Effects</th><th>Assumed Priority Secondary Mitigation</th><th>Predicted Residual Landscape Effects</th></tr>
<tr><td></td><td colspan="6">The existing A96 corridor cuts through this area with the steeper slopes from Chapel of Garioch leading down to the existing A96 and merging with the overall rolling landscape north of the existing road corridor. Within this wooded, rolling landscape there are a number of properties and two large estates. To the north, the village of Daviot sits higher up overlooking the surrounding farmland.
Logie House is a significant walled estate to the west of the area. Situated north of the A96, the estate contains a number of large properties, visible from the outside. There are blocks of mature estate trees throughout. A short distance east of Logie House sits Pitcaple Castle. This is a heavily wooded estate surrounded by intact stone walls. Limited views of the castle are possible, and it feels like a hidden garden with partial views of sunlit internal glades grazed by sheep.
The village of Daviot lies to the north of the area on a gentle rise above the B9001. The village is an expanding settlement with historic buildings, including The Smiddy public house, at its core. The village is generally well screened with mature tree planting. To the west, a newer development, Mains of Glach, surrounds a converted hospital.
Daviot sits on a defined ridgeline. To the north side of the village there is a well-preserved stone circle with large recumbent stone. From here expansive views north are possible, demonstrating the visual impact the village has on neighbouring areas.
Included in landscape high sensitivity areas 12, 13 and 14.</td></tr>
<tr><td></td><td colspan="2">Pink route option predicted landscape effects:

This LLCA contains the transition point between route options. As such there are significant impacts. This route option cuts through the northern slopes of Gallows Hill and the associated woodland. It crosses the old railway line on embankment before dissecting the woodland at Glenlogie.</td><td>Sensitivity = High

Magnitude = High</td><td>Major</td><td>M1, M2, M3, M5</td><td>Moderate</td></tr>
<tr><td></td><td rowspan="2">Pink route option strategic landscape objective risk</td><td>Predicted impact on SLO's</td><td colspan="3">Residual impact on SLO's</td></tr>
<tr><td>This route option cuts through blocks of existing woodland (SLO3 and SLO6) and has significant earthworks as it is aligned through an undulating landscape (SLO2).</td><td colspan="3">This route option cuts through blocks of existing woodland (SLO3 and SLO6) and has significant earthworks as it is aligned through an undulating landscape (SLO2).</td></tr>
</table>

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
		Major negative		Negative		
	Brown route option predicted landscape effects: This route option runs directly through the policies of Logie House with the loss of a significant number of mature trees. It passes Logie Durno on embankment before cutting through the southern slopes of Gallows Hill, passing over the old railway line and dissecting the wood at Glenlogie.		Sensitivity = High Magnitude = High	Major	M1, M2, M3, M5	**Major**
	Brown route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		This route option cuts through blocks of existing woodland (SLO3 and SLO6) and has significant earthworks as it is aligned through an undulating landscape (SLO2). It also cuts through a valued landscape at Logie House (SLO5).		Additional planting and considered earthworks will help to reduce some of the impacts. However, as the route option cuts through Logie House grounds this impact is not possible to mitigate.		
		Major negative		Major negative		
LLCA 16 Wooded Farmland South of Chapel of Garioch Includes landscape units: 67, 69, 71, 73	**Landscape baseline:** • This area sits between the wooded slopes east of Bennachie and the River Don corridor, where there is some flatter wetter farmland. It merges with the undulating farmland around Chapel of Garioch to the north and encompasses the estate lands around Crowmallie House. Overlooked by the Bennachie range the area has increasing tree cover towards the east. Due to the topography views within the area are often curtailed and field sizes are generally small. • Crowmallie House and Pittodrie House sit between the existing A96 corridor and the wooded slopes of Bennachie. They form a mature estate within which there are a number of large houses. The boundary of mature beech trees and stone walls provides effective screening and gives a sense of permanence. Within the estate modest, grazed fields can be glimpsed creating a secure and relaxed atmosphere.					

<table>
<tr><th>Sub Topic / Criteria</th><th colspan="2">Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)</th><th>LLCA Sensitivity and Magnitude of impact</th><th>Predicted Landscape Effects</th><th>Assumed Priority Secondary Mitigation</th><th>Predicted Residual Landscape Effects</th></tr>
<tr><td></td><td colspan="6">To the south of Crowmallie House there is an area of boggy farmland at the foot of Bennachie. This area is low lying, rough pasture with stone wall boundaries. Reed growth within the grassland highlights the lack of drainage
The main part of this area consists of rolling wooded farmland around East Aquhorthies. The land use is mostly grazing with the sloping fields and many blocks of trees. Intermittent views are possible from higher ground and where there are openings views across the valley to LLCA15 and LLCA13. While this area is adjacent to Inverurie itself, due to the topography and effective screening, the town is largely screened.
The rolling woodland blends into the more open undulating farmland north of the Hill of Whitecross. The gentler slopes down towards Chapel of Garioch have larger fields and less tree cover. The open nature of this landscape allows wider views across the River Urie corridor, especially from Gallows Hill. This hill, topped by wind turbines, is a focal point in this area.
This area lies within the Bennachie Special Landscape Area and landscape high sensitivity areas 11 and 14.</td></tr>
<tr><td></td><td colspan="2">Pink route option predicted landscape effects:

Due to distance and intervening topography, or landscape features providing an effective screen, this route option has no impact on this LLCA.</td><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td></td><td>Pink route option strategic landscape objective risk</td><td>Predicted impact on SLO's</td><td colspan="3">Residual impact on SLO's</td></tr>
<tr><td></td><td></td><td>No impact</td><td colspan="3">No impact</td></tr>
<tr><td></td><td colspan="2">Brown route option predicted landscape effects:

Due to distance and intervening topography, or landscape features providing an effective screen, this route option has no impact on this LLCA.</td><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td></td><td>Brown route option strategic landscape objective risk</td><td>Predicted impact on SLO's</td><td colspan="3">Residual impact on SLO's</td></tr>
<tr><td></td><td></td><td>No impact</td><td colspan="3">No impact</td></tr>
</table>

Table 1.7 Landscape baseline and Predicted Landscape Effects for Pitcaple to Kintore (Violet and Orange Route Options)

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
LLCA 13: Old Rayne to Harlaw Includes landscape units: 46, 56, 57, 58, 59, 61, 72, 75, 76, 79, 85, 86	**Landscape baseline:** • This area consists of a tract of generally undulating farmland starting at Candle Hill, running from Kirkton of Oyne across the existing A96, past Old Rayne and Meikle Wartle then turning south before Oldmeldrum and down to the north extension of Inverurie. It encompasses a number of subtly different landscape types. • In the south section it abuts the side slopes of Bennachie, which overlooks the majority of this area with the distinctive peak of Mither Tap a well-known orientation point. The lower hills and slopes around Candle Hill fall away to the boggy farmland at the foot of Bennachie. This consists of boggy farmland of unimproved grassland with a preponderance of sedge. Broken stone walls and regenerating scrubby birch give this area an unkempt appearance. This area is separated from the Moor of Carden, a similar landscape, by the Oyne Corridor. • The Oyne Valley corridor has similarly boggy fields of rough grazing following the Gadie Burn and road and rail routes. Some of this corridor is tree lined, giving a more enclosed feeling. • The lower flat area around Moor of Carden contains the existing A96 corridor. To the north Old Rayne and Pitmachie are linear settlements separated by the River Urie. Old Rayne has predominantly single storey dwellings with a central Mercat Cross. There is new housing at the edge of the village built in a more contemporary style. • Surrounding Old Rayne is a large expanse of undulating farmland with grazing and arable mixed in different field sizes and a number of scattered farmsteads. Roads lined with stone dykes and mature beech avenues give the area a sense of age and consistency. Within this area there are a number of stone circles and other historic features. • The undulating landscape extends to the wide-open expanses at Harlaw. The elevated landscape allows long views across the countryside as there are only modest tree belts at this point. From here, the Harlaw Monument is a defining feature. Human influence is apparent as views towards Gallows Hill with its wind turbines and the existing A96 are possible. • Within the undulating landscape there is a flatter area with poorer drainage around Mill of Lumphart. This area is lower lying and has areas of moss with regenerating willow and gorse. The fields are bounded by stone walls. Adjacent to this area,				

<table>
<tr><th>Sub Topic / Criteria</th><th>Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)</th><th>LLCA Sensitivity and Magnitude of impact</th><th>Predicted Landscape Effects</th><th>Assumed Priority Secondary Mitigation</th><th>Predicted Residual Landscape Effects</th></tr>
<tr><td></td><td colspan="5">Mounie Castle stands out as a contained and screened mature estate. The mature beech trees and stone gateways contain a series of smaller internal fields for grazing.

• This area stops before the River Urie corridor. At this point there are two elements of interest. Bourtie House is another mature estate which consists of a large country house with surrounding broadleaved woodlands. There is a new large pond which is visible from across the landscape due to local topography. Close by is the new residential development of Inverurie. This area of extensive new housing is sited along the edge of the flood plain. It has been screened well with boundary planting and mature trees within the estate. There are high levels of movement and noise at this point which contrasts with the relative peace of the elevated farmland.

• Included in landscape high sensitivity areas 10 and 11.</td></tr>
<tr><td></td><td>Violet route option predicted landscape effects:

This route option runs through this area of undulating farmland. There are wide open views from the elevated positions including where the Harlaw monument is sited. A large junction south of Daviot has a series of access roads linking with surrounding roads. The route option will introduce a scale of engineering works new to this landscape.</td><td>Sensitivity = High

Magnitude = High</td><td>Major</td><td>M1, M2, M3, M5, M7</td><td>Major</td></tr>
<tr><td></td><td>Violet route option strategic landscape objective risk</td><td colspan="2">Predicted impact on SLO's

The significant engineering works require a series of cuttings and embankments. These affect SLO2. Proximity to the Harlaw Battlefield may affect SLO5. As the route passes Lethenty it runs between a number of small settlements impacting SLO7.

Major negative</td><td colspan="2">Residual impact on SLO's

Mitigation measures will help the proposals to fit within this largely open landscape, but the severing of connectivity cannot be fully mitigated.

Major negative</td></tr>
</table>

<table>
<tr><th>Sub Topic / Criteria</th><th colspan="2">Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)</th><th>LLCA Sensitivity and Magnitude of impact</th><th>Predicted Landscape Effects</th><th>Assumed Priority Secondary Mitigation</th><th>Predicted Residual Landscape Effects</th></tr>
<tr><td></td><td colspan="2">Orange route option predicted landscape effects:

This route option runs through Pitcaple, crosses the existing A96, runs on the facing slopes below Chapel of Garioch to the proposed junction at Drimmies. While this route option avoids this LLCA it will be visible from the Harlaw monument on the opposite valley side.</td><td>Sensitivity = High

Magnitude = High</td><td>Major</td><td>M1, M2, M3, M5, M7</td><td>Moderate</td></tr>
<tr><td></td><td rowspan="3">Orange route option strategic landscape objective risk</td><td>Predicted impact on SLO's</td><td colspan="3">Residual impact on SLO's</td></tr>
<tr><td>During construction there will be an impact on the battlefield (SLO1).</td><td colspan="3">By introducing the mitigation measures, integrating the scheme into the landscape through landform design and planting the impact will be lessened.</td></tr>
<tr><td>Negative</td><td colspan="3">Minor negative</td></tr>
<tr><td>LLCA 14: Bennachie and Surrounds

Includes landscape units:

53, 54, 55, 57, 60</td><td colspan="6">Landscape baseline:

• This area extends from the low lying Oyne corridor and the small village of Oyne up to the peaks of Bennachie. Oyne sits at the junction between this and LLCA 13. It is a small village with a dispersed mix of modern houses with small business units on the periphery. Due to the differing house types and boundary treatments the village has an untidy appearance.
• Berry Hill lies to the south of Oyne. It is an open topped hill with pockets of gorse. Berry Hill overlooks the village of Oyne but is shaded by the greater stature of the Bennachie range behind.
• The wooded slopes to Bennachie consist of mature conifer forests with gorse scrub to the lower levels. Within the forest there are paths and open spaces indicating this is a popular recreation area. There is a visitor centre set within forest glades which are quiet with restricted views. Overall, the scale of the forest gives a sense of majesty.
• Above the forest the hill opens up to become an exposed hillside with expansive and dramatic views across the wider countryside. The upper areas were once maintained as grouse moors with man-made butts spread across the moor. The</td></tr>
</table>

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	distinctive shapes of the individual peaks, particularly Mither Tap, can be seen from a great distance and are a recognisable orientation point. • This area lies within the Bennachie Special Landscape Area and landscape high sensitivity area 11.				
	Violet route option predicted landscape effects: This route option runs the other side of Inverurie from this LLCA. It may be partially visible as it runs across the slope, but it will be seen across existing development and at some distance.	Sensitivity = High Magnitude = Low	Minor	M1, M2, M3, M5	Negligible
	Violet route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		There is an impact on this Special Landscape Area (SLO1) because of the sensitivity of this receptor	Corridor planting and replacement field boundary planting will help to mitigate any impacts.		
		Minor negative	No impact		
	Orange route option predicted landscape effects: This route option may be visible from higher, open areas within this LLCA. The junctions at Drimmies and Blackhall may be more visible during construction. The elevated sections of the Blackhall Junction may be visible although at some distance.	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M5	Minor
	Orange route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		There will be an impact on this Special Landscape Area due to the proximity and nature of the construction required for this route option. This impacts SLO1 and SLO2.	A considered earthworks strategy with slopes that blend into the landscape together with appropriate planting will mitigate the impact.		

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Negative		Minor negative		
LLCA 15: Pitcaple to Daviot Includes landscape units: 66, 68, 70, 74	**Landscape baseline:** • This LLCA consists of an area with smaller fields, mostly grazing pasture, surrounded by woodland edges and small blocks of woodland. From any point the skyline will be interrupted by woodland. The presence of shelter belts suggests the area is windswept. Due to the topography there are ridges and breaks which typically consist of rough grazing and gorse pockets. • The existing A96 corridor cuts through this area with the steeper slopes from Chapel of Garioch leading down to the road and merging with the overall rolling landscape north of the road corridor. Within this wooded, rolling landscape there are a number of properties and two large estates. To the north, the village of Daviot sits higher up overlooking the surrounding farmland. • Logie House is a significant walled estate to the west of the area. Situated north of the existing A96, the estate contains a number of large properties, visible from the outside. There are blocks of mature estate trees throughout. A short distance east of Logie House sits Pitcaple Castle. This is a heavily wooded estate surrounded by intact stone walls. Limited views of the castle are possible, and it feels like a hidden garden with partial views of sunlit internal glades grazed by sheep. • The village of Daviot lies to the north of the area on a gentle rise above the B9001. The village is an expanding settlement with historic buildings, including The Smiddy public house, at its core. The village is generally well screened with mature tree planting. To the west a newer development, Mains of Glach, surrounds a converted hospital. • Daviot sits on a defined ridgeline. To the north side of the village, there is a well-preserved stone circle with large recumbent stone. From here expansive views north are possible, demonstrating the visual impact the village has on neighbouring areas. • Included in landscape high sensitivity areas 12, 13 and 14.				

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Violet route option predicted landscape effects: The route option transition occurs in this LLCA meaning four route options converge. Therefore, the impacts are significant and similar for each route option. As the LLCA has rolling topography and a degree of tree cover appropriate mitigation measures should be employed to soften the presence of the route option.	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M5, M7	Minor
	Violet route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		This route option cuts through woodland at Pitscurry (SLO3) but as the extent of the works in this LLCA are limited, it is the views across to the large junction from here that will have the biggest impact (SLO2).	Design of the landforms and compensatory planting will mitigate the impact on this LLCA.		
		Negative	Minor negative		
	Orange route option predicted landscape effects: This route option requires a more complex junction at Pitscurry and from here it proceeds south, cutting through woodland and separating Mill of Pitcaple and Legatesden House.	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M5, M7	Minor
	Orange route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		This route option removes woodland at Pitscurry (SLO3) and also separates properties at Mill of Pitcaple (SLO7).	The significant earthworks associated with the junction need to be carefully integrated into the local topography. Compensatory planting for loss of woodland and re-established local accesses will help to mitigate the impacts.		

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Negative		Minor negative		
LLCA 16: Wooded Farmland South of Chapel of Garioch Includes landscape units: 67, 69, 71, 73	**Landscape baseline:** • This area sits between the wooded slopes east of Bennachie and the River Don corridor, where there is some flatter wetter farmland. It merges with the undulating farmland around Chapel of Garioch to the north and encompasses the estate lands around Crowmallie House. Overlooked by the Bennachie range the area has increasing tree cover towards the east. Due to the topography, views within the area are often curtailed and field sizes are generally small. • Crowmallie House and Pittodrie House sit between the existing A96 corridor and the wooded slopes of Bennachie. They form a mature estate within which there are a number of large houses. The boundary of mature beech trees and stone walls provides effective screening and gives a sense of permanence. Within the estate modest, grazed fields can be glimpsed creating a secure and relaxed atmosphere. • To the south of Crowmallie House, there is an area of boggy farmland at the foot of Bennachie. This area is low lying, rough pasture with stone wall boundaries. Reed growth within the grassland highlights the lack of drainage. • The main part of this area consists of rolling wooded farmland around East Aquhorthies. The land use is mostly grazing with the sloping fields and many blocks of trees. Intermittent views are possible from higher ground and, where there are openings, views across the valley to LLCA 15 and LLCA 13 are possible. While this area is adjacent to Inverurie itself, due to the topography and effective screening the town is largely screened. • The rolling woodland blends into the more open undulating farmland north of the Hill of Whitecross. The gentler slopes down towards Chapel of Garioch have larger fields and less tree cover. The open nature of this landscape allows wider views across the River Urie corridor, especially from Gallows Hill. This hill, topped by wind turbines, is a focal point in this area. • This area lies within the Bennachie Special Landscape Area and landscape high sensitivity areas 11 and 14.				
	Violet route option predicted landscape effects: This route option runs north-east of Inverurie. From the elevated open areas of this LLCA, the route option is visible as it runs across LLCA 13 at some distance. The main	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M5	Minor

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	impacts will be from the junctions with associated earthworks and lighting.					
	Violet route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		While the route option may be visible, it will not form a key component of the overall vista.		With the proposed mitigation measures there should be no impact on SLO's.		
		No impact		No impact		
	Orange route option predicted landscape effects: This route option runs west of Inverurie through this LLCA. New junctions at Dummuies and Alton will have an impact on this LLCA but due to the level of tree cover and topography this will have only a local impact.		Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M5	Minor
	Orange route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		As this is an undulating landscape with pockets of woodland the challenge will be to integrate the scheme into this landscape. SLO2 and SLO6 require special consideration.		Restoration planting and considered land shaping at junctions will help to mitigate any residual impacts.		
		Negative		Minor negative		
LLCA 17: River Don Wooded Corridor Includes landscape units: 90, 92	**Landscape baseline:** • This area comprises the distinctive landscape around the River Don corridor running from Inverurie south towards Kemnay. This is an enclosed river corridor contained by mature trees with occasional small pockets of farmland. The key feature is the meandering water course that weaves its way through the landscape. Adjacent to the river, there are extensive low-lying boggy areas and areas of moss. Some of these, such as Red Moss, are showing signs of birch regeneration.					

<table>
<tr><th>Sub Topic / Criteria</th><th colspan="2">Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)</th><th>LLCA Sensitivity and Magnitude of impact</th><th>Predicted Landscape Effects</th><th>Assumed Priority Secondary Mitigation</th><th>Predicted Residual Landscape Effects</th></tr>
<tr><td rowspan="8"></td><td colspan="6">• Within this contained valley, there have been some large excavations to provide recreation facilities, mainly fishing. These areas seem featureless when first constructed but with tree growth they will blend into the landscape and will provide attractive walks.
• Within the river corridor on the opposite bank to Kemnay sits Fetternear House. This building sits enclosed by stone walls and screened by mature trees. It has an air of dereliction.
• This area lies within the Bennachie Special Landscape Area and in landscape high sensitivity area 11.</td></tr>
<tr><td colspan="2">Violet route option predicted landscape effects:

Due to distance and intervening topography, or landscape features providing an effective screen, this route option has no impact on this LLCA.</td><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td rowspan="2">Violet route option strategic landscape objective risk</td><td colspan="2">Predicted impact on SLO's</td><td colspan="3">Residual impact on SLO's</td></tr>
<tr><td colspan="2">No impact</td><td colspan="3">No impact</td></tr>
<tr><td colspan="2">Orange route option predicted landscape effects:

The introduction of significant structures and large-scale earthworks as the route option crosses the river valley and cuts through the wooded Roquharold Hill will impact on a number of SLO's (SLO1, SLO2, SLO3).</td><td>Sensitivity = High

Magnitude = High</td><td>Major</td><td>M1, M2, M3, M5</td><td>Major</td></tr>
<tr><td rowspan="3">Orange route option strategic landscape objective risk</td><td colspan="2">Predicted impact on SLO's</td><td colspan="3">Residual impact on SLO's</td></tr>
<tr><td colspan="2">The introduction of significant structures and large-scale earthworks as the route option crosses the river valley and cuts through the wooded Roquharold Hill will impact on a number of SLO's (SLO1, SLO2, SLO3).</td><td colspan="3">Compensatory replacement planting and a considered approach to the earthworks associated with the structures and cuttings should be adopted to provide a degree of mitigation.</td></tr>
<tr><td colspan="2">Major negative</td><td colspan="3">Negative</td></tr>
</table>

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
LLCA 18: Wooded Farmland around Kemnay Includes landscape units: 91, 93, 94, 100	**Landscape baseline:** • This area is an intricate landscape of wooded farmland, mostly grazing, with fields contained by stone walls or post and wire fencing. Due to the topography field sizes tend to be small. There is a distribution of small farmsteads through this area, many of which have been converted to residential properties. From elevated, open areas, views across the wider valley are possible. • To the west, the village of Kemnay sits on a meander in the River Don. Kemnay is a large village well screened from the surroundings by woodland. To the south, Kemnay House, an impressive Georgian mansion, sits within heavily wooded gardens. Next to Kemnay House is Kemnay Golf Club whose tree lined fairways separate the course from the surrounding farmland. • The north side of Kemnay has two quarry sites. Dalmadilly Quarry almost adjoins Kemnay. The quarry is disused and now regenerating as a nature area. Clovenstone Quarry lies in the centre of this area. It appears as a large excavated hill within this wooded landscape. Large vehicles moving in and out of the quarry have a negative effect on the surroundings due to noise and dust. Traffic movements can be seen for some distance. • To the south of this area, there is a low-lying area of rough grazing known as Bandshed Moss. The area is poorly drained and demonstrates birch regeneration within the moss. • This area lies partly within the Bennachie Special Landscape Area and in landscape high sensitivity areas 11 and 16.				
	Violet route option predicted landscape effects: From this LLCA this route option can be viewed across the valley from more open positions. Because of the distance, mitigation measures in LLCA21 will effectively mitigate any negative impacts. As the route option joins the existing A96 at the eastern edge, there will be a slight increase in the highway infrastructure.	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M5	Minor
	Predicted impact on SLO's		**Residual impact on SLO's**		

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Violet route option strategic landscape objective risk	There may be some small impacts on views from this LLCA.		Integration of the landform associated with the works and appropriate screen planting will effectively mitigate any impacts.		
		Minor negative		No impact		
	Orange route option predicted landscape effects: The main impact on this LLCA will be where this route option joins the existing A96 alignment near Thainstone. The junction is extensive with embankments and cuttings. However, the character of this LLCA is largely unaffected because of the topography and maturity of the landscape.		Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M5	Minor
	Orange route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		The route option passes Bruce's Camp in cutting and joins a large junction at Thainstone. This potentially affects SLO5 and SLO7, the setting of a cultural heritage asset and severing connections.		Careful design of the earthworks should mitigate these impacts.		
		Minor negative		No impact		
LLCA 19: Inverurie and Settlement Corridor Includes landscape units: 88, 89, 95, 104	**Landscape baseline:** • This area includes three settlements along the road corridor of the existing A96. Inverurie, Kintore and Blackburn. The A96 was built to by-pass these settlements and affectively constrains development to the west. This linear area also follows the River Urie and River Don corridors between Kintore and Inverurie. • The largest settlement is Inverurie. This is a small historic town with a core of fine stone buildings. The constraints of the existing road and river corridors has influenced the linear development form of the town. Peripheral development to the north and south at Port Elphinstone includes industry and retail. The town is active with a busy road system. There is often traffic queuing in the town centre. The topography of the town itself is relatively flat, therefore, views from within are curtailed. There					

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	is very little town development beyond the existing A96. Inverurie Golf Course sits to the south of the corridor, but this is well screened by boundary trees and the mature tree lined fairways. • Kintore has developed in a similar fashion, constrained by the exiting A96 road and River Don. Due to expansion, the separation between Kintore, Port Elphinstone and Inverurie appears to be closing. There is a distinct difference between the residential north and industrial south of this small town. This is a busy town with high levels of noise and movement. • Blackburn is a smaller linear settlement adjacent to the existing A96. It has been constrained by the by-pass and so expansion is focussed to the north along the B979, past the central park that runs along the burn. Parcels of new housing are being built within a good framework of tree screening. • Included in landscape high sensitivity area 18.				
	Violet route option predicted landscape effects: The maturity of the landscape within and around Inverurie provides effective screening of this route option. This route option requires a significant junction to the north of Kintore to join the existing A96. This will increase the infrastructure footprint at a key entrance to the village. Lighting and signage will increase.	Sensitivity = High Magnitude = Low	Minor	M1, M2, M3, M5, M7	Negligible
	Violet route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		No impact	No impact		
	Orange route option predicted landscape effects: The impact on this LLCA will be minimal. There are some minor earthworks associated with the junction at Thainstone.	Sensitivity = High Magnitude = Negligible	Minor	M1, M2, M5	Negligible
	Orange route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		No impact	No impact		

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
LLCA 20: Oldmeldrum and Surrounds Includes landscape units: 75, 80, 81, 82, 83, 84, 98	**Landscape baseline:** • This area, around Oldmeldrum, sits on the south facing slopes of the river valley where the general topography is interrupted by small hills. Oldmeldrum itself is an expanding village with peripheral new development around an historic core. There has been some recent large-scale development around the village including residential estates, industrial or business units and a large school. The new developments are well screened with landform and planting. • Oldmeldrum has good vehicular connectivity with roads leading in all directions. The A920 approaches from the west passing close to a developing activity centre which has a number of excavated water features. To the south of the village, the Hill of Barra is a distinctive, gorse topped open hill with rough grazing. The horizon is broken by mature pine trees. The lower slopes also contain modest shelterbelts with fields of varying size. Closer to the road there are some large areas of covered agriculture. • In the valley between the Hill of Barra and Lawel Hill lies Kirkton of Bourtie. The farmland here extends north and is typified by its intricate pattern of wooded farmland with grazing in among good tree cover. There are some considerable blocks of conifer and broadleaf woodland. • To the south, Lawel Hill is a distinctive ridge which, with Hill of Selbie, provides a visual marker. The hills have a pattern of small grazing fields with blocks of trees. • Included in landscape high sensitivity area 15.				
	Violet route option predicted landscape effects: Due to the open nature of parts of this LLCA, the route option will be visible from elevated positions as it runs through LLCA 21. The impact is only moderate as it is viewed against the wider vista over Inverurie, adding to the level of man-made intrusions in the landscape.	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M5	Minor
		Predicted impact on SLO's		**Residual impact on SLO's**	

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Violet route option strategic landscape objective risk	No impact		No impact		
	Orange route option predicted landscape effects: Due to distance and intervening topography, or landscape features providing an effective screen, this route option has no impact on this LLCA.		N/A	N/A	N/A	N/A
	Orange route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		No impact		No impact		
LLCA 21: Keith Hall and Surrounds Includes landscape units: 96, 97, 98	**Landscape baseline:** • This area comprises west facing slopes of the wider River Don valley overlooking Inverurie and Kintore with good views across to the west. Mainly undulating farmland, there are also occasional small areas of woodland, usually associated with settlements. There are some incised burns with associated regenerating planting, but the main feel is of openness with large well managed fields creating a sense of care and order. • To the north of the area at the foot of Lawel Hill, there is an area of flatter less well drained rough grassland. The fields here have drystane boundary walls and the grass shows evidence of reed growth indicating poor drainage. • Standing out, due to the extensive mature woodland, are the lands and policies associated with Keith Hall. This is a designed estate which is defined by a grand stone boundary wall with gate lodges. The house and other buildings have been converted to residential properties but the relationship between the buildings and the landscape still gives the impression of a grand country home. The tree belts extend to Ordiefauld which with its mature tree screens visually links to the Keith Hall policies. The substantial stone walls offering occasional glimpses into a well-maintained landscape creates a sense of peaceful security.					
	Violet route option predicted landscape effects:		Sensitivity = High	Major	M1, M2, M3, M5	**Moderate**

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	This route option passes close to the eastern part of Keith Hall requiring the removal of a number of mature trees. This route option then runs through farmland, down towards the river corridor, changing the character of this open farmland. Due to the open, undulating landscape there will be views of the route option from higher areas.		Magnitude = High			
	Violet route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		This route option cuts through woodland at Ordiefauld (SLO3) and separates scattered properties between Hillhead and Kinmuck (SLO7). The route option passing through undulating farmland requires extensive earthworks (SLO2).		Replacement planting, including blocks of woodland will help to integrate the route option into the landscape. Considered earth shaping will prevent the cuttings and embankments from becoming intrusive.		
		Negative		Minor negative		
	Orange route option predicted landscape effects: There will be intermittent views of this route option across the valley. The woodland and undulations will mitigate the impact. The large junction at Thainstone will be obvious from elevated viewpoints within this LLCA.		Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M5, M7	Minor
	Orange route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		No impact		No impact		

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
LLCA 22: Farmland East of Newmachar Includes landscape units: 99, 103, 107, 108, 110, 111, 112, 113	**Landscape baseline:** • The open south facing gentle slopes of LLCA 21, looking over the River Don, at this point become more wooded. The neatness and order become fragmented as the lowland fields become smaller and views are curtailed by blocks of woodland. The smaller fields are mostly pasture which with the intermittent farmsteads and smaller land holdings appear fragmented and untidy. • Kintore Golf Club sits at the very east of this area, just above the River Don corridor. It has a backdrop of a mature conifer plantation. Newton Wood is a working forest and there is evidence of this in the open rides and felled blocks showing a changing landscape. The dark coniferous skyline stands out against the undulating farmland. This woodland leads to the more extensive woodland around Oschie Hill that forms a central spine to this area. The mix of mature conifers and broadleaf trees contains the views. The woodland edge is a dramatic contrast to the surrounding farmland. • Newmachar sits at the northern edge of this area on the A947. It is a small village with an historic core that is expanding to the east with new housing development. Kingseat is a new development of residential properties around a converted hospital building. South of Newmachar within the area of wooded farmland, Newmachar Golf Club has two 18-hole courses and associated facilities. Extensive tree planting both internally and along the boundaries effectively screen the course from its surroundings. • North-west of Newmachar the development of Home Farm contains a series of new houses set within a mature estate. The estate includes a framework of mature planting within which there are contained fields, stables and equestrian equipment. The housing is very discrete and because of the introverted nature of the development there are few outward views. • Included in landscape high sensitivity area 17.				
	Violet route option predicted landscape effects: From this LLCA this route option can be viewed across the valley from more open positions. Because of the distance, mitigation measures in LLCA 21 will effectively mitigate any negative impacts. As the route option joins the existing A96 at the eastern edge there will be a slight increase in the highway infrastructure footprint.	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M5	Minor

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Violet route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		The route option passing through undulating farmland requires extensive earthworks (SLO2).		Restoration of removed hedgerows and trees together with integrating the landform will help to mitigate these impacts.		
		Negative		Minor negative		
	Orange route option predicted landscape effects: Due to distance and intervening topography, or landscape features providing an effective screen, this route option has no impact on this LLCA.		N/A	N/A	N/A	N/A
	Orange route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		No impact		No impact		
LLCA 23: Hill of Marcus Includes landscape units: 101, 105, 106	**Landscape baseline:** • This area is sandwiched between Blackburn and the A96 corridor and the River Don. North of Blackburn the land is undulating, generally sloping toward the river and forms a patchwork of fields with small blocks of woodland. The land then rises to the east as it reaches Blue Hill and the Hill of Marcus. • Between the undulating farmland and the wooded hills, the slopes have a distinct character of their own. Field patterns change to subtly run with the slope and are contained with stone walls or hedges. Predominantly pasture, the landscape has an open aspect where the telegraph poles and overhead pylons are noticeable. • The sloping fields transition at the woodland edge with a band of rough gorse. The mixed conifer woodland starts beyond the gorse. The woodland is patchy with some replanting occurring and noticeable age differences between woodland parcels. From the more open areas, there are clear views across the landscape to the existing A96. • This LLCA overlaps with landscape high sensitivity areas 17, 18 and 19.					

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Violet route option predicted landscape effects: There may be limited views of any structure over the River Don from open areas within the LLCA east of Kintore.		Sensitivity = High Magnitude = Low	Minor	Not required	Minor
	Violet route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		There may be some small impacts on views from this LLCA.		Integration of the landform associated with the engineering works and appropriate screen planting will effectively mitigate any impacts.		
		No impact		No impact		
	Orange route option predicted landscape effects: Due to distance and intervening topography, or landscape features providing an effective screen, this route option has no impact on this LLCA.		N/A	N/A	N/A	N/A
	Orange route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		No impact		No impact		
LLCA 24: River Don Open Corridor Includes landscape units: 72, 87, 97, 102	**Landscape baseline:** • This low-lying area is one of the key landscape elements at the eastern end of the route option. Running from Milton of Inveramsay, it runs close to the existing A96 before heading to the north of Inverurie. It then sweeps back towards the road before heading due west after Kintore. • The flat valley floor created by the meandering River Urie and River Don has a distinct character, contrasting with the overall undulating landscape to both valley sides. The section of the River Urie at Inverurie creates a broad meandering river valley with an extensive flat area with a footpath network through the reeds. This wide-open space contrasts with the surrounding settlements.					

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	• The River Urie joins the River Don at Inverurie and continues east. As it moves into the countryside, the flat areas become rough grazing with post and wire field boundaries. There is a defined ridge of the flood plain at Kinkell where the existing road overlooks the river. Incised tributaries feed into the river from the sloping farmland. These are often overgrown with regenerating gorse and birch. • The River Don weaves its way eastward, shaping the landscape as it goes. Settlements such as Hatton of Fintray are set on the harder rocky outcrops and boggy meadows with rough grazing and infill the gaps between the drier ridge and the river. • Included in landscape high sensitivity area 17.				
	Violet route option predicted landscape effects: North of Inverurie, this LLCA sits low in the landscape and the topography shields this route option reducing the impact. The wider flatter area around the River Don will be altered in part by the route option crossing the river north of Kintore. The bridge structure will be visible due to the general flatness of this LLCA at this point.	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M5	Minor
	Violet route option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		No impact	No impact		
	Orange route option predicted landscape effects: This route option is aligned west of the existing A96 at a higher elevation. It will be visible from this LLCA at Inveramsay as it crosses LLCA16. As it runs across a hillside, there will be cuttings on the slope changing the character in the short term.	Sensitivity = High Magnitude = Medium	Moderate	M1, M2, M3, M5	Minor
		Predicted impact on SLO's	**Residual impact on SLO's**		

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Orange route option strategic landscape objective risk	The route option passing through LLCA16 requires extensive earthworks (SLO2). This is mitigated by the existing A96 corridor.		Restoration of removed hedgerows and trees together with integrating the landform will help to mitigate these impacts.		
		Minor negative		No impact		
LLCA 25: Open Farmland South of Kintore Includes landscape units: 101, 109	**Landscape baseline:** • This area comprises farmland to the south of Kintore and Blackburn. It is more open towards Kintore where there is a mix of undulating and steeper hills. This creates a patchwork effect with small fields and blocks of woodland. Most of the fields are grazed and there are a number of farmsteads dotted through the landscape. Generally, it is a wide-open landscape with views of the existing A96. • South of Blackburn, the tree cover increases with many blocks of broadleaf woodland. This is a more intricate landscape which still allows long views from more open and higher positions. The woodland helps to screen the number of large residential properties that can be found in this area. Beyond the blocks of trees and mature shelter belts, the farmland is predominantly pasture with fields contained by stone walls and post and wire fencing. • Not included in any landscape high sensitivity areas.					
	Violet route option predicted landscape effects: This route option merges with the existing A96 north of this LLCA. Therefore, there is limited impact on this LLCA.		Sensitivity = Medium Magnitude = Low	Minor	Not required	Minor
	Violet route option strategic landscape objective risk	**Predicted impact on SLO's**		**Residual impact on SLO's**		
		No impact		No impact		
	Orange route option predicted landscape effects: This route option merges with the existing A96 north of this LLCA. Therefore, there is limited impact on this LLCA.		Sensitivity = Medium Magnitude = Low	Minor	Not required	Minor
		Predicted impact on SLO's		**Residual impact on SLO's**		

Sub Topic / Criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		LLCA Sensitivity and Magnitude of impact	Predicted Landscape Effects	Assumed Priority Secondary Mitigation	Predicted Residual Landscape Effects
	Orange route option strategic landscape objective risk	No impact		No impact		

Appendix A17.3 **Landscape Appraisal Approach Technical Note**

Project Title:	A96 Dualling East of Huntly to Aberdeen		
Document Title:	Landscape Appraisal Approach Technical Note		
Document Ref:	A96PEA-AMAR-ELS-SWI-TN-LX-000004	Revision:	C01
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Contents

NB. This Technical Note **must** be read in conjunction with the Landscape Appraisal Approach Technical Note – Addendum A96PEA-AMAR-ELS-SWI-TN-LX-000005

1 Introduction

The purpose of this Technical Note is to outline the ongoing landscape appraisal to support the Design Manual for Roads and Bridges (DMRB) Stage 2 Report for the A96 Dualling East of Huntly to Aberdeen scheme.

The main objectives of this Technical Note are to:

- Explain the appraisal process for the assessment of landscape undertaken to date;
- Present the initial landscape appraisal metrics;
- Identify the Strategic Landscape Objectives (SLO); and,
- Explain the process for identifying the landscape baseline, including identification and development of the Landscape Areas of High Sensitivity, and the Local Landscape Character Areas (LLCA).

2 Appraisal process

2.1 Option development process

To deliver the DMRB Stage 2 Assessment, a progressive and iterative option development and appraisal process has been adopted by AmeyArup. Figure 1 illustrates this process with supporting text demonstrating how each step has and will enable(d) design development to progress, and a preferred option to be realised for detailed consideration at DMRB Stage 3.

Multi-disciplinary appraisals were undertaken at all phases by the three technical disciplines of environment, engineering and traffic/economic. Each technical discipline comprises sub-topics, of which there are nine within the environment discipline, including landscape and visual.

Figure 1: Five phase option development process

Corridor Areas	The Improvement Strategies progressed from DMRB Stage 1 Assessment were used to generate wide areas within which potential corridors were established.	✓
Corridor Options	Each Corridor Area was reviewed and refined using available data and subdivided into smaller Corridor Options for initial appraisal. Any poorly performing options were sifted out using the sifting methodology and criteria adopted for this stage.	✓

First Fix Alignments	Development of alignments within all Corridor Options progressed from previous phase. Appraisal of First Fix Alignments and sifting out of poorly performing options.	✓
Second Fix Alignments	Generation of end-to-end route alignments from better performing First Fix Alignments. More detailed appraisal of end-to-end routes and identification of route options for presentation at Initial Option Exhibitions (Oct 2018).	✓
Third Fix Design/DMRB Stage 2	Process public feedback, undertake option pairing assessments and develop Third Fix Design. Present shortlisted options at Design Update Exhibitions (May 2019). Undertake assessment of remaining route options in line with DMRB Stage 2.	

2.2 Landscape appraisal metrics

Elements of the strategic landscape objectives, the landscape baseline information and the analysis of the SNH landscape character areas were refined and developed to form the landscape and visual appraisal metrics.

These metrics were developed to safeguard all the strategic landscape objectives; ensuring that potential impacts at greatest variance with the objectives were appropriately weighted. The metrics consider the sensitivity of the wider landscape, including the designated landscape areas and areas of high sensitivity, as well as the ability of the landscape to absorb any potential changes.

The landscape appraisal metrics are set out in Appendix A.

The landscape appraisal metrics were used to assess the potential landscape and visual impacts of the options from information available at the time of each assessment.

2.3 Appraisal process

2.3.1 Corridor area and options

Environmental constraints were identified within the corridor areas. High impact constraints identified included (but was not limited to) topographical features, Sites of Special Scientific Interest (SSSI – geological and biological), Garden and Designed Landscapes (GDL), Scheduled Monuments (SM), and Historic Battlefields (BTL). The significance of these constraints has been defined in two categories as follows: -

- **Major** - Highly significant constraints including nationally important environmental designations and physical barriers requiring significant, unavoidable engineering solutions that would have a visual impact on the surroundings; and

- **Moderate** - Constraints of lesser significance which may include regionally and locally important environmental designations and physical barriers requiring unavoidable engineering solutions that would have a visual impact on the surroundings.

Major constraints and groups of moderate constraints were amalgamated into 'High Impact Areas' (HIAs). The HIAs represented initial areas to be avoided where possible during design development. Corridor Options were identified and each of these was appraised to identify those that performed poorly against the scheme objectives and the STAG criteria. This appraisal resulted in the removal of one Corridor Option to the south of Inverurie.

All other Corridor Options were considered feasible to be taken forward for First Fix Alignment development.

2.3.2 First, second and third fix appraisals

For the first, second and third fix appraisals, an assessment of each 50m segment of each option was considered by the three technical disciplines.

The results of these assessments informed the pairing assessments (Figure 1 -Third Fix Design/DMRB Stage 2) along with information gained through consultation and additional site visits. The impacts described in the pairing assessments were appraised using a seven-point scale. The assessments of the third fix designs use the same methodology and metrics developed as part of the second fix alignments appraisal. Engineering, environmental and traffic/economic appraisals and key differences were drawn together into a multi-disciplinary pairing assessment.

Pairing assessments can be undertaken in a specific area of the scheme where two routes or route sections have common start and end points and perform the same function. Thus, they can be directly compared. Selecting the better performing element of the pair allows the optioneering to progress to further assessments with a lower number of options, ultimately leading towards the preferred option decision for the scheme.

2.3.3 DMRB stage 2 assessment

Following the third fix design development and pairing assessment the remaining shortlisted options for the full DMRB Stage 2 assessment were presented at the May 2019 Design Update Exhibitions. The scheme from East of Huntly to Kintore can be split into three geographical areas, and there are two shortlisted options within each of these areas as follows:

- East of Huntly to Colpy:
  - Cyan route option
  - Red route option
- Colpy to Pitcaple:
  - Pink route option
  - Brown route option
- Pitcaple to Kintore:

- o Violet route option
- o Orange route option

The DMRB Stage 2 assessment of these remaining route options is currently progressing.

3 Strategic landscape objectives (SLO)

Transport Scotland's landscape policy is set out in *Fitting Landscapes*[1]. It describes how best to design and manage transport corridors. The policy vision is to promote the more sustainable design, implementation, maintenance and management of the transport estate. The policy vision also aspires to ensure that the landscapes which are created and managed are of high quality, well integrated, bio-diverse, adaptable and deliver a meaningful contribution to national sustainability targets.

Fitting Landscapes sets out the following four key policy aims:

- Aim 1 – ensure high quality of design and place. Aims to achieve integration of new transport projects with their surroundings, create new landscapes and enhance the experience for travellers.
- Aim 2 – enhance and protect natural heritage. Aims to achieve effective mitigation of adverse impacts on species and ecosystems through the positive enhancement of biodiversity and the creation and management of new habitats and green networks.
- Aim 3 – use resources wisely. Advocates the use of simple design principles and a clear understanding of future management to allow a natural equilibrium of balance to be achieved early in the creation of new landscapes.
- Aim 4 – build in adaptability to change. Identifies how transport networks should respond to the implications of climate change and the role that they can play in accommodating storm drainage, providing refuge habitats and forming linkage to green networks.

Fitting Landscapes advises that the landscape architect or manager is responsible for developing project specific design objectives to deliver the four-key policy aims. For the A96 Dualling East of Huntly to Aberdeen scheme it is proposed to develop landscape objectives which will evolve in step with the corridor sifting, route option studies, DMRB Stage 2 assessment and DMRB Stage 3 assessment. The objectives will be informed by work undertaken to assess the sensitivity of the landscape and potential impacts of the proposed scheme upon both landscape and visual receptors.

The strategic landscape objectives are set out in Table 1.

[1] Fitting Landscapes; Securing More Sustainable Landscapes; Transport Scotland March 2014.

Table 1. Strategic Landscape Objectives

SLO	SLO description
SLO1	Avoid or minimise impacts on Special Landscape Areas or other designated landscape. Avoid or minimise impacts on areas representative of landscape character and/ or areas exhibiting intactness/ condition.
SLO2	Seek to integrate the horizontal and vertical alignment within existing topography to avoid excessive amounts of cut and fill.
SLO3	Avoid or minimise impacts on woodland.
SLO4	Avoid or minimise impacts on key views within the landscape. Minimise impacts on residential properties.
SLO5	Avoid or minimise impacts on key landmark features in the landscape. Avoid or minimise impacts on the setting of settlements, built and cultural heritage assets.
SLO6	Avoid fragmenting land use and habitats. Where practicable enhance or augment existing habitats or set aside areas for potential biodiversity enhancement.
SLO7	Avoid severing human and ecological connectivity. Where practicable integrate design to enhance existing connectivity or compensate for historic loss of connectivity.
SLO8	Incorporate local materials or vernacular into design where practicable.
SLO9	Design to include sustainable drainage systems to fit with landscape and enhance biodiversity and ecological connectivity.
SLO10	Where practicable retain, restore or relocate important features, elements, habitats and landform.
SLO11	Identify locations that maximise views of the landscape on the network (e.g. the provision of rest areas or lay-bys).

These are strategic in nature and designed to inform judgements regarding the location and extent of corridors/alignments in addition to the susceptibility, value and sensitivity criteria identified in DMRB[2], IAN 135/10[3] and GLVIA3[4]. The landscape objectives will be evidence based using information gathered from desk studies and fieldwork.

[2] Design Manual for Roads and Bridges Volume 11, section 3 part 5. June 1993.

[3] Interim Advice Note 135/10 Landscape and Visual Effects Assessment. DMRB. November 2010.

[4] Guidelines for Landscape and Visual Impact Assessment. Third revised edition. Landscape Institute and Institute of Environmental Management and Assessment. Routledge. 2013.

4 Landscape Baseline

4.1 Scottish Natural Heritage Landscape Character Assessment (LCA)

Analysis has been undertaken of the potential impact of the A96 Dualling East of Huntly to Aberdeen scheme on the SNH landscape character areas (LCA) that lie within the study area. The analysis has been undertaken in line with current guidance including Interim Advice Note (IAN)135/10[5] which identifies a range of aspects that should be considered when undertaking an assessment of landscape effects.

The analysis:

- Provides an understanding of the key characteristics and features of each LCA, how these vary across each LCA and the degree to which they influence the part of the LCA through which the alignments would pass;
- Identifies potential impacts of alignments within each LCA. Potential impacts are described relative to the Strategic Landscape Objectives (SLO) which are derived from the four policy aims of Fitting Landscapes; and
- Provides instructions during design development that avoids, and reduces impacts where possible, retaining important characteristics and improving the overall fit with the landscape in accordance with Fitting Landscapes policy.

This analysis is based upon the following assessments and their relevant sub-sets:

South and Central Aberdeenshire: Landscape Character Assessment, Scottish Natural Heritage Review No.102, 1998.

- LCA 21 Deveron and Bogies Straths;
- LCA 4 Northern Rolling Lowlands;
- LCA 17 Grampian Outliers;
- LCA 5 Insch Basin;
- LCA 12 Central Wooded Estates; and
- LCA 11 Formartine Lowlands.

National Programme of Landscape Character Assessment: Banff and Buchan, Scottish Natural Heritage Review No.37, 1997.

- LCA 9 Upland Ridges South of the Deveron; and
- LCA 12 Deveron and Upper Ythan Valleys.

[5] Interim Advice Note 135/10 Landscape and Visual Effects Assessment. DMRB. November 2010.

Landscape Character Assessment of Aberdeen, Scottish Natural Heritage Review No.80, 1996.

- LCA 2 Tyrebagger Hill/ Kirkhill; and
- LCA 9 Clinterty and West Brimmond Farmland.

It is noted that although this information was superseded in 2019, it has been used as the basis of the initial landscape assessment work undertaken prior to 2019.

The analysis for each LCA identified is presented in Appendix B "Landscape Character Analysis", Tables B1 – B10. As a result of the analysis, the strategic design guidance identified helps to safeguard the Strategic Landscape Objectives, by guiding the design development across the scheme at each stage to avoid impacts or minimise any impacts where possible.

4.2 Local landscape character areas (LLCA)

In early 2019, the former SNH landscape character descriptions and mapping (prepared in the 1990s and used to inform the initial assessment phases) were superseded by the 2019 SNH Landscape Character Type (LCT) map and associated Landscape Character Type Descriptions. These descriptions are being used to inform the DMRB Stage 2 environmental assessment and have formed the basis of the Local Landscape Character Area (LLCA) Assessment. The SNH LCT areas associated with the scheme are shown on Drawings A96PEA-AMAR-ELS-SWI-DR-LX-000008-000011 (Appendix E).

The LLCA was undertaken in two stages. The first stage comprised a desk-based survey using the SNH LCT descriptions and OS base maps to identify areas of similar characteristics based on topography, tree cover and field patterns and sizes. A review of place names was undertaken and used as descriptors of landscape character. A plan was then prepared to show the proposed Local Landscape Character Areas overlain on the OS base map.

The second stage comprised a detailed analysis involving a comprehensive site survey of the entire study area. Each proposed LLCA was visited and site notes taken describing the key characteristics that make each area subtly different from the next and which if affected could cause a change in the landscape character. From this site survey the boundaries of each LLCA were confirmed together with the titles of each LLCA. Across the study area 113 LLCA were identified within 3km either side of the centreline of each option.

The LLCA are listed within Table 2 and their locations are shown on Drawings A96PEA-AMAR-ELS-SWI-DR-LX-000004-000007 (Appendix E).

Table 2: List of LLCA

LLCA	LLCA
LLCA 1 Huntly	LLCA 32 Distinctive shelterbelt
LLCA 2 Strathbogie Corridor	LLCA 33 Hill of Tillymorgan
LLCA 3 Kinnoir Wood	LLCA 34 Hill of Skares
LLCA 4 Battle Hill	LLCA 35 Undulating farmland around Mains of Tillymorgan
LLCA 5 Low farmland between Battle Hill and Robin's Height	LLCA 36 Moss of Redhills
LLCA 6 Cairn Hill	LLCA 37 Undulating farmland
LLCA 7 Undulating farmland	LLCA 38 Hill of Christ's Kirk
LLCA 8 Ba Hill Wood	LLCA 39 Hill of Dunnideer
LLCA 9 Belts of Shanquhar	LLCA 40 Insch golf course
LLCA 10 Flat wet area around Backburn	LLCA 41 Insch
LLCA 11 Wooded hill at Risquehouse	LLCA 42 Farmed slopes to Hill of Skares
LLCA 12 Gartly	LLCA 43 Loch Insch fishery
LLCA 13 Farmed hill slopes around Gartly Moor	LLCA 44 Williamston House
LLCA 14 Gartly Moor	LLCA 45 Colpy
LLCA 15 Open hills from Hill of Chapelton to Hill of Dummuies	LLCA 46 Pitmachie and Old Rayne
LLCA 16 Farmed hill slopes	LLCA 47 Newton House
LLCA 17 Newtongarry Hill to Robins Height	LLCA 48 Flat wet area by Insch
LLCA 18 Hill of Stoneyfield	LLCA 49 Hill of Netherhall to Hill of Westfield
LLCA 19 Farmed hill slopes around Glens of Foudland	LLCA 50 Shelterbelts at The Knappie
LLCA 20 Boggy fields along road corridor	LLCA 51 Auchleven
LLCA 21 Hill of Bainshole	LLCA 52 Low lying area along Gadie Burn
LLCA 22 Farmed hill slopes north of Hill of Foudland	LLCA 53 Wooded slopes to Bennachie
LLCA 23 Hill of Foudland	LLCA 54 Bennachie
LLCA 24 Skirts of Foudland	LLCA 55 Berry Hill
LLCA 25 Bisset Moss	LLCA 56 Hills around Candle Hill
LLCA 26 Broom Hill to Wether Hill	LLCA 57 Oyne valley corridor
LLCA 27 Millburn Wood	LLCA 58 Foot of Bennachie
LLCA 28 Farmed slopes around Ythan Wells	LLCA 59 Moor of Carden and surrounds
LLCA 29 Meadowhead	LLCA 60 Oyne
LLCA 30 River Ythan incised river valley	LLCA 61 Undulating farmland around Meikle Wartle
LLCA 31 Undulating farmland east of Ythanwells	LLCA 62 Freefield House

LLCA	LLCA
LLCA 63 Hills north of A920	LLCA 89 Inverurie Golf Course
LLCA 64 Flat area from A920 to A96 including Wartle Moss	LLCA 90 River Don corridor
LLCA 65 Warthill House	LLCA 91 Kemnay
LLCA 66 Logie House	LLCA 92 Fetternear House
LLCA 67 Crowmallie House and Dower House	LLCA 93 Wooded farmland between Kintore and Kemnay
LLCA 68 Rolling wooded farmland	LLCA 94 Clovenstone Quarry
LLCA 69 Flat wet area by Bennachie centre	LLCA 95 Kintore
LLCA 70 Pitcaple Castle	LLCA 96 Keith Hall to Ordiefauld
LLCA 71 Undulating farmland east of Bennachie	LLCA 97 Large area of farmland around Kinmuck
LLCA 72 Harlaw	LLCA 98 Burreldale Moss
LLCA 73 Rolling wooded farmland around Chapel of Garioch	LLCA 99 Newton Wood
LLCA 74 Daviot	LLCA 100 Bandshed Moss
LLCA 75 Flat area around Mill of Lumphart	LLCA 101 Undulating farmland around Kintore
LLCA 76 Mounie Castle	LLCA 102 River Don corridor at Kintore
LLCA 77 Toddley Hill	LLCA 103 Kintore Golf Club
LLCA 78 Core Hill	LLCA 104 Blackburn
LLCA 79 Fishery and Go-cart centre	LLCA 105 Slopes to Blue Hill and Hill of Marcus
LLCA 80 Old Meldrum	LLCA 106 Hill of Marcus
LLCA 81 Farmland around Kirkton of Bourtie	LLCA 107 Hatton of Fintray
LLCA 82 Hill of Barra	LLCA 108 Wooded farmland north of River Don
LLCA 83 Hillsides around Hill of Barra	LLCA 109 Wooded farmland around Elrick Hill
LLCA 84 Lawel Hill	LLCA 110 Woodland around Oschie Hill
LLCA 85 Residential extension north of Inverurie	LLCA 111 Home Farm
LLCA 86 Bourtie House	LLCA 112 Newmachar Golf Club
LLCA 87 River Urie corridor	LLCA 113 Newmachar
LLCA 88 Inverurie	

The sensitivity of each LLCA is dependent on both the landscape's value and its susceptibility. Landscape value considers not only recognised designations but also derives from other factors that make an area special, including scenic beauty, wildness, cultural and community interests. Where appropriate these considerations are highlighted in the detailed description of each area.

Earlier assessment identified areas which might not have designations but due to their landscape character, intactness or scenic qualities were highly sensitive (Section 4.4). LLCA's that sit within these areas are automatically categorised as highly sensitive in the landscape character analysis.

Susceptibility of the landscape resource is judged with reference to the landscape character analysis (Appendix B) according to its predicted ability to accommodate the changes likely to result from The Scheme. An example of the table is used to describe each LLCA and their sensitivity is provided within Appendix D. The tables will be further developed to include an assessment of the magnitude and significance of potential impacts on each LLCA. The completed tables will be provided as an appendix to The DMRB Stage 2 environmental assessment.

For the purpose of describing the landscape baseline, a summary of the 113 LLCAs is provided in Table 3 below. This brings the LLCA together into 13 groups, with each group having similar characteristics. Table 3 identifies the different LLCA groups, describes the main characteristics of each group and identifies the LLCA in each group.

Table 3: Groups of Local Landscape Character Areas across the Study Area

LLCA group		Key characteristics / sense of place
Settlement *Containing LLCA's* *1, 12, 41, 45, 46, 51, 60, 74, 80, 85, 88, 91, 95, 104, 107, 113*		• Groups of buildings with peripheral development • Complex landscape including mature trees • High levels of movement and noise • Influenced by infrastructure
Corridor *Containing LLCA's* *2, 20, 30, 57*		• Linear routes including rivers, roads, rail • Often supported by lines of planting • Impact of infrastructure including power lines • Generally busy, appearing less natural
Wooded hills *Containing LLCA's* *3, 4, 8, 11, 14, 18, 27, 29, 34, 38, 53, 77, 99, 106, 110*		• Distinctive hills mainly covered in trees • Coniferous plantations and broadleaved woodland • Contained or limited views from this LLCA • Edges create a contrast to surrounding landscape

Farmed hill slopes *Containing LLCA's* *13, 16, 19, 22, 24, 28, 42, 83, 105,*		• Steeper farmland below wooded or open hills • Predominantly grazing with hedges or stone walls • Field pattern is linear and generally up the slope • Long views and a sense of openness
Flatter wet land *Containing LLCA's* *5, 10, 25, 36, 48, 52, 58, 59, 64, 69, 75, 98, 100*		• Flatter areas often at the foot of hills • May have standing water or moss areas • Largely unimproved grazing • Can look unkempt with reed growth in grassland
Open hill *Containing LLCA's* *6, 15, 21, 23, 26, 33, 39, 49, 54, 55, 56, 63, 78, 82, 94*		• Hillside with few trees or hedges • Sense of openness often windswept • Many have wind turbines an obvious man-made element • Can also be grazed, usually by sheep
Undulating farmland *Containing LLCA's* *7, 31, 35, 37, 61, 71, 72, 97, 101*		• Wide-open large-scale landscape with good views • Undulating landscape curtails some views • Hedgerows and intermittent mature trees • Generally arable with large field sizes

Distinctive ridges and shelterbelts *Containing LLCA's* *9, 17, 32, 50*		• Shelter belts or avenues seen against a skyline • May contain footpaths or old tracks centrally • Often has relics of stone walls
Meandering watercourse *Containing LLCA's* *79, 87, 102*		• Enclosed river corridor contained by mature trees • Main feature is meandering watercourse • May include other routes including roads and paths • Flat land around river
Designed estate *Containing LLCA's* *44, 47, 62, 65, 66, 67, 70, 76, 86, 92, 96, 111*		• Designed estates and policies • Parcels contained with tree screens, walls and hedges • Often includes estate houses or outbuildings • Sense of security and enclosure
Rolling wooded farmland *Containing LLCA's* *68, 73, 81, 84,*		• Intricate landscape of smaller fields and blocks of planting • Views curtailed by topography and planting • Evidence of stone circles

Wooded farmland *Containing LLCA's* *93, 108, 109*		• Lowland areas with small fields and a pattern of woodland blocks • Intricate, enclosed landscape with contained views • Sheltered and secure in feel
Recreation site *Containing LLCA's* *40, 43, 79, 89, 103, 112*		• Various outdoor activities including fishing and golf • High maintenance areas • Active sites with human and vehicular movement • Generally sensitive to the surroundings

4.3 Designated landscape areas

A desk-based study was undertaken to identify designated landscape areas within the study area. This identified several designated areas including nationally important Inventory Status Gardens and Designed Landscapes (GDL) designated by Historic Environment Scotland (HES), and regionally important Special Landscape Areas (SLA) designated by Aberdeenshire Council.

4.3.1 Inventory status gardens and designed landscapes

Gardens and designed landscapes are planned landscapes, laid out for artistic effect and are an important element of Scotland's historic environment and landscape. The most common type of site on the inventory is the estate landscape comprised of policies associated with an important house or castle.

Several GDLs have been identified within the study area and their locations are shown on A96PEA-AMAR-ELS-SWI-DR-LX-000003 (Appendix E Drawings). Three of these sites are in close proximity to the remaining options. These are described as follows:

1. Williamston House (GDL00386) - A rare example of the artist William Theodore Haughton's garden design. Heavily influenced by early 20th century continental style, the gardens rely more on structure and foliage texture than flower colour. The simple

design of the policies and W.T.H. Haughton's design in the garden give Williamston high value as a Work of Art[6].

2. Newton House (GDL00300) - The walled garden is an outstanding work of art, separated into a series of rooms and containing a wide range of plants. The wider designed landscape makes an impressive setting for the significant architectural features. The design of the walled garden by Alec Parkin-Moore gives Newton House outstanding value as a Work of Art[7].
3. Keith Hall (GDL00232) - A good example of the late 18th century parkland design of Thomas White senior. The woodland canopy makes an important scenic contribution and the ornamental gardens are of note. The design by Thomas White at Keith Hall is a significant example of his work and, in its present condition, the site has high value as a Work of Art[8].

4.3.2 Special landscape areas

Special Landscape Areas are a local landscape designation placed on an area that displays certain qualities and characteristics that are valued locally. SLAs complement the National Scenic Area (NSA) designation, which identifies those landscapes that are of national importance due to their unsurpassed scenery.

There are two SLAs designated by Aberdeenshire Council near the remaining options. The locations of these are shown on A96PEA-AMAR-ELS-SWI-DR-LX-000003 (Appendix E Drawings), and a brief description of each is provided as follows:

1. Deveron Valley - This SLA covers the valley of the River Deveron as it flows through Aberdeenshire, from Haugh of Glass in the west to the north coast at Banff and Macduff. The boundaries of the SLA follow, as far as possible, the ridge lines that define the valley. Designation of the Deveron Valley acknowledges the high scenic quality resulting from its meandering river bounded by rolling wooded hills, which forms an important setting to settlements along the valley floor and sides, and backdrop to castles and estates[9].
2. Bennachie - This SLA is centred on the landmark range of Bennachie at the centre of Aberdeenshire and extends west along the distinctive ridge as far as Suie Hill. It includes Pitfichie to the south and the wooded farmland which forms the foreground to Bennachie to the east and the distinctive Mither Tap of Bennachie to the north. Designation of Bennachie and its setting recognises its importance to Aberdeenshire's landscape identity, its popularity with visitors and its indivisibility with the surrounding landscape. Designation also recognises the contribution of the moorland spurs to

[6] http://portal.historicenvironment.scot/designation/GDL00386 accessed 10/06/2019

[7] http://portal.historicenvironment.scot/designation/GDL00300 accessed 10/06/2019

[8] http://portal.historicenvironment.scot/designation/GDL00232 accessed 10/06/2019

[9] https://www.gov.scot/binaries/content/documents/govscot/publications/factsheet/2018/06/aberdeenshire-council-planning-authority-core-documents/documents/9b_special_landscape_areas_part2-pdf/9b_special_landscape_areas_part2-pdf/govscot%3Adocument/9b_Special_landscape_areas_Part2.pdf, accessed 10/06/2019

scenic qualities of the area, by forming dark ridges across the skyline which contrasts with the green lowlands[8].

4.4 Landscape areas of high sensitivity

The landscapes of the study area are identified and described within three of the SNH regional landscape character assessments as follows:

- The South and Central Aberdeenshire: Landscape Character Assessment (Scottish Natural Heritage Review No.102, 1998);
- National Programme of Landscape Character Assessment: Banff and Buchan (Scottish Natural Heritage Review No.37, 1997); and,
- The Landscape Character Assessment of Aberdeen (Scottish Natural Heritage Review No.80, 1996).

These assessments are analysed in Appendix B. Site surveys were undertaken to better understand the local landscape and to assess the sensitivity of the landscapes within the study area. During the site survey several areas were identified that, while not formally designated, were of high sensitivity in relation to specific features being present or absent. This may include being rich in cultural heritage features, stands of ancient woodland or lacking in influence from infrastructure such as roads and high voltage powerlines.

These areas of high sensitivity are landscapes of high value that sit below the designated landscape areas identified in section 4.3. A brief description of each landscape area of high sensitivity identified during initial site visits is provided within Appendix D “Landscape Areas of High Sensitivity”.

The location of each area identified and described in Appendix D is shown on drawing A96PEA-AMAR-ELS-SWI-DR-LX-000002 – Landscape Areas of High Sensitivity (Appendix E Drawings).

Appendix A **Landscape appraisal metrics**

Appraisal rating	Description of criterion	Description of potential impacts
Major negative	• Long length of alignment within SLA/GDL or large proportion within high sensitivity undesignated landscapes. • Substantial impact on setting of SLA/GDL. • Poor fit with topography – presence of cuttings/embankments >15m in depth/height. • Introduction of large structure(s) into baseline (excludes earthworks). • Substantial loss of woodland/trees/hedges. • Very large number of visual receptors affected (estimate). • Very limited potential for mitigation.	• The proposed alignment is at considerable variance with the character (including quality and value) of landscape. • The integrity of a range of characteristic features and elements is degraded or diminished • Considerable reduction in connectivity and permeability of the area. • Loss or substantial deterioration to a view from a highly sensitive receptor(s) and would constitute a substantial discordant element in views across a wide area.
Moderate negative	• Medium length of alignment within SLA/GDL or long length within high sensitivity undesignated landscape. • Moderate impact on setting of SLA/GDL. • Partial fit with topography – presence of cuttings/embankments 5-15m in depth/height. • Introduction of medium sized structure(s) into baseline (excludes earthworks). • Moderate loss of woodland/trees/hedges. • Moderate number of visual receptors affected (estimate). • Limited potential for mitigation.	• The alignment will conflict with the character (including quality and value) of landscape. • Adverse impact on characteristic features or elements. • There is a noticeable reduction to connectivity and permeability of the area. • Noticeable deterioration to a view from a moderately sensitive receptor(s), or discernible damage to a view from a more sensitive receptor(s).
Minor negative	• Short length of alignment within SLA/GDL or medium length within high sensitivity undesignated landscape. • Limited impact on setting of SLA/GDL. • Reasonable fit with topography – presence of cuttings/embankments <5m in depth/height. • Introduction of small structure(s) into baseline (excludes earthworks). • Limited loss of woodland/trees/hedges. • Small number of visual receptors affected (estimate). • Potential for mitigation.	• The alignment introduces a noticeable difference to the character (including quality and value) of landscape. • The proposed scheme is at variance with characteristic features and elements. • There is some alteration to connectivity and permeability of the area. • Limited deterioration to a view from a receptor(s) of medium sensitivity or cause greater deterioration to a view from a receptor(s) of low sensitivity.

No impact	• No alignment within SLA/GDL or limited length within high sensitivity undesignated landscape. • Negligible or no impact on setting of SLA/GDL. • Good fit with topography either through use of existing landform or limited earthworks. • Introduction of structures that can be absorbed into baseline (excludes earthworks). • Very little or no loss of woodland/trees/hedges. • Few or no visual receptors affected (estimate). • Good opportunities for embedded mitigation.	• The alignment blends in with characteristic features and elements of the landscape with little discernible change to character (including quality and value) of landscape. • Connectivity and permeability of the area is unaffected. • Very limited discernible change in the view.

Appendix B **Landscape character analysis**

Table B1. LCA 21 Deveron and Bogies Straths Analysis

Ref	Strategic Landscape Objective (SLO)	Potential Impact	Strategic Design Guidance
SLO1	Avoid or minimise impacts on SLA or other designated landscape. Avoid or minimise impacts on areas representative of landscape character and/ or areas exhibiting intactness/ condition.	Alignments within Strath Bogie would conflict with the scale of the narrow valley and have the potential to impact on riparian woodland, field pattern and settlements within this enclosed valley. Alignments on the valley sides would result in considerable earthworks which would alter the profile of the valley sides. Alignments would pass through the southern part of the Deveron SLA which is influenced by the developed fringe of Huntly and infrastructure including the A96 and high voltage transmission lines.	The area of the Deveron SLA that lies to the south of the A96 and between the A97 and A920 is influenced by transport infrastructure, an overhead transmission line on lattice pylons and by the developed edge of Huntly. The landscape of the SLA in this area is fairly level, with medium to large rectilinear fields bounded by post and wire fences. Hedges and trees are absent except near scattered farmsteads. The level landscape and absence of trees and woodland mean that alignments could potentially be absorbed into this area while retaining the character and quality of the SLA. The location of the crossing of the River Bogie should be carefully selected to minimise the need for earthworks on approach to the crossing and minimise loss of riparian woodland. The level valley floor of Strath Bogie and the steep valley sides are characteristic of the strath land form. Alignments in the valley floor should seek to avoid crossing and re-crossing the River Bogie and avoid removal of riparian woodland which is relatively scarce in the valley. Alignments on the valley sides should seek to minimise earthworks and the number of watercourse crossings.
SLO2	Seek to integrate the horizontal and vertical alignment within existing topography to avoid	Alignments on the valley sides of Strath Bogie would be a poor fit with topography due to the incised regular contours of the valley sides.	Alignments indicate considerable earthworks or structures on the floor of the Strath and large-scale earthworks on the valley sides. Alignments should seek to minimise the scale of earthworks and size of structures as the larger the scale

Ref	Strategic Landscape Objective (SLO)	Potential Impact	Strategic Design Guidance
	excessive amounts of cut and fill.	Topography of the narrow valley of Strath Bogie is particularly sensitive to alignments.	and size the more likely it is that the scheme will conflict with the scale of the narrow enclosed strath.
SLO3	Avoid or minimise impacts on woodland.	Broadleaved woodland is relatively scarce on the floor of Strath Bogie. There is relatively more, mainly coniferous woodland on the valley sides. Alignments within the valley floor would potentially result in loss of broadleaf woodland which would be detrimental to landscape character. There would also be loss of larger wooded areas on the slopes either side of the River Bogie.	Broadleaf woodland should be retained, particularly riparian woodland on the valley floor where it contributes to the distinctive character of the strath.
SLO4	Avoid or minimise impacts on key views within the landscape. Minimise impacts on residential properties.	Views along Strath Bogie would be affected which would reduce the relative scale of the valley and diminish the contribution of natural features on view composition. Alignments within this LCA will potentially affect the views of many of the residential receptors located along both river valleys.	Alignments on the valley floor will occupy a large proportion of the valley and become the dominant feature. This would contrast with existing infrastructure of the A97 and the Aberdeen to Inverness railway line which tend to follow the contours of the valley slopes with limited earthworks leaving clear views down the valley.
SLO5	Avoid or minimise impacts on key landmark features in the landscape. Avoid or minimise impacts on the setting of settlements, built and cultural heritage assets.	While there are listed buildings within Strath Bogie these do not constitute key landmark features. Alignments have the potential to impact upon the village of Gartly and scattered residential properties.	Avoid direct impacts on listed buildings and their setting by maintaining a suitable separation distance as identified by cultural heritage specialists. Assess impacts on individual properties and identify opportunities for mitigation planting.
SLO6	Avoid fragmenting land use and habitats.	Alignments across the LCA have a potential to cause fragmentation of the mixed pattern of fields, shelterbelts and woodland clumps, as	Strath Bogie is a green infrastructure corridor which is less modified by agriculture along the valley floor than on the valley sides. Alignments should avoid modifying the more

Ref	Strategic Landscape Objective (SLO)	Potential Impact	Strategic Design Guidance
	Where practicable enhance or augment existing habitats or set aside areas for potential biodiversity enhancement.	well as the two main rivers Deveron and Bogie, and associated habitats.	naturalistic areas which occur alongside the river on the valley floor.
SLO7	Avoid severing human and ecological connectivity. Where practicable integrate design to enhance existing connectivity or compensate for historic loss of connectivity.	The valley floor of Strath Bogie is susceptible to severance of human and ecological connectivity due to its relatively small scale and the fact that existing infrastructure is located at the edge of the valley floor and does not compete for space with humans and ecology Alignments along this LCA have the potential to break the ecological connectivity of the river and river floodplain associated habitats, particularly those along Strath Bogie.	Strath Bogie is a green infrastructure corridor which is less modified by agriculture along the valley floor than on the valley sides. Alignments should avoid modifying the more naturalistic areas which occur alongside the river on the valley floor.
SLO8	Incorporate local materials or vernacular into design where practicable.	The influence of buildings is limited within the LCA.	An alignment through this LCA should aim to incorporate elements of the local built environment into its design.
SLO9	Design to include sustainable drainage systems to fit with landscape and enhance biodiversity and ecological connectivity.	Alignments along this LCA have the potential to break the ecological connectivity of the river and river floodplain associated habitats, particularly those along Strath Bogie.	Alignments through this area should respond to the potential need for Sustainable Urban Drainage Systems (SuDS) ponds in the design and integrate these with mitigation of ecological fragmentation functions where practicable. The river valley presents an opportunity for the creation of aquatic habitats in conjunction with SuDS.
SLO10	Where practicable retain, restore or relocate important features, elements, habitats and landform.	Alignments through this LCA can have potential impacts on important features such as riparian woodland in both river floodplains, or topography in Strath Bogie.	Alignments through this area should where possible retain the riparian woodland in the river floodplains and the existing landform in Strath Bogie.

Ref	Strategic Landscape Objective (SLO)	Potential Impact	Strategic Design Guidance
SLO11	Identify locations that maximise views of the landscape on the network (e.g. the provision of rest areas or lay-bys).	Views along Strath Bogie would be affected which would reduce the relative scale of the valley and diminish the contribution of natural features on view composition. Alignments within this LCA will potentially affect the views of many of the residential receptors located along both river valleys.	The design of an alignment across this LCA should aim to provide visual amenity of the surrounding landscape from the new road.

Table B2: LCA 4 Northern Rolling Lowlands Analysis

Ref	Strategic Landscape Objective	Potential Impact	Strategic Design Guidance
SLO1	Avoid or minimise impacts on SLA or other designated landscape. Avoid or minimise impacts on areas representative of landscape character and/ or areas exhibiting intactness/ condition.	Alignments that cut across ridges and hills would result in considerable earthworks, with a potential impact on the characteristic rolling topography of the area. Wooded shelterbelts and tree lines are particularly representative features of the landscape character area. Alignments that result in removal or alteration of such features will result in impacts on landscape character.	The topography of large scale rolling hills could potentially absorb an alignment if this follows the landform and the natural breaks of slope. Alignments should aim to minimize the scale of earthworks. Where alignments break the skyline where practicable they should do so at existing dips or hollows and where trees and woodland are absent. Existing wooded shelterbelts can potentially help to screen a new alignment if this is well integrated in the landscape pattern. Alignments should aim to follow the field pattern, such as running parallel to existing field boundaries and avoid the loss of woodland, particularly mature trees in avenues and wooded shelterbelts.
SLO2	Seek to integrate the horizontal and vertical alignment within existing topography to avoid excessive amounts of cut and fill.	Alignments that cut across ridges and hills would result in considerable earthworks that would impact the characteristic rolling topography of the area. Examples include the ridge at Robin's Height and Newtongarry Hill,	Alignments should, as far as possible, avoid areas of higher or complex topography where large scale earthworks are required, to minimize impacts on the existing topography and the alteration of the rolling skylines.

Ref	Strategic Landscape Objective	Potential Impact	Strategic Design Guidance
		complex topography between Comalegy and Stoneyfield Hill, Hill of Bainshole, as well as Sheep Hill and Candle Hill to the southwest of Largie. Alignments along the narrow valley of Mill Burn will impact on the topography of this small scale enclosed valley as it slopes down towards Glen Water and the River Urie.	
SLO3	Avoid or minimise impacts on woodland.	Alignments across the LCA have a potential to cut across wooded shelterbelts, tree lines edging fields or roads and patches of ancient woodland. The loss of mature beech trees within the unit to the south of Skirts of Foudland could result in considerable alteration to landscape character. Alignments across conifer plantations will have a potential impact on the woodland cover and the pattern of the landscape	Broadleaf woodland should be retained, and therefore alignments should avoid as far as possible any impacts on wooded shelterbelts or patches of ancient woodland. Felling of woodland to create a construction and operational corridor for the scheme may involve loss of an area of woodland greater than the construction footprint due to the need to create a wind firm edge to the remaining areas of woodland. Where woodland cannot be avoided alignments should pass through the edges of woodland blocks or aim to leave behind large blocks of standing timber. Alignments should seek minimal impacts on any other areas of woodland such as conifer plantations.
SLO4	Avoid or minimise impacts on key views within the landscape. Minimise impacts on residential properties.	Alignments cutting through ridges may have an impact on the general open views across the landscape and the long-distance views towards landmarks like Bennachie or Dunnideer, as well as upon the undulating skylines often outlined by wooded shelterbelts.	Alignments should seek the best integration with topography, and as far as possible avoid cutting though ridges and hill tops, as large scale earthworks and a new alignment becoming prominent in the skyline would conflict with the characteristic open views and undulating skylines across the LCA.

Ref	Strategic Landscape Objective	Potential Impact	Strategic Design Guidance
		Alignments within this LCA will potentially affect the views of the residential receptors located in the lower valleys.	Further work will be done to identify key views to and from the area.
SLO5	Avoid or minimise impacts on key landmark features in the landscape. Avoid or minimise impacts on the setting of settlements, built and cultural heritage assets.	While there are some category B and C listed buildings in the LCA, these do not constitute notable landmark features. Scheduled monuments such as stone circles and cairns are mostly set on higher topography, and therefore alignments cutting through those may have a potential impact on local landmarks. Alignments have the potential to impact upon scattered residential properties and the setting of villages such as Fisherford or Largie.	Avoid direct impacts on listed buildings and their setting by maintaining a suitable separation distance as identified by cultural heritage specialists. Assess impacts on individual properties and identify opportunities for mitigation planting.
SLO6	Avoid fragmenting land use and habitats. Where practicable enhance or augment existing habitats or set aside areas for potential biodiversity enhancement.	Alignments across wooded shelterbelts and other woodland areas will cause fragmentation and have a potential impact on habitats.	The broad and regular agricultural pattern across the LCA shows potential for accommodating an alignment. Alignments should follow the landscape pattern as much as reasonably possible, while avoiding wooden shelterbelts and woodland areas.
SLO7	Avoid severing human and ecological connectivity. Where practicable integrate design to enhance existing connectivity or compensate for historic loss of connectivity.	Alignments across this area might potentially impact on the ecological connectivity across the agricultural pattern of large fields with wooden shelterbelts. Severance of broadleaf wooden shelterbelts will potentially impact on the ecological and human connectivity of these valuable features.	Alignments through this LCA should aim to avoid the severance of wooded shelterbelts and the loss of broadleaf woodland

Ref	Strategic Landscape Objective	Potential Impact	Strategic Design Guidance
SLO8	Incorporate local materials or vernacular into design where practicable.	The influence of buildings is limited within the LCA.	An alignment through this LCA should aim to incorporate elements of the local built environment into its design.
SLO9	Design to include sustainable drainage systems to fit with landscape and enhance biodiversity and ecological connectivity.	Alignments along this LCA have the potential to break the ecological connectivity of the watercourses.	Alignments through this area should respond to the potential need for Sustainable Urban Drainage Systems (SuDS) ponds in the design and integrate these with mitigation of ecological fragmentation functions where practicable.
SLO10	Where practicable retain, restore or relocate important features, elements, habitats and landform.	Alignments through this LCA can have potential impacts on smooth rounded landform and important features such as wooded shelterbelts and mature beech avenues.	Alignments through this area should aim for the best fit with topography by sticking to breaks of slope and avoiding ridges and hill tops, as well as to maintain important features such as wooded shelterbelts.
SLO11	Identify locations that maximise views of the landscape on the network (e.g. the provision of rest areas or lay-bys).	Alignments within this LCA will potentially affect the views of many of the residential receptors.	The design of an alignment across this LCA should aim to provide visual amenity of the surrounding landscape from the new road.

Table B3: LCA 17 Grampian Outliers Analysis

Ref	Strategic Landscape Objective	Potential Impact	Strategic Design Guidance
SLO1	Avoid or minimise impacts on SLA or other designated landscape. Avoid or minimise impacts on areas representative of landscape character and/ or	Alignments are unlikely to pass through the Deveron Valley SLA in the Clashindarroch Grampian Outlier LCA. Alignments have the potential to pass through Bennachie SLA within the Bennachie Grampian Outlier LCA. Hill of Foudland, Hill of Tillymorgan and Bennachie are areas representative of	Alignments should avoid Bennachie SLA. Bennachie Grampian Outlier LCA is more sensitive to change due to the presence of ancient woodland. The upland moorland within Hill of Foudland Grampian Outlier LCA is also sensitive to change.

	areas exhibiting intactness/ condition.	landscape character which alignments have the potential to impact upon.	
SLO2	Seek to integrate the horizontal and vertical alignment within existing topography to avoid excessive amounts of cut and fill.	The LCA has an upland character with steep slopes, woodland and wide, open spaces. Alignments through the LCA will result in large scale earthworks.	Alignments should avoid crossing the upland areas as it is likely that large scale earthworks will be required. Where the upland areas are crossed alignments should seek the lower ground. Alignments should avoid contouring around the hills unless the opportunity arises to do so at the break of slope. Where alignments contour around slopes on embankment the earthworks should be graded into the existing slopes.
SLO3	Avoid or minimise impacts on woodland.	Woodland is prevalent throughout the LCA. There is a higher proportion of ancient woodland in the Bennachie Grampian Outlier LCA than in the other two. Alignments have the potential to result in the loss of ancient woodland where they pass through the northern and eastern fringes of the LCA. Woodland in Clashindarroch is unlikely to be affected while that Gartly Moor is likely to be affected by alignments resulting fragmentation of large areas of conifer plantation.	Felling of woodland to create a construction and operational corridor for the scheme may involve loss of an area of woodland greater than the construction footprint due to the need to create a wind firm edge to the remaining areas of woodland. Where woodland cannot be avoided alignments should pass through the edges of woodland blocks or aim to leave behind large blocks of standing timber.
SLO4	Avoid or minimise impacts on key views within the landscape. Minimise impacts on residential properties.	There is higher potential for alignments to impact on key views within the Bennachie Grampian Outlier LCA due to the scenic quality of the SLA. There is a viewpoint identified on OS 1:25,000 mapping on the summit of Mither Tap which is likely to be affected by alignments to the west of Inverurie.	The LVIA shall identify viewpoint locations in the landscape around the Grampian Outliers LCA that are important key views from which the key features such as Tap o' Noth and Bennachie may be seen. It is likely that significant visual impacts on most properties within the LCA can be avoided.

		There is less potential for impacts on residential properties due to the fact that these LCA are sparsely populated.	
SLO5	Avoid or minimise impacts on key landmark features in the landscape. Avoid or minimise impacts on the setting of settlements, built and cultural heritage assets.	The distinctive outcrops of Tap o' Noth and Bennachie and the ridge of Hill of Foudland are key landmark features. They are unlikely to be directly affected although views towards these features are likely to be affected. The general absence of settlements and buildings means it is unlikely that alignments will affect the setting of such features. Cultural heritage assets such as the forts at Tap o' Noth and Mither Tap are unlikely to be affected although views to and from them will be.	The LVIA shall identify viewpoint locations in the landscape around the Grampian Outliers LCA that are important key views from which the key features such as Tap o' Noth and Bennachie may be seen. It is unlikely there will be significant visual impacts on the setting of settlements, built and cultural heritage assets.
SLO6	Avoid fragmenting land use and habitats. Where practicable enhance or augment existing habitats or set aside areas for potential biodiversity enhancement.	There is greater potential for habitat fragmentation in the Bennachie Grampian Outlier LCA due to the pattern of ancient woodland. There is potential for habitat fragmentation of the upland moorland at Hill of Foudland.	Where woodland cannot be avoided alignments should pass through the edges of woodland blocks or aim to leave behind large blocks of standing timber. Alignments should avoid passing though moorland and leaving small 'islands' of habitat.
SLO7	Avoid severing human and ecological connectivity. Where practicable integrate design to enhance existing connectivity or compensate for historic loss of connectivity.	Due to the importance of the LCA as a recreational resource alignment have the potential to sever connectivity to and across the LCA. Alignments also have the potential to sever ecological connectivity between habitats.	Alignments should avoid fragmenting key networks where there is high activity and connectivity.
SLO8	Incorporate local materials or vernacular into design where practicable.	The influence of buildings is limited within the LCA.	An alignment through this LCA should aim to incorporate elements of the local built environment into its design.

SLO9	Design to include sustainable drainage systems to fit with landscape and enhance biodiversity and ecological connectivity.	Alignments along this LCA have the potential to break the ecological connectivity of the watercourses particularly at the larger watercourses such as the River Bogie, River Don and Glen Water.	Alignments through this area should respond to the potential need for SUDS ponds in the design and integrate these mitigation of ecological fragmentation functions where practicable.
SLO10	Where practicable retain, restore or relocate important features, elements, habitats and landform.	Alignments through this LCA can have potential impacts on important features such as the Bennachie SLA and its setting.	Alignments through this area should aim to avoid impacts on important landscape features of the area such as the river topography and the Special Landscape Area and its setting.
SLO11	Identify locations that maximise views of the landscape on the network (e.g. the provision of rest areas or lay-bys).	Alignments within this LCA will potentially affect the views of many of the residential and recreational receptors.	The design of an alignment across this LCA should aim to provide visual amenity of the surrounding landscape from the new road.

Table B4: LCA 9 Upland Ridges South of the Deveron Analysis

Ref	**Strategic Landscape Objective**	**Potential Impact**	**Strategic Design Guidance**
SLO1	Avoid or minimise impacts on SLA or other designated landscape. Avoid or minimise impacts on areas representative of landscape character and/ or areas exhibiting intactness/ condition.	Alignments will not affect the Deveron Valley SLA as it lies outside the SEA boundary.	N/A
SLO2	Seek to integrate the horizontal and vertical alignment within existing topography to avoid excessive amounts of cut and fill.	Alignments running through the LCA could potentially have a poor fit with topography.	Alignments should aim for a good fit with topography in order to minimise the scale of earthworks and size of structures.

SLO3	Avoid or minimise impacts on woodland.	Alignments across the LCA will potentially impact on broadleaved tree lines, which is scarce within the LCA.	Broadleaf woodland should be retained Alignments should avoid the loss of woodland, or ultimately compensate it with mitigation planting that fits the landscape pattern.
SLO4	Avoid or minimise impacts on key views within the landscape. Minimise impacts on residential properties.	Alignments within the LCA have the potential to impact on the views of Hill of Tillymorgan for the residents of Fisherford and neighbouring farms.	Alignments should seek minimal visual impacts on residential properties, as well as to become too conspicuous in important vistas.
SLO5	Avoid or minimise impacts on key landmark features in the landscape. Avoid or minimise impacts on the setting of settlements, built and cultural heritage assets.	Alignments across the LCA may have potential impacts on the setting of Hill of Tillymorgan. Alignments across the LCA may have potential impacts on the setting of the residential properties in Fisherford, as well as on those along the road between Jackstown and Saphock.	Assess impacts on individual properties and identify opportunities for mitigation. A good fit with topography should reduce potential impacts on the views.
SLO6	Avoid fragmenting land use and habitats. Where practicable enhance or augment existing habitats or set aside areas for potential biodiversity enhancement.	Alignments across broadleaf tree lines will potentially cause the fragmentation of a habitat that is scarce in the area.	Alignments should avoid, as far as possible, the loss of broadleaf woodland, or compensate it with mitigation planting that fits the landscape pattern and restores the existing habitats.
SLO7	Avoid severing human and ecological connectivity. Where practicable integrate design to enhance existing connectivity or compensate for historic loss of connectivity.	Alignments will have potential impacts on the non-motorised connectivity with the Hill of Tillymorgan.	Alignments should seek to avoid the severance of human and ecological connectivity.

SLO8	Incorporate local materials or vernacular into design where practicable.	The influence of buildings is limited within the LCA.	An alignment through this LCA should aim to incorporate elements of the local built environment into its design.
SLO9	Design to include sustainable drainage systems to fit with landscape and enhance biodiversity and ecological connectivity.	Alignments along this LCA have the potential to break the ecological connectivity of the watercourses particularly the small streams as they flow towards the River Deveron and River Ythan.	Alignments through this area should respond to the potential need for SUDS ponds in the design and integrate these mitigation of ecological fragmentation functions where practicable.
SLO10	Where practicable retain, restore or relocate important features, elements, habitats and landform.	Alignments through this LCA can have potential impacts on important features such as the setting of stone circles.	Alignments through this LCA should be designed to keep the characteristic ridges and avoid impacts on important landscape features of the area such as stone circles.
SLO11	Identify locations that maximise views of the landscape on the network (e.g. the provision of rest areas or lay-bys).	Alignments within this LCA will potentially affect the views of mainly of residential receptors.	The design of an alignment across this LCA should aim to provide visual amenity of the surrounding landscape from the new road.

Table B5: LCA 12 Deveron and Upper Ythan Valleys Analysis

Ref	Strategic Landscape Objective	Potential Impact	Strategic Design Guidance
SLO1	Avoid or minimise impacts on SLA or other designated landscape. Avoid or minimise impacts on areas representative of landscape character and/ or areas exhibiting intactness/ condition.	Alignments across the south of the LCA are not expected to have an impact on any designated landscape or areas representative of the landscape character.	

SLO2	Seek to integrate the horizontal and vertical alignment within existing topography to avoid excessive amounts of cut and fill.	Alignments running through the LCA could potentially have a poor fit with topography.	Alignments should aim for a good fit with topography in order to minimise the scale of earthworks and size of structures.
SLO3	Avoid or minimise impacts on woodland.	Alignments across the LCA will potentially impact on broadleaved and ancient woodland on the edge of the LCA.	Alignments should avoid the loss of woodland, or ultimately compensate it with mitigation planting that fits the landscape pattern.
SLO4	Avoid or minimise impacts on key views within the landscape. Minimise impacts on residential properties.	Alignments across the south of the LCA are not expected to have impacts on key views or residential properties.	Alignments should seek minimal visual impacts on residential properties, as well as to become too conspicuous in important vistas.
SLO5	Avoid or minimise impacts on key landmark features in the landscape. Avoid or minimise impacts on the setting of settlements, built and cultural heritage assets.	The section of the LCA contained within the SEA does not feature any key landmark feature. Alignments across this section may have potential impacts on the settings of residential properties.	Assess impacts on individual properties and identify opportunities for mitigation. A good fit with topography should reduce potential impacts on the views.
SLO6	Avoid fragmenting land use and habitats. Where practicable enhance or augment existing habitats or set aside areas for potential biodiversity enhancement.	Alignments across the south of the LCA are not expected to have significant impacts on land use or cause habitat fragmentation.	Alignments have the potential to set areas for potential biodiversity enhancement, i.e. through the planting of native woodland, fitting it as far as possible with the existing landscape pattern.
SLO7	Avoid severing human and ecological connectivity.	Alignments across the south of the LCA are not expected to have impacts on human and ecological connectivity.	Alignments should always seek to avoid the severance of human and ecological connectivity.

	Where practicable integrate design to enhance existing connectivity or compensate for historic loss of connectivity.		
SLO8	Incorporate local materials or vernacular into design where practicable.	The influence of buildings is limited within the LCA.	An alignment through this LCA should aim to incorporate elements of the local built environment into its design.
SLO9	Design to include sustainable drainage systems to fit with landscape and enhance biodiversity and ecological connectivity.	Alignments along this LCA have the potential to break the ecological connectivity of the watercourses including a number of burns connecting the river valleys of the Deveron and the Ythan.	Alignments through this area should respond to the potential need for SUDS ponds in the design and integrate these mitigation of ecological fragmentation functions where practicable.
SLO10	Where practicable retain, restore or relocate important features, elements, habitats and landform.	Alignments through this LCA can have potential impacts on important features such as river topography, ancient woodland and Garden and Designed Landscapes.	Alignments through this LCA should be designed to avoid impacts on important landscape features of the area such as the river topography, ancient woodland and Garden and Designed Landscapes.
SLO11	Identify locations that maximise views of the landscape on the network (e.g. the provision of rest areas or lay-bys).	Alignments within this LCA will potentially affect the views of mainly the residential receptors.	The design of an alignment across this LCA should aim to provide visual amenity of the surrounding landscape from the new road.

Table B6: LCA 5 Insch Basin Analysis

Ref	Strategic Landscape Objective	Potential Impact	Strategic Design Guidance
SLO1	Avoid or minimise impacts on SLA or other designated landscape. Avoid or minimise impacts on areas representative of landscape character and/ or	Any alignments running south of the road between Kirkton and Clatt will potentially have an impact on the northwest section of Bennachie SLA. Alignments running through areas of high sensitivity will potentially have an impact on	Alignments should avoid having any length within Bennachie SLA. Alignments should avoid, as far as possible, areas of high sensitivity within the LCA.

	areas exhibiting intactness/ condition.	one or more features that are representative of the landscape character. Examples of this are the area around Daviot, the area between Old Rayne and Oyne, the area around Insch, Dunnideer and Christ's Kirk, the area around Mill of Boddam and the area between Williamston House GDL and Newton House GDL. Alignments across conical hills, woodland copses and cultural heritage assets will have potential impacts on highly representative landscape features and cause a detriment to the landscape character.	The relatively small scale of the conical hills on the basin means that these features could be obscured by the earthworks needed to accommodate an alignment across them, in detriment of the landscape character. The numerous hillforts and recumbent stone circles, of which many are scheduled monuments, are a defining feature of the LCA, and therefore alignments should avoid any impacts on these features.
SLO2	Seek to integrate the horizontal and vertical alignment within existing topography to avoid excessive amounts of cut and fill.	Alignments running through the LCA could have a poor fit with the characteristic topography of conical hills and subtle undulations and will potentially obscure these landforms and become highly conspicuous in the views.	Alignments indicate considerable earthworks or structures across the basin, particularly to the southwest of the existing of the A96. Alignments should seek to minimise the scale of earthworks and size of structures as the larger the scale and size the more likely it is that the scheme will conflict with the scale of the conical hills and subtle undulating landform.
SLO3	Avoid or minimise impacts on woodland.	Small woodland copses are scattered across the area, complementing the landscape pattern and occasionally acting as local landmark features when growing on hilltops. Alignments running across them will have potential impacts on the landscape character and will cause undesirable loss of broadleaved woodland.	Broadleaf woodland should be retained. Alignments running across woodland copses should compensate their loss with mitigation planting that fits and enhances the landscape pattern.
SLO4	Avoid or minimise impacts on key views within the landscape. Minimise impacts on residential properties.	Alignments across the basin will potentially obscure conical hills and cause the loss of woodland copses that are key features in the views within the LCA.	Alignments should avoid, as far as possible, earthworks across conical hills, as well as the loss of broadleaf woodland copses. Alignments should seek minimal impacts on residential properties, as well as to become too conspicuous in

		Alignments across the LCA will have potential impacts on open views towards landmarks as Bennachie, Tap O' Noth or Dunnideer. Alignments within this LCA will potentially affect the views of many of the residential receptors scattered throughout the basin and in the nucleated villages.	important vistas towards landmarks like Bennachie or Dunnideer. A good fit with topography and avoiding areas of high sensitivity should assist with this objective.
SLO5	Avoid or minimise impacts on key landmark features in the landscape. Avoid or minimise impacts on the setting of settlements, built and cultural heritage assets.	Alignments across the LCA may have potential impacts on local landmarks like conical hills, hilltop woodland or cultural heritage features, such as Dunnideer. The LCA is rich in heritage sites, and any alignment across the LCA may have potential impacts on the setting of a number of Garden and Designed Landscapes, Category A Listed Buildings and Scheduled monuments.	Avoid direct impacts on heritage sites and their setting by maintaining a suitable separation distance as identified by cultural heritage specialists. Assess impacts on individual properties and identify opportunities for mitigation planting.
SLO6	Avoid fragmenting land use and habitats. Where practicable enhance or augment existing habitats or set aside areas for potential biodiversity enhancement.	Alignments across the LCA will potentially disrupt the geometrical pattern of medium size fields and woodland copses, as well as to fragment existing habitats associated to this pattern.	Alignments should seek a good horizontal fit with the agricultural pattern, and as far as possible avoid the loss of broadleaf woodland.
SLO7	Avoid severing human and ecological connectivity. Where practicable integrate design to enhance existing connectivity or compensate for historic loss of connectivity.	The LCA counts with a network of core paths associated to settlements that also provides access to more natural areas such as hill tops and woodland. Alignments across these core paths will potentially severe connections that are key within the landscape area, such as the connection between Insch and Dunnideer.	Alignments should seek to avoid the severance of the core paths.

SLO8	Incorporate local materials or vernacular into design where practicable.	The built environment exerts an influence on the LCA. Farm houses and cottages built on local stone are the predominant buildings in the area.	An alignment through this LCA should aim to incorporate elements of the local built environment into its design.
SLO9	Design to include sustainable drainage systems to fit with landscape and enhance biodiversity and ecological connectivity.	Alignments along this LCA have the potential to break the ecological connectivity of the watercourses including the main watercourse of the River Urie and its tributaries along the centre of the basin, the Kellock and the Shevock and the numerous burns and streams that flow towards the River Urie.	Alignments through this area should respond to the potential need for SUDS ponds in the design and integrate these in mitigation of ecological functions where practicable.
SLO10	Where practicable retain, restore or relocate important features, elements, habitats and landform.	Alignments through this LCA may have potential impacts on important features like the conical hills and subtly undulating topography, geometrical field pattern and woodland copses, or cultural heritage assets.	Alignments through this LCA should be designed to avoid impacts on important landscape features of the area such as topography, field pattern and woodland copses as well as cultural heritage assets and their setting.
SLO11	Identify locations that maximise views of the landscape on the network (e.g. the provision of rest areas or lay-bys).	Alignments within this LCA will potentially affect the views of the residential receptors where views are not restricted by vegetation and possibly from the core path users.	The design of an alignment across this LCA should aim to provide visual amenity of the surrounding landscape from the new road.

Table B7: LCA 12 Central Wooded Estates Analysis

Ref	Strategic Landscape Objective	Potential Impact	Strategic Design Guidance
SLO1	Avoid or minimise impacts on SLA or other designated landscape. Avoid or minimise impacts on areas representative of landscape character and/ or	Alignments have the potential to pass through Bennachie SLA in the northwest of the LCA. Alignments have the potential to pass close to Keith Hall GDL. The undulating wooded hills in the northwest of the LCA and within Bennachie SLA are	Alignments should avoid Bennachie SLA. The north western part of the LCA is more sensitive to change due to the presence of ancient woodland and the intactness of landscape features and elements that define landscape character. Alignments through this area should

	areas exhibiting intactness/ condition.	representative of landscape character and show a high degree of intactness and good condition. The broad floodplain of the River Don to the south of Inverurie and east of Kintore although not typical of the wider LCA is an important feature that contrasts with the surrounding undulating topography. Alignments crossing the floodplain would introduce a large structure that would contrast with the natural environment of floodplain.	make use of existing topography and woodland to conceal the scheme. The scheme should seek the shortest crossing possible of the River Don floodplain.
SLO2	Seek to integrate the horizontal and vertical alignment within existing topography to avoid excessive amounts of cut and fill.	The small scale, irregular pattern of undulating hills in the north western part of the LCA are sensitive to change of the scale proposed.	Alignments should avoid contouring around the hills unless the opportunity arises to do so at the break of slope.
SLO3	Avoid or minimise impacts on woodland.	The pattern of woodland within the SEA boundary is irregular consisting of frequent large blocks of conifer and mixed woodland in addition to smaller areas of broadleaf woodland. The blocks are of irregular shape and size. Alignments through that part of the LCA to the north of Kemnay and west of Inverurie will result in the loss of woodland and fragmentation of this resource.	Felling of woodland to create a construction and operational corridor for the scheme may involve loss of an area of woodland greater than the construction footprint due to the need to create a wind firm edge to the remaining areas of woodland. Where woodland cannot be avoided alignments should pass through the edges of woodland blocks or aim to leave behind large blocks of standing timber.
SLO4	Avoid or minimise impacts on key views within the landscape. Minimise impacts on residential properties.	While there are no key views identified on the OS 1:25,000 mapping the well wooded landscape to the west of Inverurie is of high scenic quality with views of Bennachie framed by woodland. Bennachie is an important focal point and there is a notable contrast between	The LVIA shall identify viewpoint locations in the landscape around the Grampian Outliers LCA that are important key views from which the key features such as Tap o' Noth and Bennachie may be seen.

		the agricultural foothills and the well forested, steep eastern slopes of Bennachie.	It is likely that significant visual impacts on most properties within the LCA can be avoided.
SLO5	Avoid or minimise impacts on key landmark features in the landscape. Avoid or minimise impacts on the setting of settlements, built and cultural heritage assets.	Bennachie is a key landmark feature which is visible from a wide area and exerts a strong influence on the wooded, undulating hills to the east of Bennachie. There are views towards Bennachie from this area. In addition, there are many scattered dwellings and farmsteads with varied views across the landscape within which woodland and other features provide focal points and diversity.	The LVIA shall identify viewpoint locations in the landscape around the Grampian Outliers LCA that are important key views from which the key features such as Tap o' Noth and Bennachie may be seen. It is unlikely there will be significant visual impacts on the setting of settlements, built and cultural heritage assets.
SLO6	Avoid fragmenting land use and habitats. Where practicable enhance or augment existing habitats or set aside areas for potential biodiversity enhancement.	There is greater potential for habitat fragmentation in the northern part of the LCA due to the pattern of ancient woodland and size of woodland blocks.	Where woodland cannot be avoided alignments should pass through the edges of woodland blocks or aim to leave behind large blocks of standing timber.
SLO7	Avoid severing human and ecological connectivity. Where practicable integrate design to enhance existing connectivity or compensate for historic loss of connectivity.	Alignments have the potential to sever connectivity across the northern part of the LCA particularly along the River Urie and River Don Valleys. There is potential to sever connectivity between Inverurie in the northeast of the LCA and Bennachie. Alignments also have the potential to sever ecological connectivity between habitats.	Alignments should avoid fragmenting key networks where there is high activity and connectivity.

SLO8	Incorporate local materials or vernacular into design where practicable.	The built environment exerts an influence on the LCA.	An alignment through this LCA should aim to incorporate elements of the local built environment into its design.
SLO9	Design to include sustainable drainage systems to fit with landscape and enhance biodiversity and ecological connectivity.	Alignments along this LCA have the potential to break the ecological connectivity of the watercourses	Alignments through this area should respond to the potential need for SUDS ponds in the design and integrate these mitigation of ecological fragmentation functions where practicable.
SLO10	Where practicable retain, restore or relocate important features, elements, habitats and landform.	Alignments through this LCA can have potential impacts on important features such as well wooded estates and the river valleys of the Don and the Urie as well as the cultural heritage assets.	Alignments through this LCA should be designed to avoid impacts on important landscape features of the area such as well wooded estates and the river valleys of the Don and the Urie and cultural heritage assets.
SLO11	Identify locations that maximise views of the landscape on the network (e.g. the provision of rest areas or lay-bys).	Alignments within this LCA will potentially affect the views of mainly the residential receptors.	The design of an alignment across this LCA should aim to provide visual amenity of the surrounding landscape from the new road.

Table B8: LCA 11 Formartine Lowlands Analysis

Ref	Strategic Landscape Objective	Potential Impact	Strategic Design Guidance
SLO1	Avoid or minimise impacts on SLA or other designated landscape. Avoid or minimise impacts on areas representative of landscape character and/ or areas exhibiting intactness/ condition.	Alignments have the potential to pass close to Keith Hall GDL and Battle of Barra battlefield. This is a large-scale landscape, the character of which is strongly influenced by the shape of the broad, smooth undulating ridges and plateaux where woodland and hedges are infrequent. It is therefore more able to absorb development than smaller scale landscapes of small hills where woodland is prevalent.	Alignments should avoid Keith Hall GDL and Battle of Barra battlefield. Alignments should make use of the broad slopes of ridges and the low points between them to minimise earthworks and avoid interrupting the ‘flow’ of the landform.

		Areas of more complex topography or areas with woodland and settlement are more sensitive to change.	
SLO2	Seek to integrate the horizontal and vertical alignment within existing topography to avoid excessive amounts of cut and fill.	While landform is large in scale alignments have the potential to result in substantial impacts where they cross the 'grain' of the landscape interrupting the smooth flow of the contours.	Alignments should make use of the broad slopes of ridges and the low points between them to minimise earthworks and avoid interrupting the 'flow' of the landform.
SLO3	Avoid or minimise impacts on woodland.	While there are some larger areas of plantation woodland in the south of the LCA between Kinmuck and Newmachar, woodland is generally infrequent and where present occurs as small clumps associated with farmsteads and dwellings. Although infrequent these clumps are important features in the landscape as they break up the large-scale landform and act as landmarks in the landscape.	Avoid the loss of small clumps of woodland that form focal points in the landscape. Felling of woodland to create a construction and operational corridor for the scheme may involve loss of an area of woodland greater than the construction footprint due to the need to create a wind firm edge to the remaining areas of woodland. Where woodland cannot be avoided alignments should pass through the edges of woodland blocks or aim to leave behind large blocks of standing timber.
SLO4	Avoid or minimise impacts on key views within the landscape. Minimise impacts on residential properties.	While there are no key views identified on the OS 1:25,000, the undulating topography and relatively high elevation mean there are views of Bennachie from the southern part of the LCA within the SEA boundary and beyond to the north. Travelling through the LCA by road gives a changing view of the landscape with Bennachie suddenly appearing in views when cresting ridges before being lost from view in the valleys between.	The LVIA shall identify viewpoint locations within the Formartine Lowlands LCA that are important key views from which key features such as Bennachie may be seen. Assess impacts on individual properties and identify opportunities for mitigation planting.

SLO5	Avoid or minimise impacts on key landmark features in the landscape. Avoid or minimise impacts on the setting of settlements, built and cultural heritage assets.	Bennachie is a key landmark feature which is visible from the southern part of the LCA. In addition, there are many scattered dwellings and farmsteads with varied views across the landscape within which woodland and other features provide focal points and diversity.	The LVIA shall identify viewpoint locations within the Formartine Lowlands LCA that are important key views from which key features such as Bennachie may be seen. It is unlikely there will be significant visual impacts on the setting of settlements, built and cultural heritage assets.
SLO6	Avoid fragmenting land use and habitats. Where practicable enhance or augment existing habitats or set aside areas for potential biodiversity enhancement.	Alignments across the LCA will affect the pattern of medium to large size fields.	Alignments should be sympathetic to the existing field pattern and where practicable should run parallel to existing field boundaries. Where land is severed leaving smaller fragments these should be used for mitigation where practicable.
SLO7	Avoid severing human and ecological connectivity. Where practicable integrate design to enhance existing connectivity or compensate for historic loss of connectivity.	Alignments have the potential to sever ecological connectivity where passing through woodland and field boundaries. There are a limited number of core paths with rural parts of the LCA. There are core paths to the south of Oldmeldrum within the LCA and Battle of Barra battlefield and to the west of Newmachar.	Alignments should avoid fragmenting key networks where there is high activity and connectivity.
SLO8	Incorporate local materials or vernacular into design where practicable.	The built environment exerts an influence on the LCA including drystone walls.	An alignment through this LCA should aim to incorporate elements of the local built environment into its design.
SLO9	Design to include sustainable drainage systems to fit with landscape and enhance biodiversity and ecological connectivity.	Alignments along this LCA have the potential to break the ecological connectivity of the watercourses even though they are not a defining feature of the LCA.	Although watercourses are not a defining feature of this LCA, alignments through this area should respond to the potential need for SUDS ponds in the design and integrate these mitigation of ecological fragmentation functions where practicable.

SLO10	Where practicable retain, restore or relocate important features, elements, habitats and landform.	Alignments through this LCA can have potential impacts on important features such as the river valley of the Don, scarce shelterbelts, drystone walls and other cultural heritage features.	Alignments through this LCA should be designed to avoid impacts on important landscape features of the area such as cultural heritage assets, shelterbelts and river topography.
SLO11	Identify locations that maximise views of the landscape on the network (e.g. the provision of rest areas or lay-bys).	Alignments within this LCA will potentially affect the views of many of the residential and recreational receptors.	The design of an alignment across this LCA should aim to provide visual amenity of the surrounding landscape from the new road.

Table B9: LCA 2 Tyrebagger Hill/ Kirkhill Analysis

Ref	Strategic Landscape Objective	Potential Impact	Strategic Design Guidance
SLO1	Avoid or minimise impacts on SLA or other designated landscape. Avoid or minimise impacts on areas representative of landscape character and/ or areas exhibiting intactness/ condition.	Alignments have the potential to cut through the southern part of Kirkhill Forest which contains a number of walking and cycling routes. The part of the LCA within the SEA boundary likely to be affected by alignments is predominantly plantation forest which is used for recreational purposes. Other units of the LCA occur to the south at Brimmond Hill and to the south of Kingswells and outside the SEA boundary at Cove Bay.	Alignments should run as close to the existing alignment of the A96 as practicable to avoid or minimise impacts upon the recreational area of Kirkhill Forest.
SLO2	Seek to integrate the horizontal and vertical alignment within existing topography to avoid	The existing A96 passes through the LCA in cutting. Proposed alignments would pass through the LCA in cutting either online or offline to the north of the existing A96.	An online alignment will minimise the need for earthworks within Kirkhill Forest.

	excessive amounts of cut and fill.		Alignments should therefore run as close to the existing alignment of the A96 as practicable to avoid or minimise earthworks required.
SLO3	Avoid or minimise impacts on woodland.	The woodland at Kirkhill Forest to the north of the A96 is categorised as ancient woodland. Offline alignments to the north of the existing A96 have the potential to result in the loss of ancient woodland.	An online alignment will minimise the need for earthworks within Kirkhill Forest. Felling of woodland to create a construction and operational corridor for the scheme may involve loss of an area of woodland greater than the construction footprint due to the need to create a wind firm edge to the remaining areas of woodland. Where woodland cannot be avoided alignments should pass through the edges of woodland blocks or aim to leave behind large blocks of standing timber.
SLO4	Avoid or minimise impacts on key views within the landscape. Minimise impacts on residential properties.	There are no key views identified on the OS 1:25,000 within the LCA unit at Kirkhill Forest. There is a viewpoint identified on the summit of Brimmond Hill approximately 2.3km to the south of the existing A96 which could potentially be affected by alignments on the south side of the existing A96. There are very few residential properties within the LCA likely to be affected by alignments.	The LVIA shall identify viewpoint locations within the LCA that are important to enjoyment of the recreational area of Kirkhill Forest. The LVIA will assess impacts on individual properties and identify opportunities for mitigation planting.
SLO5	Avoid or minimise impacts on key landmark features in the landscape. Avoid or minimise impacts on the setting of settlements, built and cultural heritage assets.	While the LCA is used for recreational purposes the high proportion of woodland cover means that views are predominantly short range or occur from the edge of the woodland. Alignments would be present within cutting and therefore less visible in views from the LCA to the north.	The LVIA shall identify viewpoint locations within the LCA that are important to enjoyment of the recreational area of Kirkhill Forest. It is unlikely there will be significant visual impacts on the setting of settlements, built and cultural heritage assets.

SLO6	Avoid fragmenting land use and habitats. Where practicable enhance or augment existing habitats or set aside areas for potential biodiversity enhancement.	Alignments have the potential for some land use fragmentation by passing through agricultural land and running parallel to the existing A96. There is the potential for loss of ancient woodland although fragmentation is limited due to the fact that such loss would occur on the southern margins of a large area at Kirkhill Forest.	Where woodland cannot be avoided alignments should pass through the edges of woodland blocks or aim to leave behind large blocks of standing timber.
SLO7	Avoid severing human and ecological connectivity. Where practicable integrate design to enhance existing connectivity or compensate for historic loss of connectivity.	Kirkhill Forest within the LCA is used for walking and cycling and there is potential for severing NMU routes in the south of the LCA. The existing A96 separates Kirkhill Forest on the north side from Clinterty Woods on the south side.	Alignments should run as close to the existing alignment of the A96 as practicable to avoid severance of routes. There is the potential to enhance connectivity for people by installation of a footbridge between Kirkhill Forest and Clinterty Woods on the south side of the existing A96.
SLO8	Incorporate local materials or vernacular into design where practicable.	The influence of buildings is limited within the LCA.	An alignment through this LCA should aim to incorporate elements of the local built environment into its design.
SLO9	Design to include sustainable drainage systems to fit with landscape and enhance biodiversity and ecological connectivity.	Although no substantial watercourses, alignments along this LCA have the potential to break the ecological connectivity of the minor watercourses.	Although major watercourses are not a defining feature of this LCA, alignments through this area should respond to the potential need for SUDS ponds in the design and integrate these mitigation of ecological fragmentation functions where practicable.
SLO10	Where practicable retain, restore or relocate important features, elements, habitats and landform.	Alignments through this LCA can have potential impacts on important features such as scheduled monuments and drystone walls	Alignments through this LCA should be designed to avoid impacts on important landscape features of the area such as drystone wall and other cultural heritage assets.
SLO11	Identify locations that maximise views of the landscape on the network (e.g. the provision of rest areas or lay-bys).	Alignments within this LCA will potentially affect the views of mainly of residential and recreational receptors.	The design of an alignment across this LCA should aim to provide visual amenity of the surrounding landscape from the new road.

Table B10: LCA 9 Clinterty and West Brimmond Farmland Analysis

Ref	Strategic Landscape Objective	Potential Impact	Strategic Design Guidance
SLO1	Avoid or minimise impacts on SLA or other designated landscape. Avoid or minimise impacts on areas representative of landscape character and/ or areas exhibiting intactness/ condition.	Alignments have the potential to cut through the western part of Clinterty Woods which contains ancient woodland and walking routes. There is a small valley running from Little Clinterty in the west to Bunhead of Clinterty in the east. It is small in scale containing small pasture fields with a back drop of broadleaf woodland on its southern side where there are a number of residential properties. While the A96 runs a short distance to the north it represents an area of good condition and diversity.	Alignments should avoid the ancient woodland and the small valley that runs to the south of the existing A96. Alignments that run close to the existing A96 or online will result in the least earthworks and minimise loss of woodland and impacts on landscape character.
SLO2	Seek to integrate the horizontal and vertical alignment within existing topography to avoid excessive amounts of cut and fill.	Alignments will avoid the majority of the LCA by running through the northern part within a short distance of the existing A96. The fairly level topography in the north of the LCA means that earthworks could be kept to a minimum or potentially mitigated. However, the land steepens at Clinterty becoming more undulating and incised.	Alignments that run close to the existing A96 or online will result in the least earthworks which will be beneficial to landscape character and nearby residential receptors.
SLO3	Avoid or minimise impacts on woodland.	The northern part of the LCA is typical of the majority by having a sparse woodland cover of shelterbelts and clumps of trees associated with farmsteads and dwellings. The exception	Alignments should avoid fragmenting woodland particularly in the northeast of the LCA at Clinterty Woods where broadleaf woodland makes an important contribution to landscape character.

		is the broadleaf ancient woodland in the western part of Clinterty Woods	
SLO4	Avoid or minimise impacts on key views within the landscape. Minimise impacts on residential properties.	There are no key views identified on the OS 1:25,000 within the northern part of the LCA unit through which alignments are likely to pass. There are views from west facing slopes towards the distinctive silhouette of Bennachie. As mentioned above the distribution of farmsteads and dwellings is slightly denser in the north of the LCA. It is therefore unlikely that alignments through this part of the LCA can avoid impacts on residents.	Alignments that run close to the existing A96 or online will result in the least impacts on views of Bennachie from west facing slopes. Any offline alignments are likely to result in substantial impacts on residential amenity.
SLO5	Avoid or minimise impacts on key landmark features in the landscape. Avoid or minimise impacts on the setting of settlements, built and cultural heritage assets.	While Bennachie is a notable landmark feature visible from west facing slopes of the LCA, it is a distant feature and more visible from elevated locations. There are no notable landmark features in the northern part of the LCA. In addition, there are many scattered dwellings and farmsteads with varied views across the landscape within which woodland and other features provide focal points and diversity.	Alignments that run close to the existing A96 or online will result in the least impacts on views of Bennachie from west facing slopes. Alignments that run close to the existing A96 or online will result in the least earthworks which will be beneficial to landscape character and nearby residential receptors. It is unlikely there will be significant visual impacts on the setting of settlements, built and cultural heritage assets.
SLO6	Avoid fragmenting land use and habitats. Where practicable enhance or augment existing habitats or set aside areas for potential biodiversity enhancement.	There is greater potential for habitat fragmentation in the north eastern part of the LCA due to the pattern of ancient woodland and the undulating topography.	Where woodland cannot be avoided alignments should pass through the edges of woodland blocks or aim to leave behind large blocks of standing timber.

SLO7	Avoid severing human and ecological connectivity. Where practicable integrate design to enhance existing connectivity or compensate for historic loss of connectivity.	Alignments have the potential to sever ecological connectivity across the northern part of the LCA. There is potential to sever core paths within the Clinterty Woods on the east side of the B979.	Alignments should avoid fragmenting key networks where there is high activity and connectivity.
SLO8	Incorporate local materials or vernacular into design where practicable.	The built environment exerts an influence on the LCA particularly to the north of Clinterty.	An alignment through this LCA should aim to incorporate elements of the local built environment into its design.
SLO9	Design to include sustainable drainage systems to fit with landscape and enhance biodiversity and ecological connectivity.	Although no substantial watercourses, alignments along this LCA have the potential to break the ecological connectivity of the minor watercourses.	Although major watercourses are not a defining feature of this LCA, alignments through this area should respond to the potential need for SUDS ponds in the design and integrate these mitigation of ecological fragmentation functions where practicable.
SLO10	Where practicable retain, restore or relocate important features, elements, habitats and landform.	Alignments through this LCA can have potential impacts on important features such as drystone walls	Alignments through this LCA should be designed to avoid impacts on important landscape features of the area such as drystone wall and other cultural heritage assets.
SLO11	Identify locations that maximise views of the landscape on the network (e.g. the provision of rest areas or lay-bys).	Alignments within this LCA will potentially affect the views of mainly of residential and possibly recreational receptors.	The design of an alignment across this LCA should aim to provide visual amenity of the surrounding landscape from the new road.

Appendix C **Local landscape character areas assessment**

The following Table C1 is an example of how each LLCA may be presented showing the description of each LLCA and their sensitivity. The tables will be further developed to include an assessment of the magnitude and significance of potential impacts on each LLCA as part of the DMRB Stage 2 assessment. The fully completed tables will be provided as an appendix to the DMRB Stage 2 environmental assessment.

Table C1: Local Landscape Character Areas East of Huntly to Colpy Section

Sub topic/criteria	Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)		Predicted landscape effects	Assumed priority secondary mitigation	Predicted residual landscape effects
LLCA 3 **Kinnoir Wood**	**Landscape baseline** • Large coniferous woodland on distinct group of hills • Noticeable rides and forest compartments • Distinctive skyline feature • Within the Deveron Valley special landscape area				
	Cyan route option predicted landscape effects:	**Sensitivity** = High **Magnitude =**			
	Red route option predicted landscape effects:	**Sensitivity =** High **Magnitude =**			

Appendix D **Landscape areas of high sensitivity**

High sensitivity area 1

This area lies between Landscape Character Area (LCA) 21 Deveron and Bogie Straths[10] based around Huntly and its river valleys, and LCA 4 Northern Rolling Lowlands[11] character areas that border north and south of the Hill of Foudland/Wishach Hill/Gartly Moor. Newtongarry Hill and the ancient woodland shelterbelt along its ridge are the key features of this area, which is more widely defined by its topography of smooth rolling hills and wide river valleys.

High sensitivity area 2

This area is located within LCA 4 Northern Rolling Lowlands, a character area that borders north and south of the Hill of Foudland/Wishach Hill/Gartly Moor. The skylines are defined by hills that overlap in the view.

High sensitivity area 3

This area comprises the northern banks of Glen Water, with undulating ridges that drop down perpendicular into the glen. The area also comprises the Hill of Tillymorgan and its surroundings, including the well settled landscape around Kirkton of Culsalmond, rich in cultural heritage sites. To the east of Tillymorgan some fields are bounded by lines of mature trees.

High sensitivity area 4

This area comprises Strathbogie, which is part of LCA 21 Deveron and Bogie Straths based around Huntly and it's river valleys, a spur of hills including Hill of Foudland and Hill of Skares which are part of LCA 17 Grampian Outliers[12] (Grampian Outliers encompass Hill of Foudland and Wishach Hill/Gartly Moor), an area to the south of these hills between Largie and the A96 that lies between LCA 4 Northern Rolling Lowland (character areas that border north and south of the Hill of Foudland/Wishach Hill/Gartly Moor), and LCA 5 Insch Basin[13] which is a character area from Rhynie to Insch in the west, running north of Old Rayne but south of Culsalmond, arcing north of the A96 (along the A920) to Oldmeldrum in the east. Strathbogie is an enclosed valley predominantly used for pastures, where the fields are bounded by a loose network of hedges and shelterbelts and small woodland copses.

[10] South and Central Aberdeenshire: Landscape Character Assessment (Scottish Natural Heritage Review No.102, 1998

[11] South and Central Aberdeenshire: Landscape Character Assessment (Scottish Natural Heritage Review No.102, 1998

[12] South and Central Aberdeenshire: Landscape Character Assessment (Scottish Natural Heritage Review No.102, 1998

[13] South and Central Aberdeenshire: Landscape Character Assessment (Scottish Natural Heritage Review No.102, 1998

The area between Largie and the A96 has an undulating topography that provides a noticeable sense of enclosure, with many field boundaries consisting of lines of mature trees.

High sensitivity area 5

This area is located north of the A920, east of the Hill of Tillymorgan and west of the Hill of Blackford. The topography rises in the Hill of Rothmaise and some fields are bounded by dry-stone walls.

High sensitivity area 6

This area south-west of Rothienorman, is located between LCA 12 Deveron and Upper Ythan Valleys[14] (Macduff to Turriff and south-east to Fyvie, south-west to Auchingoul) and LCA 9 Upland Ridges South of the Deveron[15], (bordered to the north by Hill of Foudland/Wishach Hill/Gartly Moor and to the south by the Insch Basin). It is defined by the rising topography at Hill of Blackford, Hill of Little Folla and the associated settlements to the north and south (Middleton of Blackford, The Mill, Kinbroon, Fernybrae, Backhill of Little Folla, East Mains, Westerton etc).

High sensitivity area 7

This area is located west of Insch and straddles the B9002 west to Wardhouse, including Hill of Glanderston and Fallow Hill, Whiteburn and Sunside. It is characteristic of the LCA 5 Insch Basin, with conical hills such as Dunnideer or Christ Kirk, Scheduled Monuments of Dunnideer Stone Circle and Hill of Dunnideer fort, platform settlement and tower, tree lines and woodland copses, as well as the well settled area around Insch.

High sensitivity area 8

This area located between Williamston House GDL and Newton House GDL, has been identified as having high sensitivity. It includes the gently sloping arable and grazing pasture fields alongside of the River Urie river valley flood plain including Mains of Williamston, Mellenside and Brankanentum. Associated features include mature tree lines, stands of mature woodland vegetation with some field boundaries characterised by mature tree lines and hedgerows.

High sensitivity area 9

This area is contained within LCA 5 Insch Basin and includes the settlement of Meikle Wartle and Warthill House which is surrounded by ancient woodland.

[14] National Programme of Landscape Character Assessment: Banff and Buchan (Scottish Natural Heritage Review No.37, 1997)

[15] National Programme of Landscape Character Assessment: Banff and Buchan (Scottish Natural Heritage Review No.37, 1997)

High sensitivity area 10

This area is located south of the Newton House GDL and includes settlements of Old Rayne and Pitmachie with the River Urie passing between them. The area is located adjacent to the Bennachie SLA and is a flat to gently undulating broad valley floor contained by undulating slopes.

High sensitivity area 11

This area is located to the south of Insch near the small village of Auchleven. The area is located adjacent to the Bennachie SLA and is a flat to gently undulating broad valley floor contained by undulating slopes.

High sensitivity area 12

This area lies south of Durno and Daviot and north of the existing A96 between LCA 12 Central Wooded States[16] and LCA 5 Insch Basin. It is rich in small copses of ancient woodland, cultural heritage assets such as Pitcaple Castle and Pitscurry Cairn and the Sites of Specific Scientific Interest at Pitscurry and Legatsden Quarries. A number of more significant broadleaf woodlands are also registered on the National Forest Inventory 2017. It is also a well settled landscape, Whiteford being the main settlement in the area.

High sensitivity area 13

This area is located around Daviot and falls within LCA 5 Insch Basin. Daviot is surrounded by copses of ancient woodland and is rich in cultural heritage assets. Two stone circles which are scheduled monuments lie in proximity to the north of the village.

High sensitivity area 14

This area is located adjacent to Bennachie SLA, north of the Chapel of Garioch and south of the existing A96 including Gallows Hill. The sensitivity of the area is defined by the presence of ancient woodland, settlements at Pitcaple, elevated topography including a stone circle and the Maiden Stone both of which are Scheduled Monuments.

High sensitivity area 15

This area is located south of Oldmeldrum and includes Redhouse and Fordalehouse Wood. The area is irregular in shape and encompasses Lawel Hill and Bourtie House, south to the B9170/minor road junction and west to Tullochmoor and Lethenty House. The topography at Lawell Hill and Little Hillbrae includes small copses of woodland and ancient woodland and is very sparsely populated contributing to providing this area with a sense of enclosure and isolation.

[16] South and Central Aberdeenshire: Landscape Character Assessment (Scottish Natural Heritage Review No.102, 1998

High sensitivity area 16

This area is located south of Port Elphinstone and the River Don, west of the A96 including Crichie and Shaw Hill. It runs south to the Gourock Burn including Clovenstone and Tom's Forest and to the west including Cairntown Wood, Aquhythie Wood and Roquharold Hill in the north. The area falls within LCA 12 Central Wooded Estates and is rich in small areas of ancient woodland as well as scheduled monuments. The elevated topography of this area increases visibility from south facing slopes to the north.

High sensitivity area 17

This area falls within LCA 12 Central Wooded Estates. It comprises the River Don floodplain from Balbithan at Kintore until Hatton of Fintray, which is surrounded by small areas of coniferous and broadleaf woodland. There are a significant number of field boundaries including drystone dykes and hedgerows as well as tree lines and woodland copses. The gently undulating topography and lack of screening vegetation helps optimise visibility of the landscape.

High sensitivity area 18

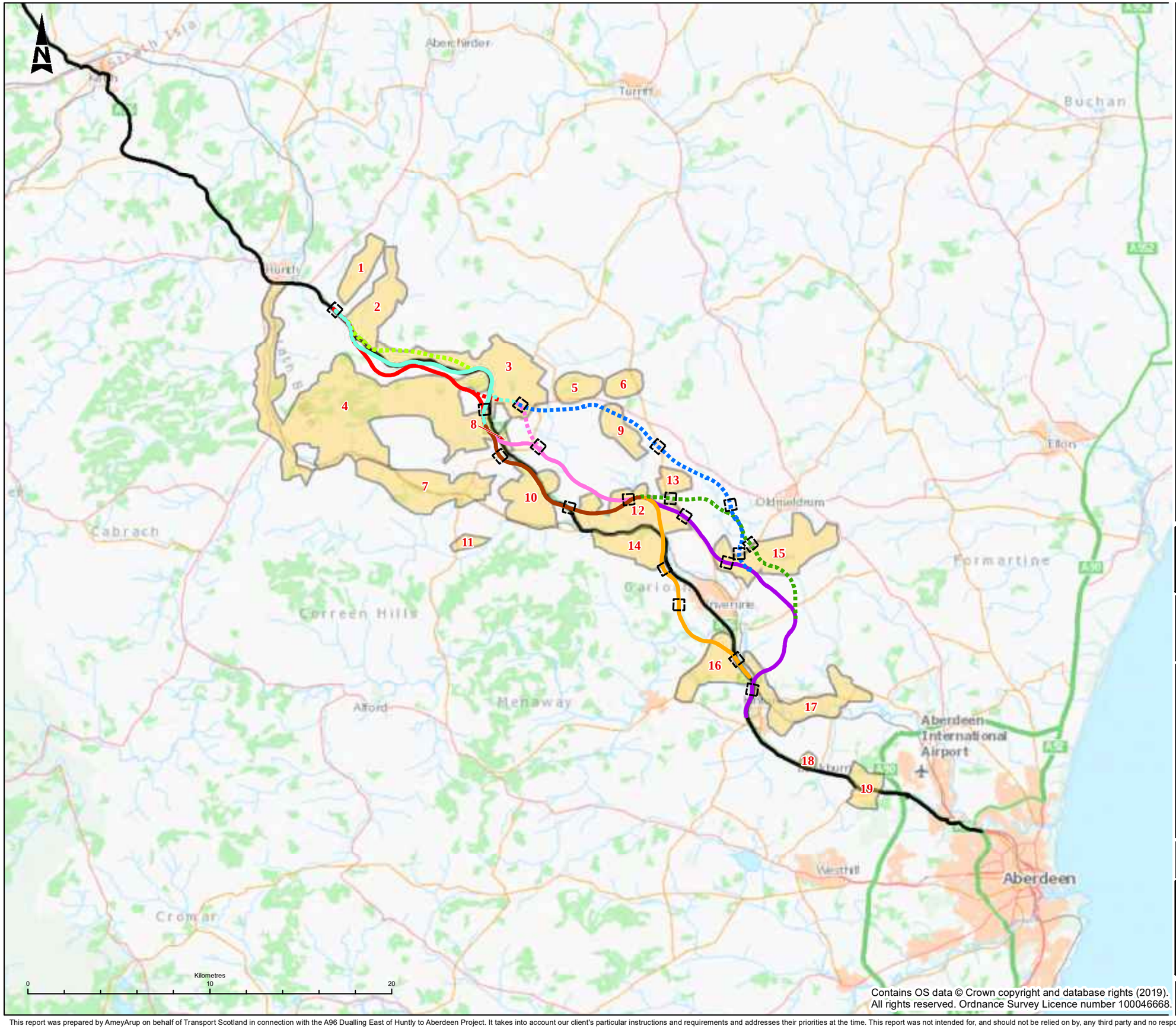
This area is located to the west of Blackburn and comprises the non-inventory GDL of Kinellar House. There are existing settlements, a proposed residential development and public buildings.

High sensitivity area 19

This area is mostly covered by Kirkhill Forest, a mixed coniferous forest which includes a number of cycle routes and walking trails. It is a popular visitor attraction.

Appendix E **Drawings**

Landscape Areas of High Sensitivity	A96PEA-AMAR-ELS-SWI-DR-LX-000002
Designated Landscape Areas	A96PEA-AMAR-ELS-SWI-DR-LX-000003
Local Landscape Character Areas	
Red/Cyan Route Options	A96PEA-AMAR-ELS-SWI-DR-LX-000004
Brown/Pink Route Options	A96PEA-AMAR-ELS-SWI-DR-LX-000005
Orange/Violet Route Options	A96PEA-AMAR-ELS-SWI-DR-LX-000006 and 7
Landscape Character Types	
Red/Cyan Route Options	A96PEA-AMAR-ELS-SWI-DR-LX-000008
Brown/Pink Route Options	A96PEA-AMAR-ELS-SWI-DR-LX-000009
Orange/Violet Route Options	A96PEA-AMAR-ELS-SWI-DR-LX-000010 and 11



Legend

- A96 blue section deselected
- A96 brown section
- A96 cyan section
- A96 cyan section deselected
- A96 green section deselected
- A96 lime section deselected
- A96 orange section
- A96 pink section
- A96 pink section deselected
- A96 red section
- A96 red section deselected
- A96 violet selected
- Existing A96
- Indicative Junction
- 1 Landscape Areas of High

	Issue				
C01	ACT	TS	LW	FM	NH
	27/06/19	27/06/19	28/06/19	28/06/19	28/06/19

	Revision details				
Revision	Created	Checked	Reviewed	Approved	Authorised
	dd/mm/yy	dd/mm/yy	dd/mm/yy	dd/mm/yy	dd/mm/yy

Designer
Precision House
McNell Drive
Motherwell, ML1 4UR

Client
58 Port Dundas Road
Glasgow
G4 0HF

Project Name
A96 Dualling East of Huntly to Aberdeen

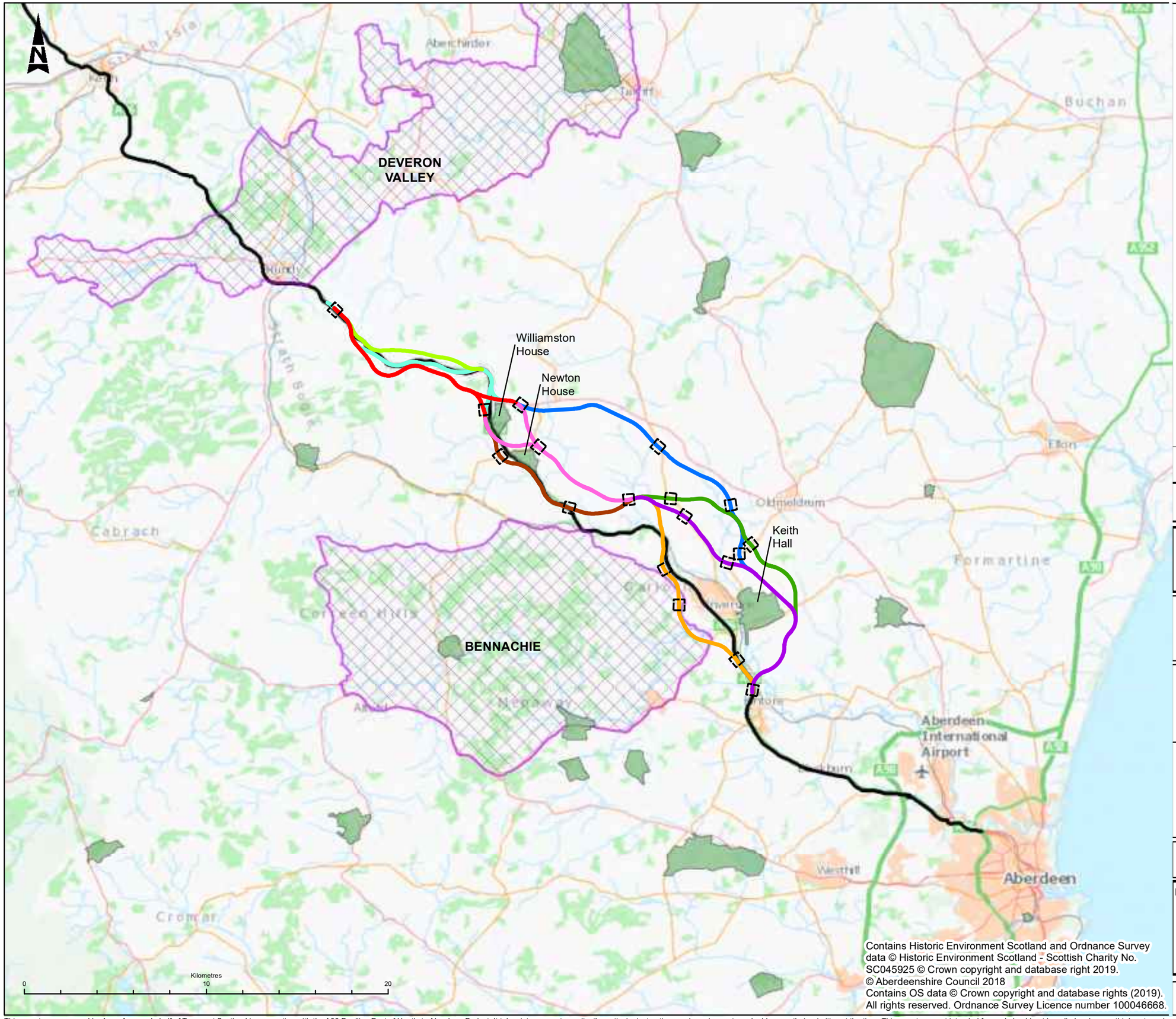
Drawing Title
Landscape Areas of High Sensitivity

Project Ref. No.	Stage	Scale : 1:200,000 @A3
250002-92	Stage 2	Dimensions :

Drawing Number

Project	Originator	Volume	Location	Type	Role	Number
A96PEA	AMAR	ELS	SWI	DR	LX	000002

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01



Legend

- Existing A96
- A96 Blue Section
- A96 Brown Section
- A96 Cyan Section
- A96 Green Section
- A96 Lime Section
- A96 Orange Section
- A96 Pink Section
- A96 Red Section
- A96 Violet Section
- Indicative Junction
- Inventory Status Gardens & Designed Landscapes
- Aberdeenshire Council LDP Special Landscape Area

	Issue				
C01	EH	TS	LW	FM	NH
	06/03/19	15/03/19	20/03/19	22/03/19	25/03/19

	Revision details				
Revision	Created	Checked	Reviewed	Approved	Authorised
	dd/mm/yy	dd/mm/yy	dd/mm/yy	dd/mm/yy	dd/mm/yy

Designer
Precision House
McNell Drive
Motherwell, ML1 4UR

Client
58 Port Dundas Road
Glasgow
G4 0HF

Project Name
A96 Dualling East of Huntly to Aberdeen

Drawing Title
Designated Landscape Areas

Project Ref. No.	Stage	Scale : 1:200,000 @A3
250002-92	Stage 2	Dimensions :

Drawing Number

Project	Originator	Volume	Location	Type	Role	Number
A96PEA	AMAR	ELS	SWI	DR	LX	000003

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01

Local Landscape Character Area (LLCA) Group

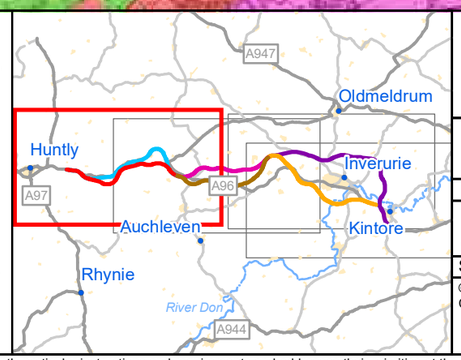
- Settlement
- Corridor
- Wooded Hills
- Farmed Hill Slopes
- Low Lying Farmland
- Open Hill
- Undulating Farmland
- Distintive Ridges
- Meandering Watercourse
- Designed Estate
- Rolling Wooded Farmland
- Wooded Farmland
- Recreation Site

Legend

- Route Options
- 3km Study Area

Local Landscape Character Area (LLCA)

1 - Huntly
2 - Strathbogie Corridor
3 - Kinnoir Wood
4 - Battle Hill
5 - Low Farmland between Battle Hill and Robin's Height
6 - Cairn Hill
7 - Undulating farmland
8 - Ba' Hill wood
9 - Belts of Shanquhar
11 - Wooded hill at Risquehouse
13 - Farmed hill slopes around Gartly Moor
14 - Gartly Moor
15 - Open hills from Hill of Chapelton to Hill of Dummuies
16 - Farmed hill slopes
17 - Newtongarry Hill to Robins Height
18 - Hill of Stoneyfield
19 - Farmed hill slopes around Glens of Foudland
20 - Boggy fields along road corridor
21 - Hill of Bainshole
22 - Farmed hill slopes north of Hill of Foudland
23 - Hill of Foudland
24 - Skirts of Foudland
25 - Bisset Moss
26 - Broom Hill to Wether Hill
27 - Millburn Wood
28 - Farmed slopes around Ythan Wells
29- Meadowhead
30 - River Ythan incised river valley
31 - Undulating farmland east of Ythanwells
32 - Distinctive shelterbelt
33 - Hill of Tillymorgan
34 - Hill of Skares
35 - Undulating farmland around Mains of Tillymorgan
36 - Moss of Redhills
37 - Undulating farmland
38 - Hill of Christ's Kirk
39 - Hill of Dunnideer
40 - Insch golf course
41 - Insch
42 - Farmed slopes to Hill of Skares
43 - Loch Insch fishery
44 - Williamston House
45 - Colpy
46 - Pitmachie and Old Rayne
47 - Newton House
48 - Flat wet area by Insch
49 - Hill of Netherhall to Hill of Westfield
50 - Shelterbelts at The Knappie
52 - Low lying area along Gadie Burn
53 - Wooded slopes to Bennachie
55 - Berry Hill
56 - Hills around Candle Hill
57 - Oyne valley corridor
59 - Moor of Carden and surrounds
61 - Undulating farmland
62 - Freefield House
63 - Hills north of A920
64 - Flat area from A920 to A96 including Wartle Moss



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	13/12/19	13/12/19	13/12/19	13/12/19	13/12/19
Revision	Created	Checked	Reviewed	Approved	Authorised

Kilometres: 0 2 4

Scale @ A3: 1:50,000 | Project Ref. No. A96PEA | Stage: Stage 2

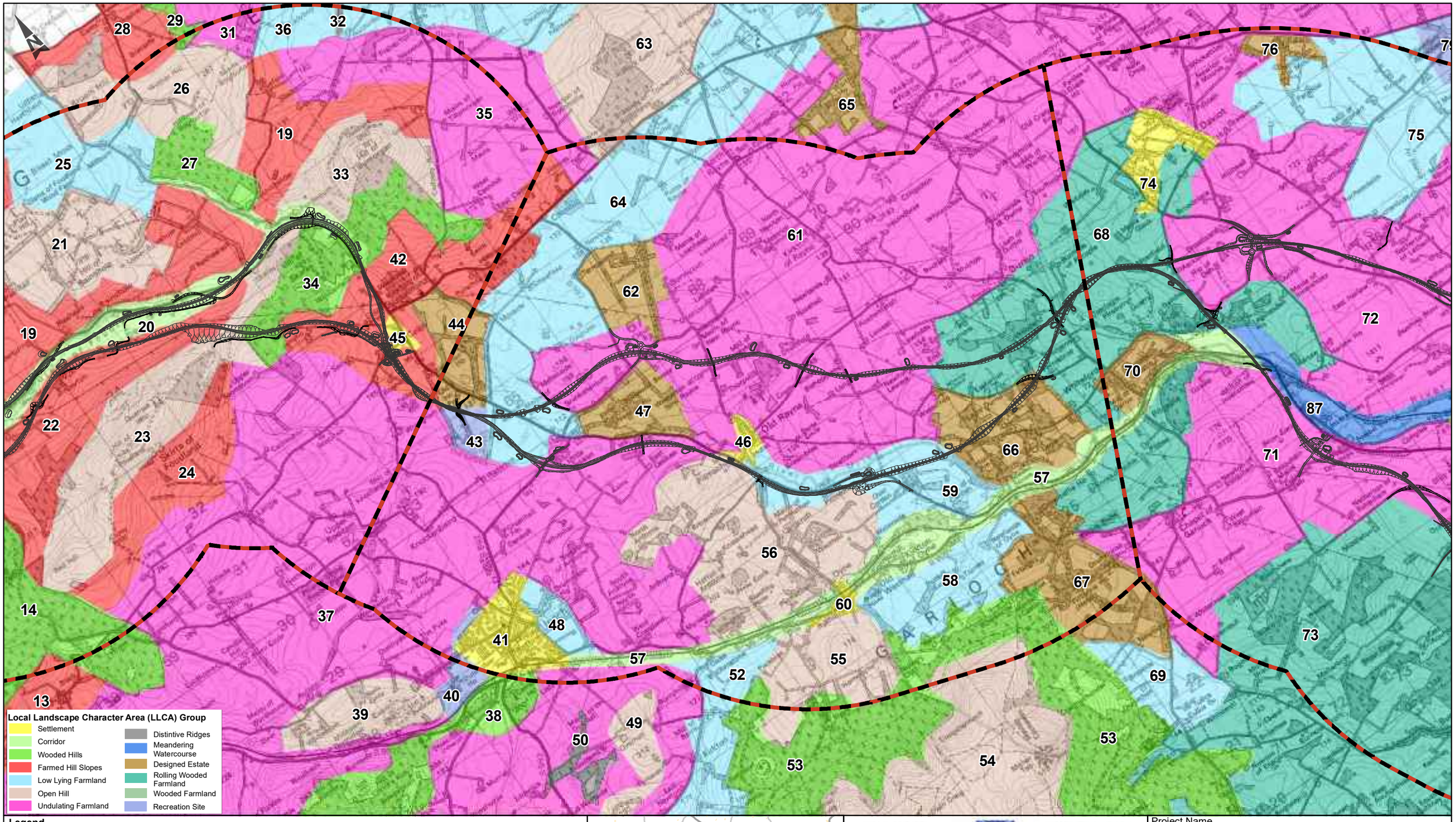
Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Fig 1.1
Local Landscape Character Areas
Red/Cyan Route Options
Sheet 1 of 4

Map Number

Project	Originator	Volume				
A96PEA	- AMAR	- ELS	- SWI	- DR	- LX	- 000004
			Location	Type	Role	Number

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01



Local Landscape Character Area (LLCA) Group

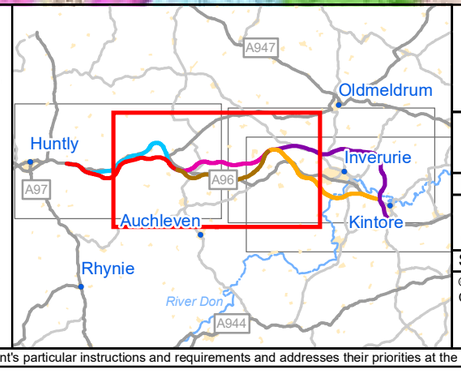
- Settlement
- Corridor
- Wooded Hills
- Farmed Hill Slopes
- Low Lying Farmland
- Open Hill
- Undulating Farmland
- Distintive Ridges
- Meandering Watercourse
- Designed Estate
- Rolling Wooded Farmland
- Wooded Farmland
- Recreation Site

Legend

- Route Options
- 3km Study Area

Local Landscape Character Area (LLCA)

- 13 - Farmed hill slopes around Gartly Moor
- 14 - Gartly Moor
- 19 - Farmed hill slopes around Glens of Foudland
- 20 - Boggy fields along road corridor
- 21 - Hill of Bainshole
- 22 - Farmed hill slopes north of Hill of Foudland
- 23 - Hill of Foudland
- 24 - Skirts of Foudland
- 25 - Bisset Moss
- 26 - Broom Hill to Wether Hill
- 27 - Millburn Wood
- 28 - Farmed slopes around Ythan Wells
- 29- Meadowhead
- 31 - Undulating farmland east of Ythanwells
- 32 - Distinctive shelterbelt
- 33 - Hill of Tillymorgan
- 34 - Hill of Skares
- 35 - Undulating farmland around Mains of Tillymorgan
- 36 - Moss of Redhills
- 37 - Undulating farmland
- 38 - Hill of Christ's Kirk
- 39 - Hill of Dunnideer
- 40 - Insch golf course
- 41 - Insch
- 42 - Farmed slopes to Hill of Skares
- 43 - Loch Insch fishery
- 44 - Williamston House
- 45 - Colpy
- 46 - Pitmachie and Old Rayne
- 47 - Newton House
- 48 - Flat wet area by Insch
- 49 - Hill of Netherhall to Hill of Westfield
- 50 - Shelterbelts at The Knappie
- 52 - Low lying area along Gadie Burn
- 53 - Wooded slopes to Bennachie
- 54 - Bennachie
- 55 - Berry Hill
- 56 - Hills around Candle Hill
- 57 - Oyne valley corridor
- 58 - Foot of Bennachie
- 59 - Moor of Carden and surrounds
- 60 - Oyne
- 61 - Undulating farmland
- 62 - Freefield House
- 63 - Hills north of A920
- 64 - Flat area from A920 to A96 including Wartle Moss
- 65 - Warthill House
- 66 - Logie House
- 67 - Crowmallie House and Dower House
- 68 - Rolling wooded farmland
- 69 - Flat wet area by Bennachie centre
- 70 - Pitcaple Castle
- 71 - Undulating farmland east of Bennachie
- 72 - Harlaw
- 73 - Rolling wooded farmland around Chapel of Garrioch
- 74 - Daviot
- 75 - Flat area around Mill of Lumphart
- 76 - Mounie Castle
- 79 - Fishery and Go-cart centre
- 87 - River Urie corridor
- 88 - Inverurie



A96 DUALLING | Transport Scotland | AmeyArup

Revision	Created	Checked	Reviewed	Approved	Authorised
C01	ACEN 13/12/19	DTUC 13/12/19	HATH 13/12/19	LWAR 13/12/19	NHAC 13/12/19

First Issue

Kilometres: 0 — 2 — 4

Scale @ A3: 1:50,000 | Project Ref. No. A96PEA | Stage: Stage 2

Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Fig 1.2
Local Landscape Character Areas
Brown/Pink Route Options
Sheet 2 of 4

Map Number

Project	Originator	Volume	Location	Type	Role	Number
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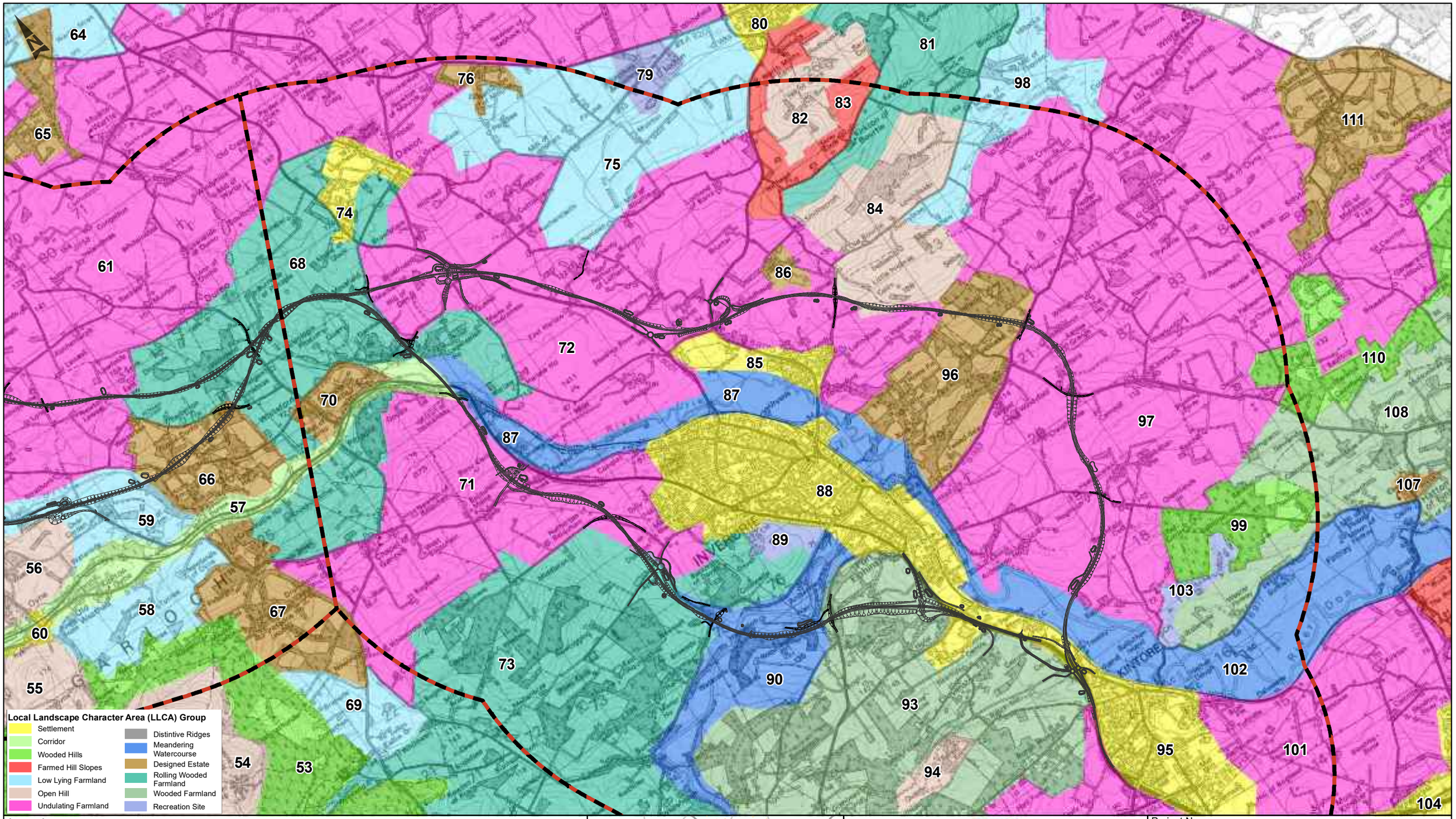
Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01



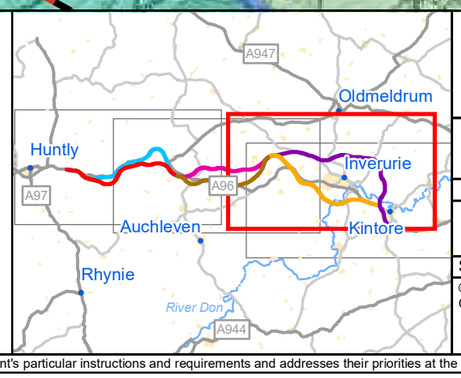
Legend

Route Options

3km Study Area

Local Landscape Character Area (LLCA)

53 - Wooded slopes to Bennachie
54 - Bennachie
55 - Berry Hill
56 - Hills around Candle Hill
57 - Oyne valley corridor
58 - Foot of Bennachie
59 - Moor of Carden and surrounds
60 - Oyne
61 - Undulating farmland
63 - Hills north of A920
64 - Flat area from A920 to A96 including Wartle Moss
65 - Warthill House
66 - Logie House
67 - Crowmallie House and Dower House
68 - Rolling wooded farmland
69 - Flat wet area by Bennachie centre
70 - Pitcaple Castle
71 - Undulating farmland east of Bennachie
72 - Harlaw
73 - Rolling wooded farmland around Chapel of Garrioch
74 - Daviot
75 - Flat area around Mill of Lumphart
76 - Mounie Castle
79 - Fishery and Go-cart centre
80 - Old Meldrum
81 - Farmland around Kirkton of Bourtie
82 - Hill of Barra
83 - Hillsides around Hill of Barra
84- Lawel Hill
85 - Residential extension north of Inverurie
86 - Bourtie House
87 - River Urie corridor
88 - Inverurie
89 - Inverurie Golf Course
90 - River Don corridor
93 - Wooded farmland between Kintore and Kemnay
94 - Clovenstone Quarry
95 - Kintore
96 - Keith Hall to Ordiefauld
97 - Large area of farmland around Kinmuck
98 - Burreldale Moss
99 - Newton Wood
101 - Undulating farmland around Kintore
102 - River Don corridor at Kintore
103 - Kintore Golf Club
104 - Blackburn
105 - Slopes to Blue Hill and Hill of Marcus
107 - Hatton of Fintray
108 -Wooded farmland north of River Don
110 - Woodland around Oschie Hill
111 - Home Farm



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Revision	Created	Checked	Reviewed	Approved	Authorised	

Kilometres: 0 — 2 — 4

Scale @ A3: 1:50,000 | Project Ref. No. A96PEA | Stage: Stage 2

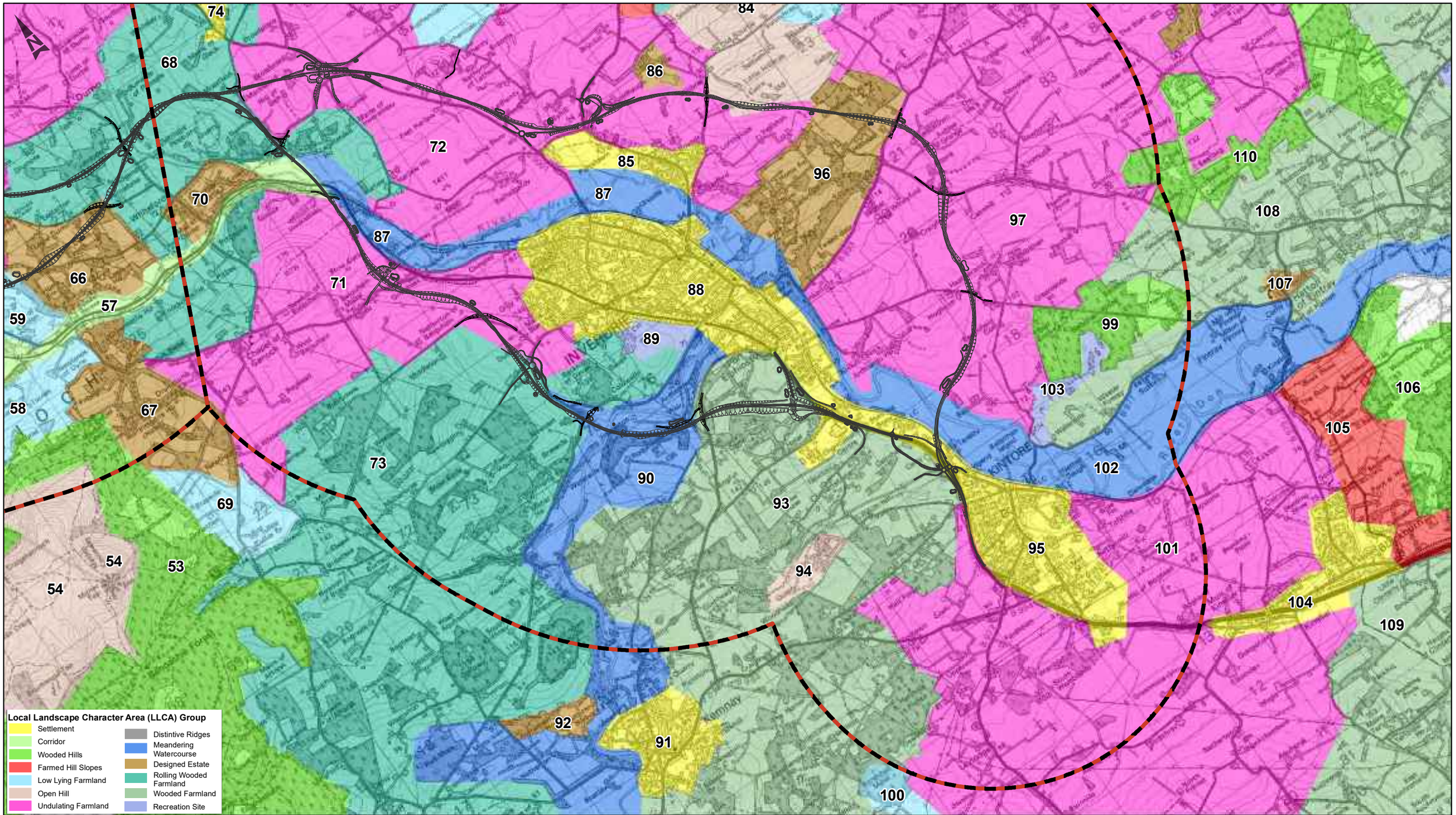
Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Fig 1.3
Local Landscape Character Areas
Orange/Violet Route Options
Sheet 3 of 4

Map Number

Project	Originator	Volume				
A96PEA	- AMAR	- ELS	-			
SWI	- DR	- LX	- 000006			
Location	Type	Role	Number			

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01

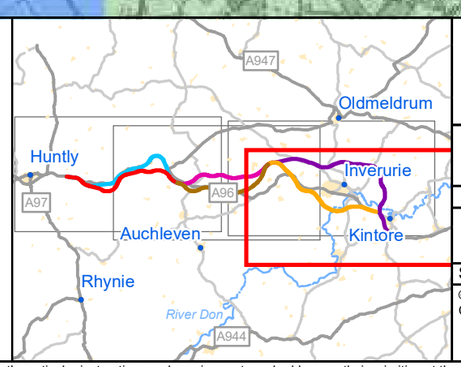


Legend

- Route Options
- 3km Study Area

Local Landscape Character Area (LLCA)

- 53 - Wooded slopes to Bennachie
- 54 - Bennachie
- 57 - Oyne valley corridor
- 58 - Foot of Bennachie
- 59 - Moor of Carden and surrounds
- 61 - Undulating farmland
- 66 - Logie House
- 67 - Crowmallie House and Dower House
- 68 - Rolling wooded farmland
- 69 - Flat wet area by Bennachie centre
- 70 - Pitcaple Castle
- 71 - Undulating farmland east of Bennachie
- 72 - Harlaw
- 73 - Rolling wooded farmland around Chapel of Garrioch
- 74 - Daviot
- 75 - Flat area around Mill of Lumphart
- 81 - Farmland around Kirkton of Bourtie
- 83 - Hillsides around Hill of Barra
- 84- Lawel Hill
- 85 - Residential extension north of Inverurie
- 86 - Bourtie House
- 87 - River Urie corridor
- 88 - Inverurie
- 89 - Inverurie Golf Course
- 90 - River Don corridor
- 91 - Kemnay
- 92- Fetternear House
- 93 - Wooded farmland between Kintore and Kemnay
- 94 - Clovenstone Quarry
- 95 - Kintore
- 96 - Keith Hall to Ordiefauld
- 97 - Large area of farmland around Kinmuck
- 98 - Burreldale Moss
- 99 - Newton Wood
- 100 - Bandshed Moss
- 101 - Undulating farmland around Kintore
- 102 - River Don corridor at Kintore
- 103 - Kintore Golf Club
- 104 - Blackburn
- 105 - Slopes to Blue Hill and Hill of Marcus
- 106 - Hill of Marcus
- 107 - Hatton of Fintray
- 108 -Wooded farmland north of River Don
- 109 - Wooded farmland around Elrick Hill
- 110 - Woodland around Oschie Hill
- 111 - Home Farm
- 112 - Newmachar Golf Club



A96 DUALLING

Revision	First Issue				
	ACEN	DTUC	HATH	LWAR	NHAC
C01	13/12/19	13/12/19	13/12/19	13/12/19	13/12/19
	Created	Checked	Reviewed	Approved	Authorised

Kilometres: 0 2 4

Scale @ A3: 1:50,000 | Project Ref. No. A96PEA | Stage: Stage 2

Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Fig 1.4
Local Landscape Character Areas
Orange/Violet Route Options
Sheet 4 of 4

Map Number

Project	Originator	Volume	Location	Type	Role	Number
A96PEA	AMAR	ELS	SWI	DR	LX	000007

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01

Farmed Moorland Edge - Aberdeenshire

Farmed and Wooded River Valleys

Farmed Rolling Ridges and Hills

Farmed and Wooded River Valleys

Farmed and Wooded River Valleys

Outlying Hills & Ridges

Outlying Hills & Ridges

Farmed Basin - Aberdeenshire

Farmed Rolling Ridges and Hills

Wooded Estates Aberdeenshire

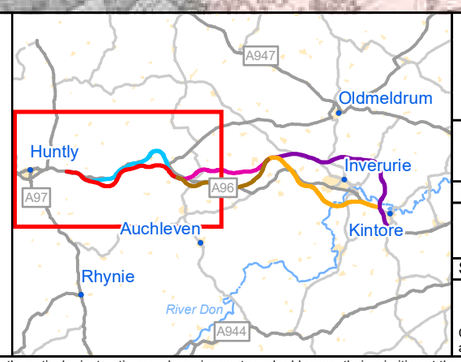
Outlying Hills & Ridges

Legend

Route Options

LCT

- Farmed Basin - Aberdeenshire
- Farmed Moorland Edge - Aberdeenshire
- Farmed Rolling Ridges and Hills
- Farmed and Wooded River Valleys
- Outlying Hills & Ridges
- Wooded Estates - Aberdeenshire



	First Issue				
C01	ATM	JS	TS	LW	NH
	18/12/19	18/12/19	18/12/19	18/12/19	18/12/19
Revision	Created	Checked	Reviewed	Approved	Authorised

Kilometres: 0 2 4

Scale @ A3: 1:50,000 | Project Ref. No. A96PEA | Stage: Stage 2

Project Name: A96 Dualling East of Huntly to Aberdeen

Map Title: SNH Landscape Character Types
Red/Cyan Route Options
Sheet 1 of 4

Map Number

Project	Originator	Volume	Location	Type	Role	Number
A96PEA	AMAR	ELS	SWI	DR	LX	000008

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01

Farmed and Wooded River Valleys

Farmed and Wooded River Valleys

Farmed Rolling Ridges and Hills

Farmed Rolling Ridges and Hills

Farmed Basin - Aberdeenshire

Outlying Hills & Ridges

Wooded Estates - Aberdeenshire

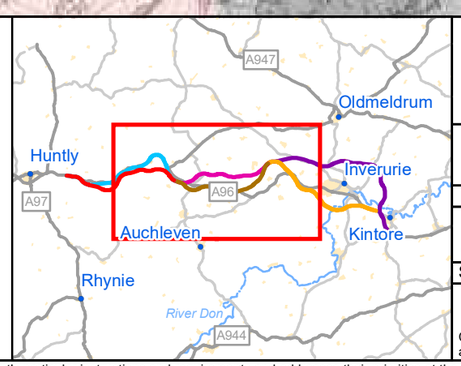
Outlying Hills & Ridges

Legend

- Route Options

LCT

- Farmed Basin - Aberdeenshire
- Farmed Rolling Ridges and Hills
- Farmed and Wooded River Valleys
- Outlying Hills & Ridges
- Wooded Estates - Aberdeenshire



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Revision	Created	Checked	Reviewed	Approved	Authorised	

Kilometres: 0 — 2 — 4

Scale @ A3: 1:50,000 | Project Ref. No. A96PEA | Stage: Stage 2

Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
SNH Landscape Character Types
Brown/Pink Route Options
Sheet 2 of 4

Map Number

Project	Originator	Volume	Location	Type	Role	Number
A96PEA	AMAR	ELS	SWI	DR	LX	000009

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01

Farmed Rolling Ridges and Hills

Farmed Rolling Ridges and Hills

Farmed Basin - Aberdeenshire

Coastal Agricultural Plain - Aberdeenshire

Narrow Winding Farmed Valley

Wooded Estates - Aberdeenshire

River Valley - Aberdeen Undulating Open Farmland

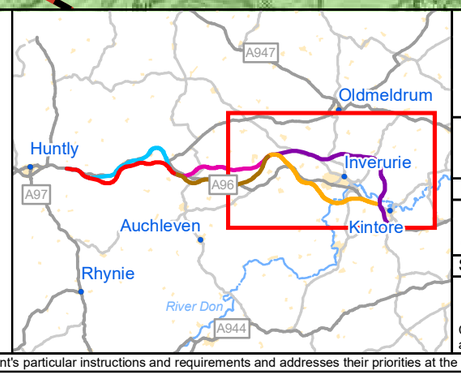
Outlying Hills & Ridges

Legend

- Route Options

LCT

- Coastal Agricultural Plain - Aberdeenshire
- Farmed Basin - Aberdeenshire
- Farmed Rolling Ridges and Hills
- Narrow Winding Farmed Valley
- Outlying Hills & Ridges
- River Valley - Aberdeen
- Undulating Open Farmland
- Wooded Estates - Aberdeenshire



A96 DUALLING

	First Issue				
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	18/12/19	18/12/19	18/12/19	18/12/19	18/12/19
Revision	Created	Checked	Reviewed	Approved	Authorised

Kilometres: 0 2 4

Scale @ A3: 1:50,000 | Project Ref. No. A96PEA | Stage: Stage 2

Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
SNH Landscape Character Types
Orange/Violet Route Options
Sheet 3 of 4

Map Number

Project	Originator	Volume	Location	Type	Role	Number
A96PEA	AMAR	ELS	SWI	DR	LX	0000010

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01

Farmed Basin - Aberdeenshire

Farmed Basin - Aberdeenshire

Coastal Agricultural Plain - Aberdeenshire

Narrow Winding Farmed Valley

River Valley - Aberdeen

Undulating Open Farmland

Low Hills - Aberdeen

Wooded Estates - Aberdeenshire

Outlying Hills & Ridges

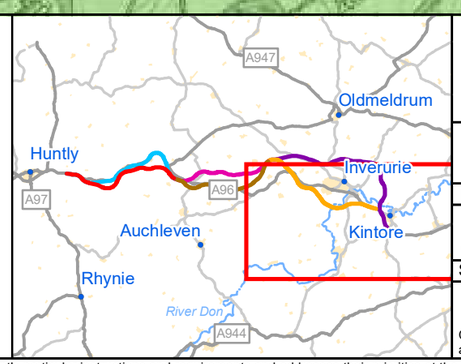
Undulating Open Farmland

Legend

Route Options

LCT

- Coastal Agricultural Plain - Aberdeenshire
- Farmed Basin - Aberdeenshire
- Low Hills - Aberdeen
- Narrow Winding Farmed Valley
- Outlying Hills & Ridges
- River Valley - Aberdeen
- Undulating Open Farmland
- Wooded Estates - Aberdeenshire



A96 DUALLING

	First Issue				
C01	ATM	JS	TS	LW	NH
	18/12/19	18/12/19	18/12/19	18/12/19	18/12/19
Revision	Created	Checked	Reviewed	Approved	Authorised

Kilometres

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Scale @ A3: 1:50,000 | Project Ref. No. A96PEA | Stage: Stage 2

Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
SNH Landscape Character Types
Orange/Violet Route Options
Sheet 4 of 4

Map Number

Project	Originator	Volume			
A96PEA	AMAR	ELS			
Location	Type	Role	Number		
SWI	DR	LX	0000011		

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01

Appendix A17.4 **Addendum - Landscape Appraisal Approach Technical Note**

Project Title:	A96 Dualling East of Huntly to Aberdeen		
Document Title:	Addendum - Landscape Appraisal Approach Technical Note		
Document Ref:	A96PEA-AMAR-ELS-SWI-TN-LX-000005	Revision:	C01
Suitability:	A - Approved for Stage Complete	Date:	31 January 2020

Contents

NB. This addendum **must** be read in conjunction with the Landscape Appraisal Approach Technical Note A96PEA-AMAR-ELS-SWI-TN-LX-000004

1 Addendum to the Technical Note

1.1 Purpose

Following issue of the Landscape Appraisal Approach Technical Note (A96PEA-AMAR-ELS-SWI-TN-LX-000004) to Scottish Natural Heritage (SNH) comments were made at a subsequent meeting in July 2019 regarding the format of the technical note, the methodology and the assessment. It was agreed that the methodology and outputs would be reviewed to:

- Rationalise the detailed Local Landscape Character Areas (LLCA's) to reduce the number and to provide identifiable groupings which relate to the perception of landscape areas on the ground.
- Demonstrate a link between the mitigation measures and the Strategic Landscape Objectives (SLO's) showing how earlier assessment of these has been carried forward into the initial design intent.
- Provide greater detail for each group of LLCA's to include qualities beyond simple physical descriptions, that help to define a sense of place.
- Ensure that the link between sensitive and special landscapes is explicit and is carried forward into the assessment of each LLCA.

It was agreed that the best method to present this was as an addendum to the original Landscape Appraisal Approach Technical Note.

Methodology

While the assessment of the original LLCA's is based largely on physical characteristics it is acknowledged that our landscapes are rarely considered as individual elements. Each constituent part often has a relationship with adjacent LLCA's through visibility corridors or linking landscape features with areas beyond.

Therefore, the nomenclature has been revised, and these elements are called landscape units (LU's).

In addition, when assessing the sensitivity of the landscape, where appropriate, LU's have been grouped to form a combined LLCA (see Appendix A, Table A1). These bridge the gap between the individual landscape elements and the overarching Landscape Character Types (LCT's). Drawing A96PEA-AMAR-ELS-SWI-DR-LX-000016 (Appendix C) provides an overview of the LU's within the LLCA's.

In the assessment tables for the Design Manual for Roads and Bridges (DMRB) Stage 2 assessment (see Appendix B, Table A2 example), text has been included regarding the risks to the SLO's and a reference to how the secondary mitigation measures have been incorporated to maintain these objectives.

The assessment process uses these revised LLCA's as it is important that wider considerations, such as scenic beauty, cultural associations and setting form part of the assessment. This also includes the wider appreciation of the landscape where there are links to conservation status and community interests which are considered in other chapters of the DMRB Stage 2 report.

Within the assessment tables (see Appendix B, Table A2 example), there are references to the special and high sensitive landscapes. Where these form part of the LLCA, this area is automatically defined as sensitive.

Appendix A, Table A1 provides the revised list of LLCA's which will be reflected in the wider assessment in the DMRB stage 2 report and are shown on the updated drawings A96PEA-AMAR-ELS-SWI-DR-LX-000004-000007 and 000014-000016 (provided within Appendix C). An example of the assessment table for the Insch Basin LLCA is also provided in Appendix B, Table A2.

Appendix A Revised LLCA list

Table A1 lists the revised LLCA's which bridge the gap between Scottish Natural Heritage's Landscape Character Types and the LU's identified in the Landscape Appraisal Approach Technical Note (A96PEA-AMAR-ELS-SWI-TN-LX-000005) (Table 2). See Drawing Nos. A96PEA-AMAR-ELS-SWI-DR-LX-000004-000007, and 000014-000016 (Appendix C) for the revised LLCA's. These revised LLCA's form the basis of the Stage 2 Assessment.

Table A1. Revised LLCA list

LLCA No.	**LLCA Name**
1	Huntly
2	A97 Corridor
3	Ba Hill and Surrounds
4	Strath Bogie Corridor
5	Mains of Newtongarry
6	Dummuies to Stoneyfield
7	Ridge from Gartly to Hill of Tillymorgan
8	Bisset Moss
9	Ythanwells
10	Insch Basin
11	Low Area from Colpy to Fisherford
12	Hill of Rothmaise to Hill of Easterton
13	Old Rayne to Harlaw
14	Bennachie and Surrounds
15	Pitcaple to Daviot
16	Wooded Farmland South of Chapel of Garioch
17	River Don Wooded Corridor
18	Wooded Farmland around Kemnay
19	Inverurie and Settlement Corridor
20	Old Meldrum and Surrounds
21	Keith Hall and Surrounds
22	Farmland East of Newmachar
23	Hill of Marcus
24	River Don Open Corridor
25	Open Farmland South of Kintore

Appendix B Revised local landscape character areas assessment

Table A2 provides an example assessment table for the Insch Basin LLCA. Each LLCA will be assessed as part of the DMRB Stage 2 assessment. The fully completed tables will be provided as an appendix to the DMRB Stage 2 environmental assessment.

Table A2. Landscape baseline and predicted landscape effects for East of Huntly to Colpy (Cyan and Red Route Options)

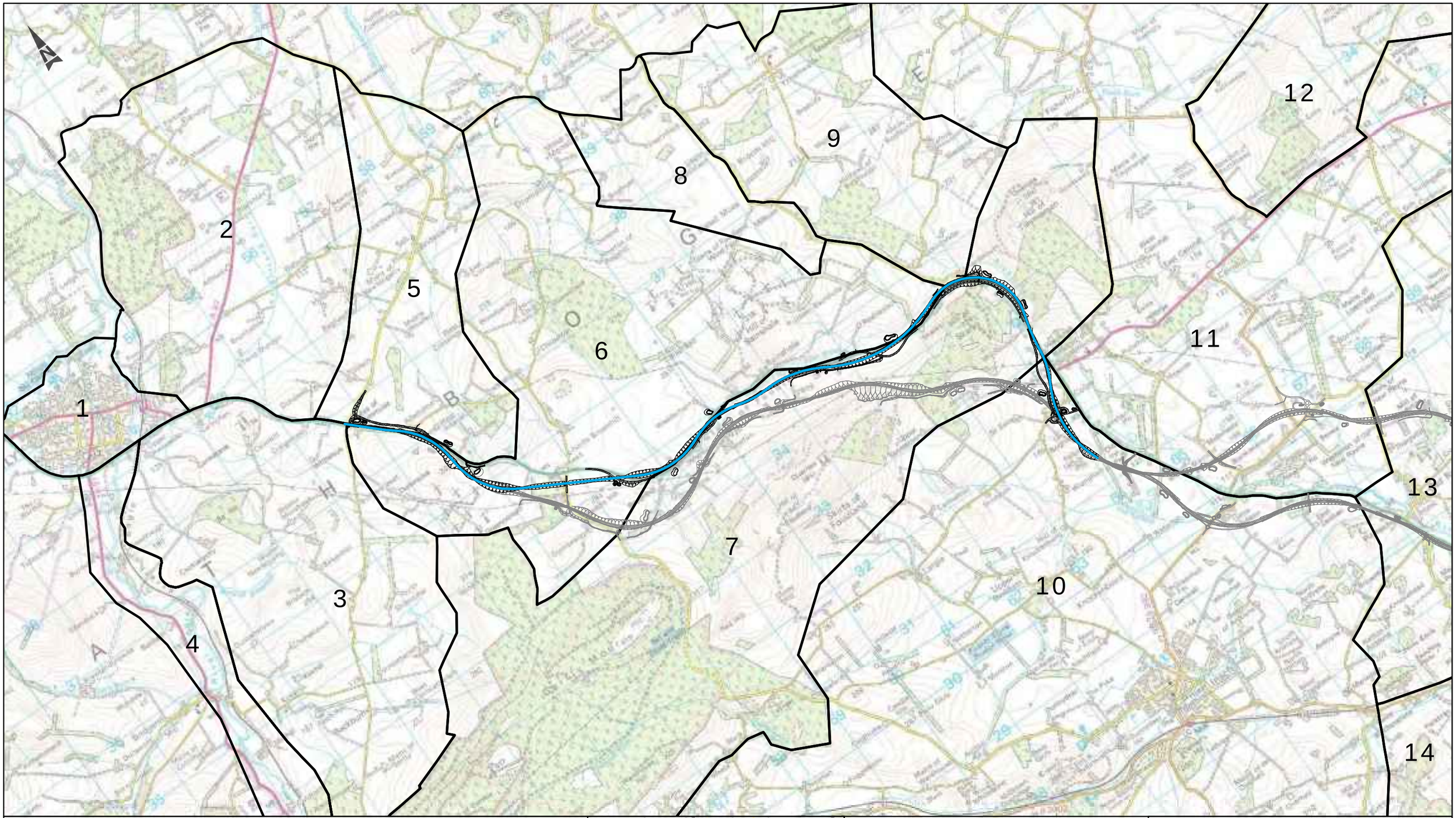
Sub topic / criteria		Baseline and Predicted Effects (reflecting combined sensitivity and magnitude)	Predicted landscape effects	Assumed priority secondary mitigation	Predicted residual landscape effects
LLCA	**10**	**Landscape baseline**			
Insch Basin		• This area is dominated by the large expanse of undulating farmland with differing field sizes of mostly grazing and a scattering of farmsteads. There are occasional Beech lined roads giving the area an historic setting and a sense of grandeur. Within the landscape there is evidence of historic features providing interest. • The wider flatter area is overlooked by the surrounding hills. To the north the Hill of Foudland and Gartly Moor and to the south Bennachie. The Hill of Dunnideer, with its fort, provides a distinctive skyline feature that can be viewed from across the area. From the top of the hill, which is popular with walkers, there are expansive views. Behind this the wooded Hill of Christs Kirk is of different character. • The area surrounds the main village of Insch. This large village has an historic core with good facilities including a leisure centre and golf course. A large linear park runs into the centre. The golf course stands out with its manicured tree lined fairways. There is a flatter area east of Insch that shows evidence of poor drainage. This area links with the Oyne Corridor which is also unkempt presenting a contrast to the surrounding well-maintained farmland. • Further south are the hills of Netherhall and Westfield and the distinctive shelterbelts at the Knappie. These together with Auchleven, a sprawling linear village are too far away from the development to be affected.			

	• The area around Insch has been identified as a highly sensitive landscape area (7). This includes the village itself, surrounding fields and hills. Other sensitive areas included in this LLCA include the foothills of the Hill of Foudland (4) and the Bennachie Special Landscape Area (11). Because of these the overall sensitivity of this LLCA is high. • There are no designated Gardens and Designed Landscape within this LLCA.				
Includes landscape units 37, 38, *39, 40, 41, 48, 49, 50, 51, 52,* 56, 57	**Cyan Route Option predicted landscape effects:**	**Sensitivity =** High	Minor	Not required	**Minor**
	From this LLCA the Cyan route option will not be visible as it runs behind the Hill of Foudland. From elevated views the junction at Colpy may be visible at some distance.	**Magnitude =** Negligible			
	Cyan Route Option strategic landscape objective risk	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		No impact	**No impact**		
	Red Route Option predicted landscape effects:	**Sensitivity =** High	Minor	M3, M5, M7	**Minor**
	From this LLCA the Red route option may be visible from higher vantage points as it runs south of the Hill of Skares to the new junction at Colpy.	**Magnitude =** Low			
	Red Option strategic landscape objective risk:	**Predicted impact on SLO's**	**Residual impact on SLO's**		
		This route option will require earthworks along the northern section it also becomes visible at the proposed Colpy Junction.	Integrating the landform, providing additional tree planting and consideration of low-level lighting at the junction will mitigate the impact.		
		Minor negative	**No impact**		

Project Title:	A96 Dualling East of Huntly to Aberdeen		
Document Title:	Addendum - Landscape Appraisal Approach Technical Note		
Document Ref:	A96PEA-AMAR-ELS-SWI-TN-LX-000005	Revision:	C01
Suitability:	A - Approved for Stage Complete	Date:	31 January 2020

Appendix C Drawings

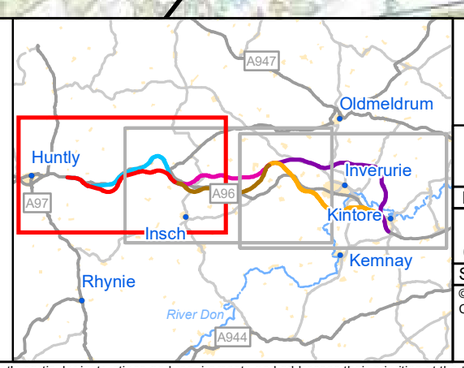
Local Landscape Character Areas Cyan Route Option	A96PEA-AMAR-ELS-SWI-DR-LX-000004
Local Landscape Character Areas Red Route Option	A96PEA-AMAR-ELS-SWI-DR-LX-000005
Local Landscape Character Areas Pink Route Option	A96PEA-AMAR-ELS-SWI-DR-LX-000006
Local Landscape Character Areas Brown Route Option	A96PEA-AMAR-ELS-SWI-DR-LX-000007
Local Landscape Character Areas Violet Route Option	A96PEA-AMAR-ELS-SWI-DR-LX-000014
Local Landscape Character Areas Orange Route Option	A96PEA-AMAR-ELS-SWI-DR-LX-000015
Overview of Local Landscape Character Areas	A96PEA-AMAR-ELS-SWI-DR-LX-000016



Route Option
- Cyan
- Red
- Brown
- Pink
- Orange
- Violet

Local Landscape Character Areas

1. Huntly
2. A97 Corridor
3. Ba' Hill and Surrounds
4. Strath Bogie Corridor
5. Mains of Newtongarry
6. Dummuies to Stoneyfield
7. Ridge from Gartly to Hill of Tillymorgan
8. Bisset Moss
9. Ythanwells
10. Insch Basin
11. Low Area from Colpy to Fisherford
12. Hill of Rothmaise to Hill of Easterton
13. Old Rayne to Harlaw
14. Bennachie and Surrounds
15. Pitcaple to Daviot
16. Wooded Farmland South of Chapel of Garioch
17. River Don Wooded Corridor
18. Wooded Farmland around Kemnay
19. Inverurie and Settlement Corridor
20. Old Meldrum and Surrounds
21. Keith Hall and Surrounds
22. Farmland East of Newmachar
23. Hill of Marcus
24. River Don Open Corridor
25. Open Farmland South of Kintore



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C01	ACT	JS	AF	LW	NH
	25/11/19	27/11/19	04/12/19	06/12/19	07/12/20
Revision	Created	Checked	Reviewed	Approved	Authorised

Kilometres: 0 1 2 3 4

Scale @ A3: 1:50,000 | Project Ref. No. A96PEA | Stage: Stage 2

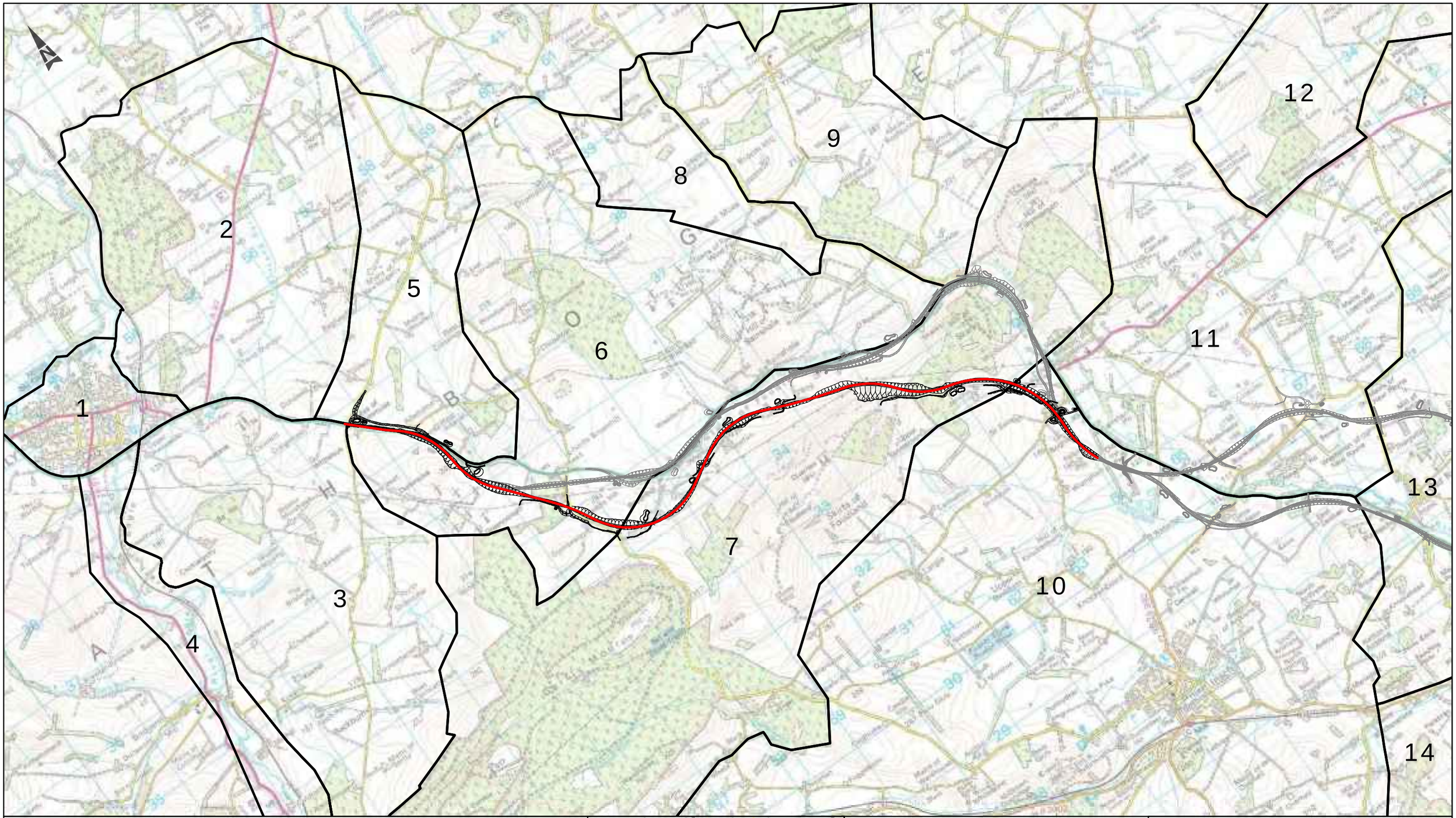
Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Figure 1.1
Local Landscape Character Areas
Cyan Route Option
Sheet 1 of 6

Map Number

Project	Originator	Volume	Location	Type	Role	Number
A96PEA	AMAR	ELS	SWI	DR	LX	000004

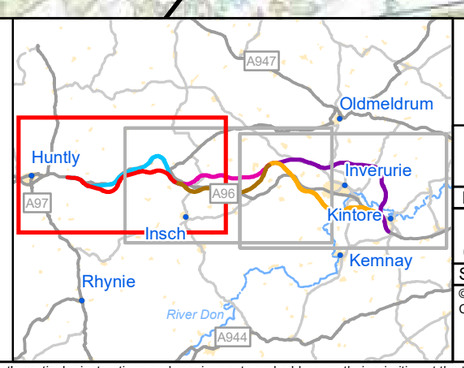
Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01



Route Option
- Cyan
- Red
- Brown
- Pink
- Orange
- Violet

Local Landscape Character Areas

1. Huntly
2. A97 Corridor
3. Ba' Hill and Surrounds
4. Strath Bogie Corridor
5. Mains of Newtongarry
6. Dummuies to Stoneyfield
7. Ridge from Gartly to Hill of Tillymorgan
8. Bisset Moss
9. Ythanwells
10. Insch Basin
11. Low Area from Colpy to Fisherford
12. Hill of Rothmaise to Hill of Easterton
13. Old Rayne to Harlaw
14. Bennachie and Surrounds
15. Pitcaple to Daviot
16. Wooded Farmland South of Chapel of Garioch
17. River Don Wooded Corridor
18. Wooded Farmland around Kemnay
19. Inverurie and Settlement Corridor
20. Old Meldrum and Surrounds
21. Keith Hall and Surrounds
22. Farmland East of Newmachar
23. Hill of Marcus
24. River Don Open Corridor
25. Open Farmland South of Kintore



Revision	Created	Checked	Reviewed	Approved	Authorised
C01	25/11/19	27/11/19	04/12/19	06/12/19	07/12/20

Minor amendments: ACT | JS | AF | LW | NH

Kilometres: 0 1 2 3 4

Scale @ A3: 1:50,000 | Project Ref. No. A96PEA | Stage: Stage 2

Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Figure 1.2
Local Landscape Character Areas
Red Route Option
Sheet 2 of 6

Map Number

Project	Originator	Volume	Location	Type	Role	Number
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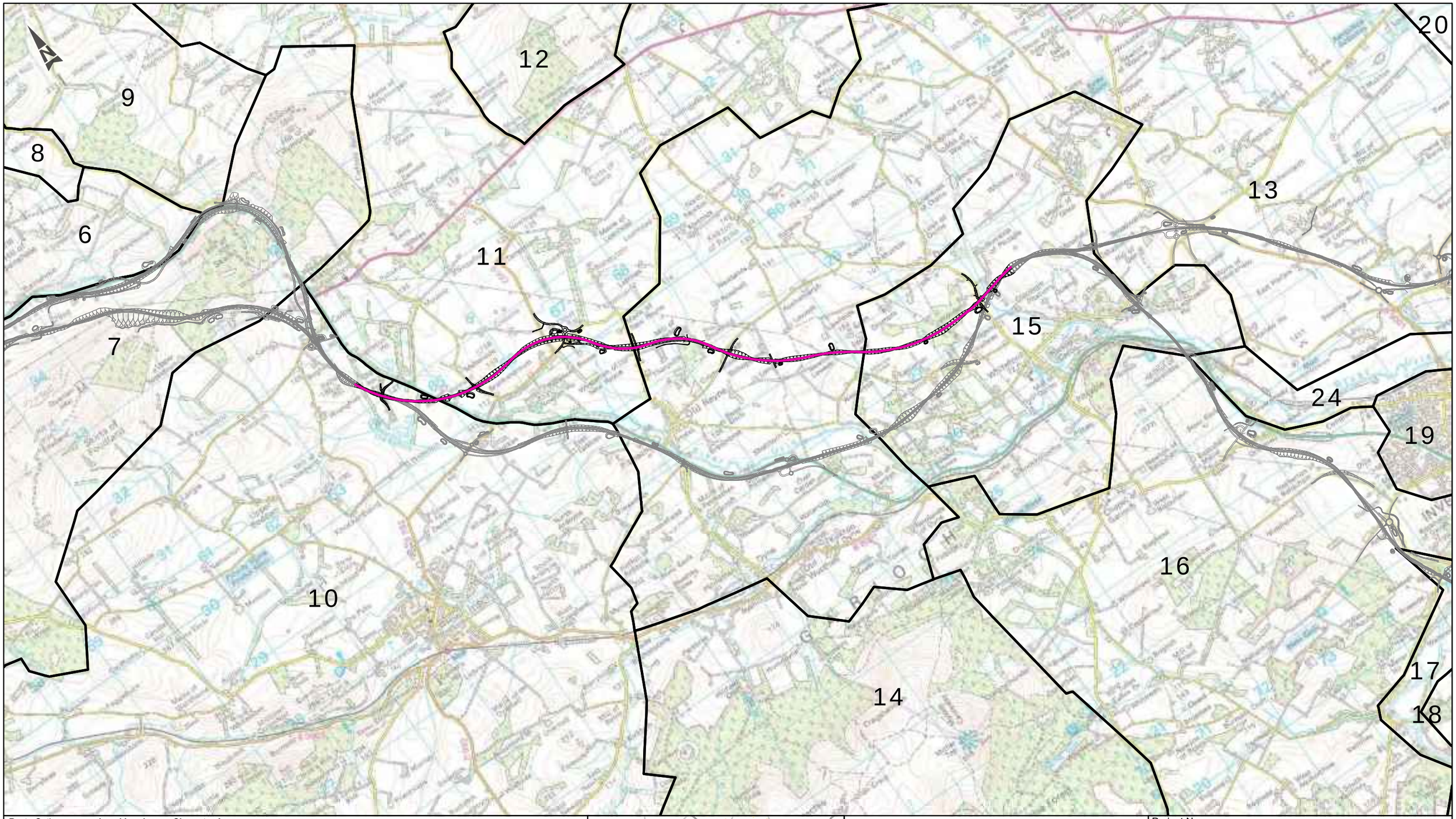
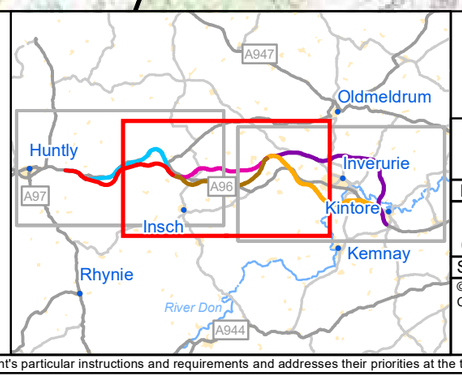
Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01



Route Option	Local Landscape Character Areas	
Cyan	1. Huntly	13. Old Rayne to Harlaw
Red	2. A97 Corridor	14. Bennachie and Surrounds
Brown	3. Ba' Hill and Surrounds	15. Pitcaple to Daviot
Pink	4. Strath Bogie Corridor	16. Wooded Farmland South of Chapel of Garioch
Orange	5. Mains of Newtongarry	17. River Don Wooded Corridor
Violet	6. Dummuies to Stoneyfield	18. Wooded Farmland around Kemnay
	7. Ridge from Gartly to Hill of Tillymorgan	19. Inverurie and Settlement Corridor
	8. Bisset Moss	20. Old Meldrum and Surrounds
	9. Ythanwells	21. Keith Hall and Surrounds
	10. Insch Basin	22. Farmland East of Newmachar
	11. Low Area from Colpy to Fisherford	23. Hill of Marcus
	12. Hill of Rothmaise to Hill of Easterton	24. River Don Open Corridor
		25. Open Farmland South of Kintore



C01	Minor amendments				
	ACT	JS	AF	LW	NH
Revision	25/11/19	27/11/19	04/12/19	06/12/19	07/12/20
	Created	Checked	Reviewed	Approved	Authorised

Kilometres: 0 1 2 3 4

Scale @ A3: 1:50,000 | Project Ref. No. A96PEA | Stage: Stage 2

Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Figure 1.3
Local Landscape Character Areas
Pink Route Option
Sheet 3 of 6

Map Number

Project	Originator	Volume	Location	Type	Role	Number
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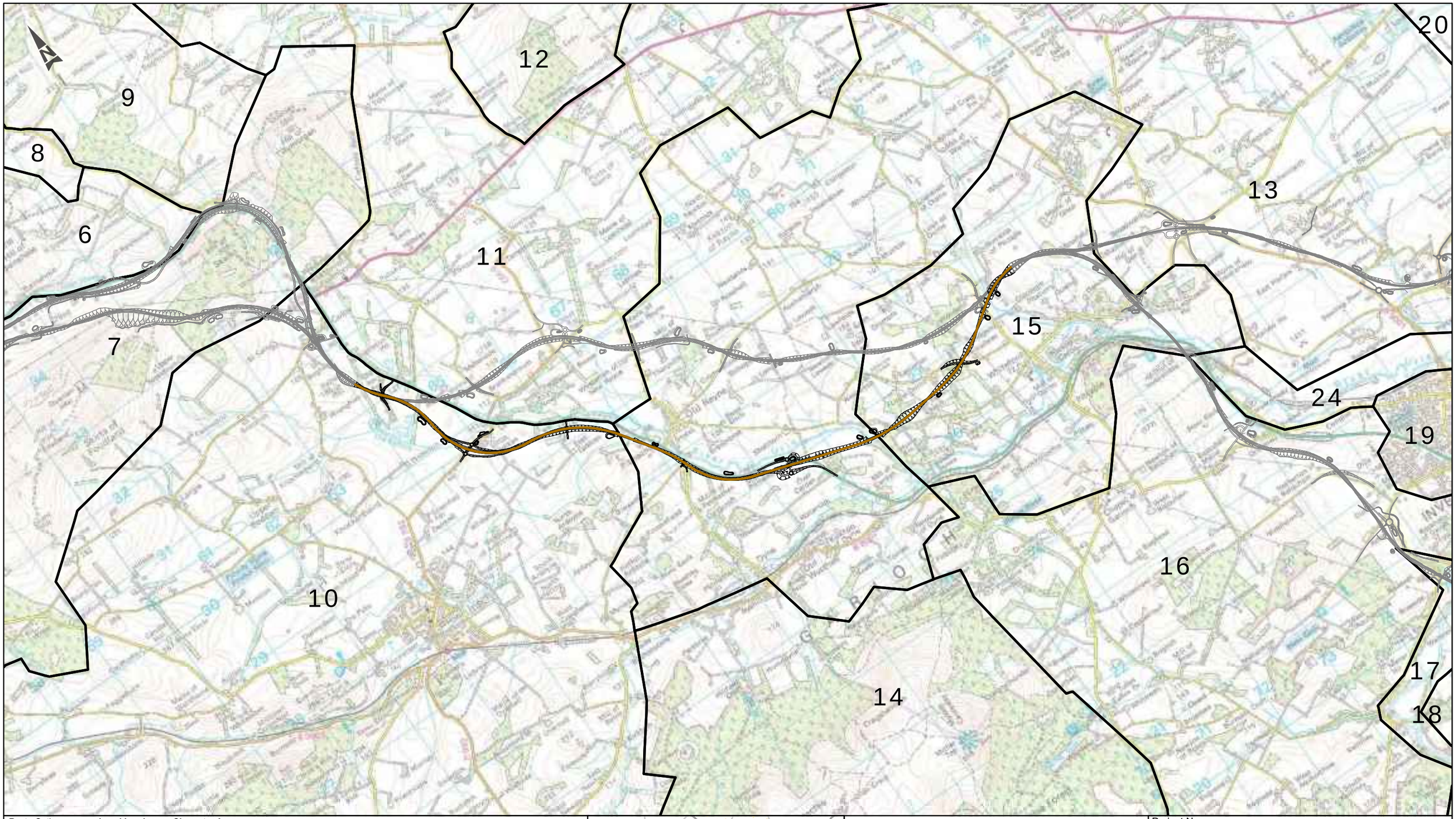
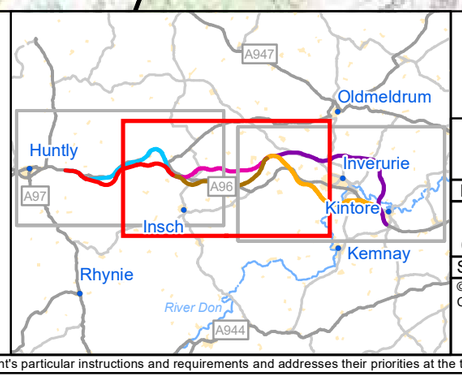
Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01



Route Option	Local Landscape Character Areas	
Cyan	1. Huntly	13. Old Rayne to Harlaw
Red	2. A97 Corridor	14. Bennachie and Surrounds
Brown	3. Ba' Hill and Surrounds	15. Pitcaple to Daviot
Pink	4. Strath Bogie Corridor	16. Wooded Farmland South of Chapel of Garioch
Orange	5. Mains of Newtongarry	17. River Don Wooded Corridor
Violet	6. Dummuies to Stoneyfield	18. Wooded Farmland around Kemnay
	7. Ridge from Gartly to Hill of Tillymorgan	19. Inverurie and Settlement Corridor
	8. Bisset Moss	20. Old Meldrum and Surrounds
	9. Ythanwells	21. Keith Hall and Surrounds
	10. Insch Basin	22. Farmland East of Newmachar
	11. Low Area from Colpy to Fisherford	23. Hill of Marcus
	12. Hill of Rothmaise to Hill of Easterton	24. River Don Open Corridor
		25. Open Farmland South of Kintore



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Revision	Created	Checked	Reviewed	Approved	Authorised

Kilometres: 0 1 2 3 4

Scale @ A3: 1:50,000 | Project Ref. No. A96PEA | Stage: Stage 2

Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Figure 1.4
Local Landscape Character Areas
Brown Route Option
Sheet 4 of 6

Map Number

Project	Originator	Volume	Location	Type	Role	Number
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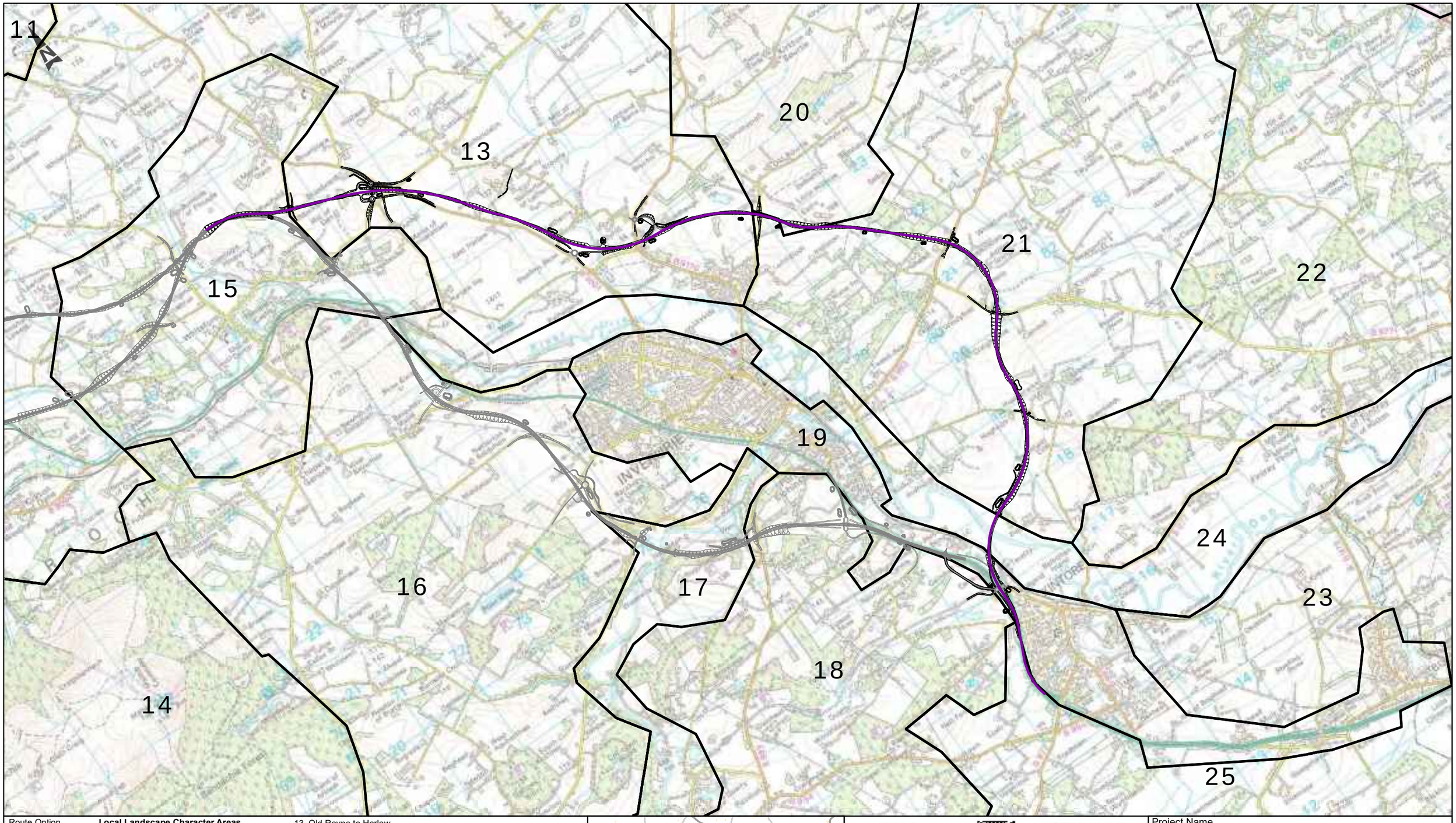
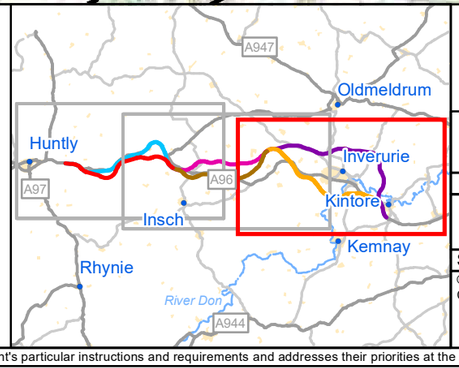
Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01



Route Option
- Cyan
- Red
- Brown
- Pink
- Orange
- Violet

Local Landscape Character Areas

1. Huntly
2. A97 Corridor
3. Ba' Hill and Surrounds
4. Strath Bogie Corridor
5. Mains of Newtongarry
6. Dummuies to Stoneyfield
7. Ridge from Gartly to Hill of Tillymorgan
8. Bisset Moss
9. Ythanwells
10. Insch Basin
11. Low Area from Colpy to Fisherford
12. Hill of Rothmaise to Hill of Easterton
13. Old Rayne to Harlaw
14. Bennachie and Surrounds
15. Pitcaple to Daviot
16. Wooded Farmland South of Chapel of Garioch
17. River Don Wooded Corridor
18. Wooded Farmland around Kemnay
19. Inverurie and Settlement Corridor
20. Old Meldrum and Surrounds
21. Keith Hall and Surrounds
22. Farmland East of Newmachar
23. Hill of Marcus
24. River Don Open Corridor
25. Open Farmland South of Kintore



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Revision	Created	Checked	Reviewed	Approved	Authorised

Kilometres: 0 1 2 3 4

Scale @ A3: 1:50,000 | Project Ref. No. A96PEA | Stage: Stage 2

Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Figure 1.5
Local Landscape Character Areas
Violet Route Option
Sheet 5 of 6

Map Number

Project	Originator	Volume	Location	Type	Role	Number
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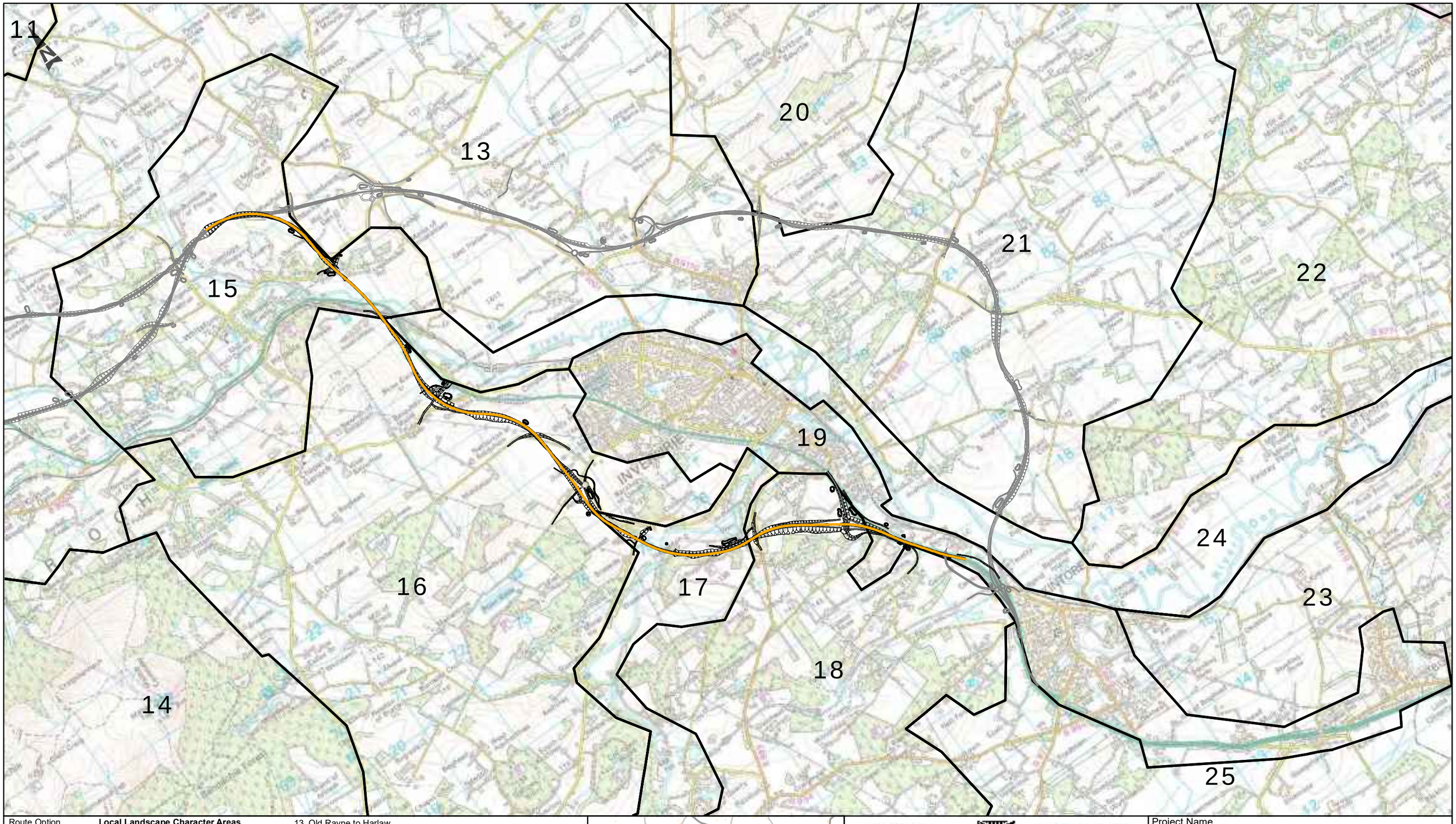
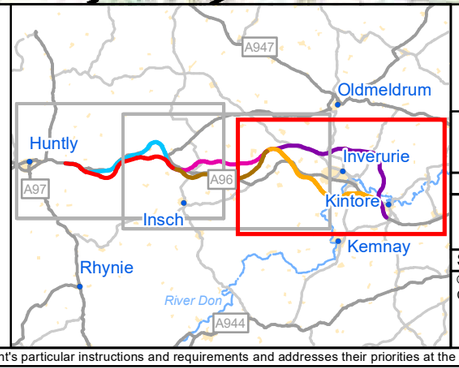
Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01



Route Option	Local Landscape Character Areas	
Cyan	1. Huntly	13. Old Rayne to Harlaw
Red	2. A97 Corridor	14. Bennachie and Surrounds
Brown	3. Ba' Hill and Surrounds	15. Pitcaple to Daviot
Pink	4. Strath Bogie Corridor	16. Wooded Farmland South of Chapel of Garioch
Orange	5. Mains of Newtongarry	17. River Don Wooded Corridor
Violet	6. Dummuies to Stoneyfield	18. Wooded Farmland around Kemnay
	7. Ridge from Gartly to Hill of Tillymorgan	19. Inverurie and Settlement Corridor
	8. Bisset Moss	20. Old Meldrum and Surrounds
	9. Ythanwells	21. Keith Hall and Surrounds
	10. Insch Basin	22. Farmland East of Newmachar
	11. Low Area from Colpy to Fisherford	23. Hill of Marcus
	12. Hill of Rothmaise to Hill of Easterton	24. River Don Open Corridor
		25. Open Farmland South of Kintore



Revision	Minor amendments				
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C01	25/11/19	27/11/19	04/12/19	06/12/19	07/12/20
	Created	Checked	Reviewed	Approved	Authorised

Kilometres

0 1 2 3 4

Scale @ A3: 1:50,000 | Project Ref. No. A96PEA | Stage: Stage 2

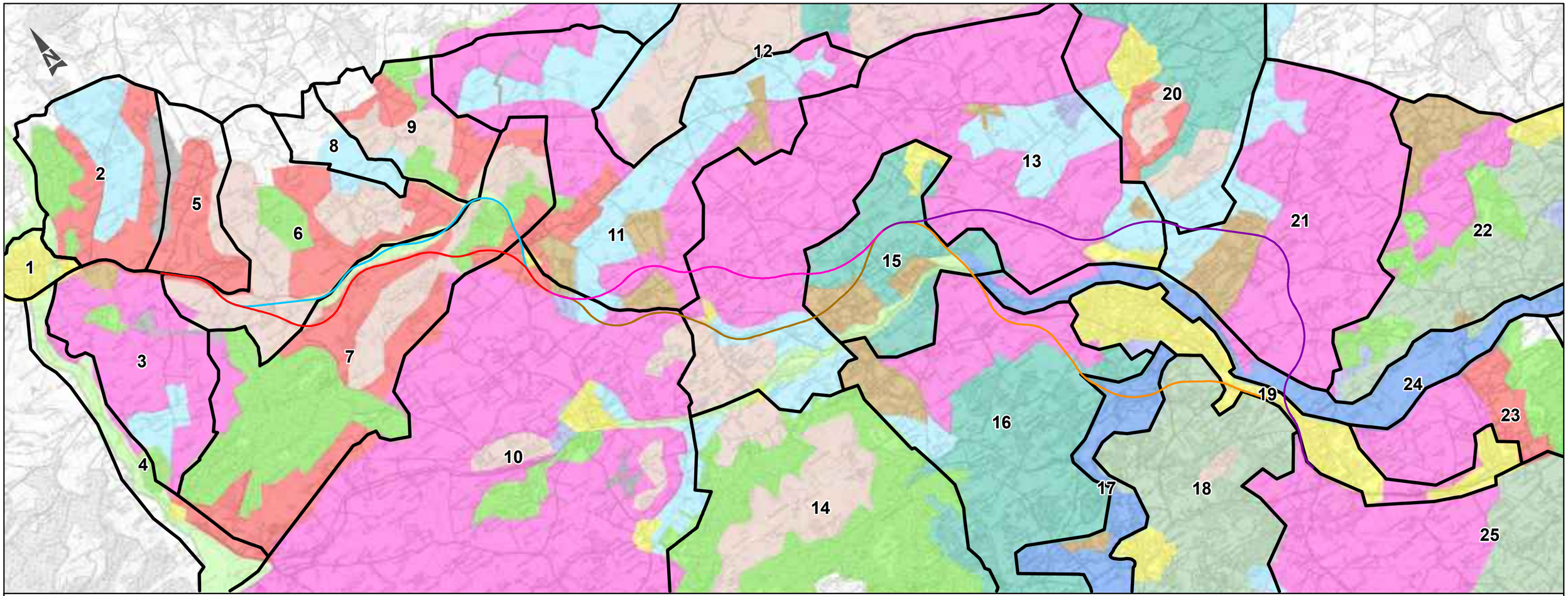
Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Figure 1.6
Local Landscape Character Areas
Orange Route Option
Sheet 6 of 6

Map Number

Project	Originator	Volume				
A96PEA	- AMAR	- ELS	- SWI	- DR	- LX	- 000015
Location			Type	Role	Number	

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01

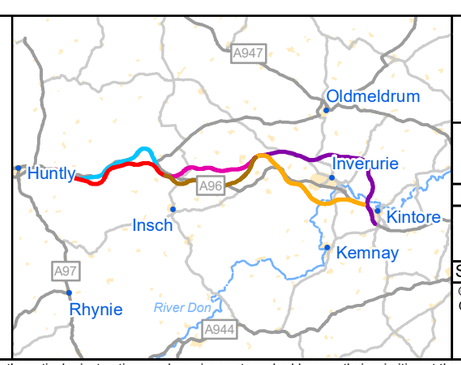


Local Landscape Character Areas

1. Huntly
2. A97 Corridor
3. Ba' Hill and Surrounds
4. Strath Bogie Corridor
5. Mains of Newtongarry
6. Dummuies to Stoneyfield
7. Ridge from Gartly to Hill of Tillymorgan
8. Bisset Moss
9. Ythanwells
10. Insch Basin
11. Low Area from Colpy to Fisherford
12. Hill of Rothmaise to Hill of Easterton
13. Old Rayne to Harlaw
14. Bennachie and Surrounds
15. Pitcaple to Daviot
16. Wooded Farmland South of Chapel of Garioch
17. River Don Wooded Corridor
18. Wooded Farmland around Kemnay
19. Inverurie and Settlement Corridor
20. Old Meldrum and Surrounds
21. Keith Hall and Surrounds
22. Farmland East of Newmachar
23. Hill of Marcus
24. River Don Open Corridor
25. Open Farmland South of Kintore

Landscape Units
- Settlement
- Corridor
- Wooded Hills
- Farmed Hill Slopes
- Low Lying Farmland
- Open Hill
- Undulating Farmland
- Distintive Ridges
- Meandering Watercourse
- Designed Estate
- Rolling Wooded Farmland
- Wooded Farmland
- Recreation Site

Route Option
- Cyan
- Red
- Pink
- Brown
- Violet
- Orange



C01	First Issue					
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Project Name: A96 Dualling East of Huntly to Aberdeen

Map Title: Overview of Local Landscape Character Areas
Sheet 1 of 1

Map Number

Project	Originator	Volume	Location	Type	Role	Number
A96PEA	AMAR	ELS	SWI	DR	LX	00016

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01

Appendix A18.1 **Nature Conservation Assessment Methodology**

Appendix A18.1 **Nature Conservation Assessment Methodology**

Introduction

The objective of the DMRB Stage 2 assessment is to undertake sufficient assessment to identify the nature conservation factors, and the likely significance of effects upon them, in order for them to be taken into account in the development and refinement of the route options[1].

The evaluation of nature conservation features (or assessment of values) was undertaken taking into consideration professional judgement and the following guidance:

- Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 4;
- DMRB Volume 11, Section 4, Part 1, Ecology and Nature Conservation[2];
- DMRB Interim Advice Note 130/10 Ecology and Nature Conservation: Criteria for Assessment[2];
- Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland (2018); and
- Scottish Natural Heritage (SNH) Environmental Impact Assessment Handbook (2018).

The criteria used to assess the value of nature conservation features are set out below in Table 1.1. The assigned valuation to each feature is set out in Appendix A18.2 (Valuation of Ecological Receptors).

As part of the route option selection process, a series of design workshops allowed technical input (including nature conservation) into the development of route options. This allowed experienced ecologists to facilitate early implementation of the mitigation hierarchy (avoidance, minimise, mitigate) into the DMRB Stage 2 route option development.

Information relating to the construction programme and the likely construction activities was not available at DMRB Stage 2 and, therefore, a 'simple' assessment[3] was undertaken, informed by a desk study and site walkovers. A 'detailed' assessment of the Preferred Option will be carried out at DMRB Stage 3.

The 'simple' assessment focused on determining the value of nature conservation features and assessing whether the route options are likely to have any significant effects. The value of nature conservation features was assigned following CIEEM guidance and professional judgement (Appendix A18.2). This included assigning their geographical importance (international, national, regional, county, or local), understanding the condition of habitats and the contextual information of species. This was based upon the baseline information gathered.

[1] Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 4.
[2] This guidance been withdrawn and replaced by DMRB LA 108 Biodiversity
[3] Design Manual for Roads and Bridges (DMRB) Volume 11, Section 2, Part 1.

Table 1.1: Criteria for Assessment of Ecological Value

Ecological importance	Attributes of ecological feature
International (European)	**Habitats:** An internationally designated site or candidate site (i.e. Special Protection Area (SPA), proposed SPA (pSPA), Special Area of Conservation (SAC), candidate SAC (cSAC), Ramsar site, proposed Ramsar site, or an area which meets the published selection criteria for such designation). A viable area of a habitat type listed in Annex I of the Habitats Directive[4], or smaller areas of such habitat that are essential to maintain the viability of a larger whole. **Species:** Any regularly occurring population of an internationally important species, which is threatened or rare in the UK (i.e. a UK Red List species or listed as occurring in 15 or fewer 10km squares in the UK (category S3 on the Scottish Biodiversity List (SBL)) or of uncertain conservation status or of having an international obligation category S2 on the SBL). A regularly occurring, nationally significant population/number of any internationally important species.
National (Scottish)	**Habitats:** A nationally designated site (i.e. Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR), or a discrete area, which meets the published selection criteria for national designation (e.g. SSSI selection guidelines)). A viable area of a priority habitat identified in the UK Biodiversity Action Plan (UKBAP) or SBL, or smaller areas of such habitat that are essential to maintain the viability of a larger whole. **Species:** A regularly occurring, regionally or county significant population/number of an internationally/nationally important species. Any regularly occurring population of a nationally important species which is threatened or rare in the region or county (Local Biodiversity Action Plan (LBAP)). A species listed as occurring in less than six 10km squares on the SBL. Species listed as Nationally Scarce, Nationally Notable A or Nationally Notable B (rare and scarce species not based on International Union for Conservation of Nature (IUCN) criteria).
Regional (Grampian / north east Scotland)	**Habitats:** Sites which exceed the county-level designations but fall short of SSSI selection criteria. Viable areas of key habitat identified in the regional BAP or smaller areas of such habitat that are essential to maintain the viability of a larger whole. Habitats determined to be of medium to high value based on their ecological function.

[4] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

Ecological importance	Attributes of ecological feature
	Ancient woodland covering an area of greater than 0.25ha. **Species:** Any regularly occurring, locally significant population of a species listed as being nationally scarce which occurs in 16-100 10km squares in the UK or in a regional BAP on account of its regional rarity or localisation. A regularly occurring, locally significant population/number of a regionally important species. Sites maintaining populations of internationally/nationally important species that are not threatened or rare in the region or county.
Authority (Aberdeenshire Council)	**Habitats:** Sites that are recognised by local authorities (e.g. Local Nature Conservation Sites (LNCS)). County/district sites that the designating Authority has determined meet the published ecological selection criteria for designation, including Local Nature Reserves (LNR). A viable area of habitat identified in the local Biodiversity Action Plan (BAP). A diverse and/or ecologically valuable hedgerow network. Ancient woodland smaller than 0.25ha. Habitats determined to be of at least medium value based on their ecological function. **Species:** Any regularly occurring, locally significant population of a species that is listed in a local BAP on account of its regional rarity or localisation. A regularly occurring, locally significant population of a county/district important species (particularly during a critical phase of its life cycle). Sites supporting populations of internationally/nationally/regionally important species that are not threatened or rare in the region or county and are not integral to maintaining those populations. Sites/features that are scarce within the county/district or which appreciably enrich the county/district habitat resource.
Local (in the locality of a place, e.g. such as Colpy)	**Habitats:** Areas of habitat considered to appreciably enrich the habitat resource e.g. species-rich hedgerows, ponds etc. Sites that retain other elements of semi-natural vegetation that due to their size, quality or the wide distribution of such habitats within the local area are not considered for the above classifications. Habitats determined to be of low to medium value based on their ecological function. Species: Populations/assemblages of species that appreciably enrich the biodiversity resource within the local context.

Ecological importance	Attributes of ecological feature
	Sites supporting populations of county/district important species that are not threatened or rare in the region or county and are not integral to maintaining those populations.
Site (less than local; of limited ecological value)	**Habitats:** Sites that retain habitats and/or species that are of limited ecological importance owing to their size, species composition or other factors. Habitats determined to be of low to medium value based on their ecological function.

Identification of impacts

Knowledge and assessment of standard construction methods and operational activities, together with professional judgment by experienced ecologists, were used to identify the potential impacts on ecological receptors during all phases of the scheme.

The application of professional judgement to the scoping of potential impacts ensured that the assessment focused on key impacts and effects. For example, a small area of amenity grassland would be assessed as having less than local ecological value and would not progress through the assessment process. However, a potential impact on a SSSI valued at a national level would progress through the assessment process.

Characterising ecological impacts

Ecological impacts were characterised as follows to a degree permitted by the information available at this stage:

- Positive or negative;
- Extent;
- Magnitude;
- Duration;
- Frequency and timing; and
- Reversibility.

Considered together, the value of the ecological feature and the characterisation of the impact allowed the significance of the effects to be determined.

Significance of effects

Following the assessment of ecological value and the characterisation of ecological impacts, professional judgement was then applied to determine the likely significance of potential impacts in order to allow the focus to be upon any effects which would require mitigation.

In accordance with CIEEM guidelines (2018), a significant effect is 'a positive or negative ecological effect that should be given weight in judging whether to authorise a project'. As with the identification of potential impacts, the application of knowledge and assessment of construction methods and operational activities, combined with the professional judgment by

ecologists with experience of similar large-scale infrastructure projects, has been used to identify and assess the predicted likely effects of the route options on ecological features. Additional information on the overall approach to nature conservation assessment is set out in the Chapter 18, Nature Conservation. The terms used in relation to impact significance are explained in Table 1.2 and have been developed with reference to IAN 130/10, CIEEM (2018) and SNH (2018) guidance.

Table 1.2: Significance Category Definitions

Significance category	Description
Major	**Adverse:** effects associated with features of international, national and regional importance. Effects likely to be damaging or result in loss of integrity. Likely to be permanent and irreversible effects potentially resulting in loss of function/structure of feature. **Beneficial:** would result in significant positive effect on an international, national or regional feature.
Moderate	**Adverse:** effects associated with features of international, national, regional or authority importance. Effects likely to be damaging or result in loss of integrity. Likely to be long-term but reversible effects potentially resulting in loss of function/structure of feature. **Beneficial:** would result in significant positive effect on an international, national or regional feature.
Minor	**Adverse:** effects associated with features of regional, authority, local or site importance. Effects likely to be damaging or result in loss of integrity. Likely to be short-term and reversible. **Beneficial:** would result in significant positive effect on a regional, authority, local or site feature.
Negligible	No detectable effects, or effects within the normal level of variation expected for a feature.

The evaluation of likely significant effects has been based on the best available scientific evidence. If sufficient information is not available, further surveys or additional research will be required. In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no likely significant effect, a significant effect has been assumed.

Appendix A18.2 **Valuation of Ecological Features**

Appendix A18.2 **Valuation of Ecological Features**

Introduction

The evaluation of nature conservation features (or assessment of values) was undertaken taking into consideration professional judgement and the following guidance:

- Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 4; Ecology and Nature Conservation[5];
- DMRB Volume 11, Section 4, 1; Assessment of Implications (of Highways and/or Roads Projects) on European sites (including appropriate assessment);
- DMRB Interim Advice Note 130/10 Ecology and Nature Conservation: Criteria for Assessment[5];
- Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland (2018); and
- Scottish Natural Heritage (SNH) Environmental Impact Assessment Handbook (2018).

The criteria used to assess the value of nature conservation features are defined in Table 1.1 within Appendix A18.1 (Nature Conservation Assessment Methodology).

Table 1.1 below details the assigned valuation of each nature conservation feature.

[5] This guidance been withdrawn and replaced by DMRB LA 108 Biodiversity

Table 1.1: Valuation of Nature Conservation Features

Receptor	Description	Value
Nature conservation sites within 2km of the outermost route options		
Strathbogie Wildcat Priority Area (WPA)	37,460ha of land incorporating all of Clashindarroch Forest and a surrounding matrix of habitats known to support wildcat, within which wildcat conservation projects are being funded. There is considered to be 9,885ha of high-quality wildcat habitat within this Priority Area[6].	National
Cairnhill LNCS	A mosaic of wet and heathland habitats including fen, rush pasture, wet woodland and acid grassland surrounding quarry.	Authority
Cottown Woods	A mosaic of woodland habitat types with a small area of fen habitat. Good diversity of plant and invertebrate species. The site forms part of a network of woodlands within the local area.	Authority
Fetternear LNCS	One of a series of woodlands around the Kemnay area, adjacent to the River Don, largely dominated by birch (*Betula* sp.) with oak (*Quercus* sp.), ash (*Fraxinus* sp.) and small stands of aspen (*Populus* sp.). Wetter areas within the woodland contain willow (*Salix* sp.) scrub and wetland plants.	Authority
Kinkell Belt LNCS	Wooded banks at the confluence of the Rivers Don and Urie. The long-established woodland contains a mixture of tree species with good ground flora of relatively common species.	Authority
Pitscurry Moss LNCS	Small area of wet meadow, wet woodland and birch woodland which supports a good diversity of plant species including some locally uncommon species such as creeping lady's tresses (*Goodyera repens*).	Authority
Sunnybrae Moss LNCS	Small area of fen and grassland. Although small in size this site contributes to a network of wetland and fen habitats within the local area which are important for the small pearl-bordered fritillary butterfly (*Boloria selene*).	Authority
Toms Forest LNCS	One of a suite of woodland sites around the Kemnay area. This mainly birch woodland with areas of open grassland, is rich in invertebrates.	Authority

[6] Scottish Wildcat Action. http://www.scottishwildcataction.org/about-us/#priority-areas

Receptor	Description	Value
Bisset Moss LNCS	A good example of a very wet lowland bog which supports a good diversity of plants.	Authority
Habitats		
Air Quality	Air pollution from the route options has the potential to alter habitats over time resulting in changes to species composition and ultimately habitat types. Air Quality is assessed in Chapter 10 but has been included here to acknowledge the potential for habitat changes over time from changes in air quality. Value is classed as Regional due to extent of Ancient Woodland along the route options.	Regional
Arable	Arable fields are generally intensively managed with low quality field margins. Arable land is considered unlikely to support many protected and/or notable species.	Site
Ancient Woodland	Ancient woodland in this context has been taken as those areas of woodland which are recorded on the Scottish Ancient Woodland Inventory (AWI). It is land which is currently wooded and has been continually wooded since at least since 1750[7]. This includes Ancient Woodland[8], long-established woodlands of plantation origin (LEPO)[9] and other woodlands on 'Roy' woodland sites[10]. This habitat is valuable, commonly acknowledged as irreplaceable, and has the potential to support protected and notable species of flora[11] and fauna (e.g. wood small-reed (*Calamagrostis epigejos*), wood melick (*Melica uniflora*), bird's-nest orchid (*Neottia nidus-avis*), pine marten, red squirrel and wildcat).	National

[7] A guide to understanding the Scottish Ancient Woodland Inventory (AWI) https://www.nature.scot/sites/default/files/2018-11/A%20guide%20to%20understanding%20the%20Scottish%20Ancient%20Woodland%20Inventory%20%28AWI%29.pdf
[8] Interpreted as semi-natural woodland from maps of 1750 (1a) or 1860 (2a) and continuously wooded to the present day. If planted with non-native species during the 20th century they are referred to as Plantations on Ancient Woodland Sites (PAWS).
[9] Interpreted as plantation from maps of 1750 (1b) or 1860 (2b) and continuously wooded since. Many of these sites have developed semi-natural characteristics, especially the oldest ones, which may be as rich as Ancient Woodland.
[10] Shown as unwooded on the 1st edition OS maps but shown as woodland on the Roy maps. Such sites have, at most, had only a short break in continuity of woodland cover and may still retain features of Ancient Woodland.
[11] Examples taken from North East Scotland Biodiversity Partnership Locally Important Species List, Downloaded from https://www.nesbiodiversity.org.uk/biodiversity-information-for-developers/important-local-species/

Receptor	Description	Value
Dense Scrub	Dense scrub within the study area is dominated by gorse (*Ulex europaeus*) and broom (*Cytisus scoparius*). It is species-poor but will support breeding birds and potentially protected species.	Site
Grassland	The majority of grassland habitats reported during the Phase 1 habitat surveys have low species diversity. This habitat is extensive in the survey area. It may be utilised by Pink-footed and Greylag geese (qualifying features of SPA, pSPA and Ramsar sites) but generally has low potential to support protected species. There is the potential for areas of higher value grasslands to be present locally (which are either botanically more diverse or provide habitat for other species e.g. butterflies), however, the Phase 1 habitat survey and desk study have not identified significant extent of such habitats to raise the overall value assigned to grassland habitats.	Site
Native Woodland	In this context native woodland is land which has been classified as supporting native woodland on the Native Woodland Survey of Scotland (NWSS)[12]. The NWSS definition of native woodland is a '*a woodland where over 50% of the canopy (defined as the upper layers present at any part of the site) is composed of native species.*' Native woodland is closely associated with ancient woodland and, where a woodland appears on the AWI and NWSS, it has been treated as an ancient woodland following the precautionary principle[13]. Native woodland has the potential to support a wider range of protected flora and fauna, than non-native stands or plantations.	Authority
Non-designated Woodland and Trees	Plantation woodland (excluding AWI woods), parkland trees and roadside trees are common throughout the Aberdeenshire area. Some plantations will have greater botanical and faunal diversity depending upon history, location and size.	Site
Non-Statutory Designated Watercourses	Value of watercourses will range considerably from large ecologically diverse rivers to small heavily modified field drains with little value. Larger rivers and streams will support a range of protected species. In addition, endemic macroinvertebrate species may be present.	Authority/Local

[12] Scottish Forestry. *Native Woodland Survey of Scotland (NWSS)*. Available: https://forestry.gov.scot/forests-environment/biodiversity/native-woodlands/native-woodland-survey-of-scotland-nwss

[13] At DMRB Stage 3, this assumption will be supplanted by detailed survey information.

Receptor	Description	Value
Waterbodies	Ponds are classed as authority ecological value due to their relative scarcity within the Aberdeenshire landscape and their potential to provide habitats for a range of protected species including great crested newt (GCN), osprey and otter.	Authority
Species and species groups[14]		
Amphibians (not including GCN)	Common toad is listed on the Scottish Biodiversity List (SBL), while common frog, smooth newt and palmate newt are likely to be present within the study area.	Local
Badger	Badger is afforded legal protection under the Protection of Badgers Act 1992 (as amended), however, badger is locally and regionally common and it is assumed that all suitable habitat has the potential to support badgers.	Local
Barn Owl	Barn owl is afforded legal protection under the Wildlife & Countryside Act 1981 (WCA) as a Schedule 1 bird. An assessment of the status of the species is hampered by limited data, especially in Scotland[15]. Barn Owl are thought to be in recovery[16] although still significantly impacted by habitat loss and degradation. Aberdeenshire is at the northern extent of the Barn Owl climatic tolerance and as such fluctuations in numbers are associated with the severity of the winters. Barn owl are also particularly vulnerable to direct mortality from operational road schemes.	Authority
Bats	Although designated as European Protected Species (EPS) under the Habitats Regulations 1994, most bat species within the areas of the route options are likely to be common locally and are not threatened. Rarer species may occur; however, they are likely to be infrequent and does not alter the overall valuation of bats.	Regional
Breeding Birds (excluding Barn Owl)	The study area will support a range of breeding bird species including Schedule 1 species. Desk study data indicate at least 12 Schedule 1 bird species recorded within the last ten years across a variety of habitats	Regional

[14] At the time of writing, species and habitat statements outlining key conservation priorities for Aberdeenshire and Aberdeen City Councils had not yet been finalised by the North East Scotland Biodiversity Partnership (NESBP).
[15] Scottish Raptor Study Group. Available: http://www.scottishraptorstudygroup.org/barnowl.html
[16] BTO. *Breeding Bird Survey: Population trend graphs*. Available: https://www.bto.org/our-science/projects/bbs/latest-results/trend-graphs

Receptor	Description	Value
Fish	Suitable watercourses are likely to support ecologically valuable salmonid, lamprey and cyprinid species.	Authority
Freshwater Macroinvertebrates (excluding Fresh Water Pearl Mussel)	The value of macroinvertebrate populations will vary. Larger rivers such as the River Urie and River Don will have a high species richness and potentially support UK endemic species such as Stonefly and the Northern February Red (*Brachyptera putata*). Smaller and poorer quality watercourses will tend to hold local value macroinvertebrate populations, although they may still support specific species of regional or national importance such as the various aquatic beetles listed on the Scottish Biodiversity List (SBL).	Local
Freshwater Pearl Mussel (FWPM)	FWPM is protected under the WCA and is defined as 'Threatened' by the IUCN, primarily due to habitat degradation and illegal pearl fishing. There are no known populations within the study area but consultation with SNH indicates there is anecdotal evidence from shells washing up during floods that small relict populations may be present around the River Urie catchment.	International
Great Crested Newt (GCN)	GCN are on the SBL and is an EPS. No GCN records exist within the study area, however, there are records of populations to the north which appear genetically distinct and disconnected from the main UK range for this species. It is, therefore, plausible that relic or isolated populations could be present within the study area.	National
Invasive Non-native Plants (INNS)	The WCA 1981 (as amended) makes it an offence to allow INNS to grow outwith its native range. Phase 1 habitat surveys show that INNS are widespread across the study area, particularly along watercourses.	Regional
Macrophytes	The value of macrophyte communities will vary across the study area, however, the findings of desk study, public consultation and site visits has not identified any high value communities locally.	Site
Otter	Although otter is an EPS, it is classified as 'Near Threatened' by the IUCN across its range, and it is a SBL species, the species is also nationally widespread and locally common.	Regional
Pine marten	Pine marten is listed on WCA Schedule 5, the SBL and UKBAP, however, it is locally relatively common, and it is assumed that all suitable habitat has the potential to support pine marten.	Authority

Receptor	Description	Value
Red Squirrel	Red Squirrel is listed on WCA Schedule 5, the SBL and UKBAP, however, it is locally and regionally common and it is assumed that all suitable habitat has the potential to support red squirrel.	Authority
Reptiles	Common lizard, slow-worm and adder are all listed on the current version of the SBL and are likely to be present within the study area.	Authority
Terrestrial Invertebrates	Certain areas within the study area are likely to support notable invertebrate species such as wood tiger beetle (*Cicindela sylvatica*), several spiders and numerous species of butterfly and moth.	Authority
Water Vole	Water vole is listed on the SBL and is protected under the WCA. Public consultation and stakeholder meetings have indicated that this species is relatively common within the study area.	Authority
Wildcat	Wildcat are listed on the SBL and are an EPS. Habitat loss and persecution have, and are continuing to impact many protected species, but wildcat also suffer from interaction with feral and domestic cats. Given the very low population size (in the hundreds[17]) genetic introgression is cited as the greatest threat to wildcat in Scotland[18]. This is not such an issue for the species on continental Europe. A recent study[19] of wildcat genetics found that 'wildcat' are probably functionally extinct in Scotland, concluding that even specimens scoring highly on the phenotypic pelage scoring system[22] are genetically part of a hybrid swarm. Experts still consider there to be a limited number of wild living cats in Scotland which fit both the genetic and pelage definition of a wildcat, but there is no viable population and they will not recover without significant conservation intervention[20]. As the	National

[17] Kilshaw K., Johnson P.J., Kitchener A.C., MacDonald D.W. (2015) *Detecting the elusive Scottish wildcat* (*Felis silvestris silvestris*) *using camera trapping.* Oryx 49(2): 207–215.
[18] Breitenmoser U., Lanz T., Breitenmoser-Würsten C. (2019) *Conservation of the wildcat (Felis silvestris) in Scotland: Review of the conservation status and assessment of conservation activities*. Available: https://www.nature.scot/sites/default/files/2019-02/Wildcat%20in%20Scotland%20-%20Review%20of%20conservation%20status%20and%20activities_1.pdf
[19] Senn H., Ghazali M., Kaden J., Barclay D., Harrower B., Campbell R., Macdonald D., Kitchener A. (2019) *Distinguishing the victim from the threat: SNP-based methods reveal the extent of introgressive hybridization between wildcats and domestic cats in Scotland and inform future in situ and ex situ management options for species restoration.* Evolutionary Applications. 12: 399–414.
[20] Scottish Wildcat Action. *News article: New international report sets out how Scottish wildcats can be saved from extinction*. Available: http://www.scottishwildcataction.org/latest-news/2019/february/new-international-report-sets-out-how-scottish-wildcats-can-be-saved-from-extinction/

Receptor	Description	Value
	wildcat is nationally endangered, it is considered of national value[21]. Given the difficulty in distinguishing 'genetic wildcats' from 'genetic hybrids', and the vulnerability of the species in Scotland, the scheme will consider any cat scoring above 14 on the pelage scoring system[22] a wildcat and mitigate accordingly. This will, if possible, be supplemented with genetic evidence wherever potential wildcat are recorded.	
Wintering Birds (SPA/Ramsar qualifying species)	Bird species, particularly geese, are listed as qualifying features of Loch of Skene[23]; and Ythan Estuary, Sands of Forvie and Meikle Loch[24] European Designated Sites. These species are known to utilise grassland and arable areas within the study area for roosting and foraging[25]. These birds are, therefore, assessed as being of International ecological value. In addition, waterbodies within the footprint of the route options may support wintering birds listed on the Red List of Birds of Conservation Concern (BoCC) and/or 'endangered' or 'critically endangered' (IUCN).	International
Wintering Birds (other species)	The study area will support a range of wintering birds which are not qualifying features of the European Designated Sites but do hold conservation significance such as being listed on the SBL or being present in notable numbers when otherwise holding a threatened or rare status at the regional or national level.	Regional/National (species dependent)

[21] A new project Saving Wildcats has now been funded to support the re-introduction of Wildcat into the Cairngorms National Park http://www.scottishwildcataction.org/latest-news/2019/december/wildcats-take-another-step-forward/
[22] Littlewood N.A., Campbell R.D., Dinnie L., Gilbert L., Hooper R., Iason G., Irvine J., Kilshaw K., Kitchener A., Lackova P., Newey S., Ogden R., Ross A. (2014) *Survey and scoping of wildcat priority areas.* Scottish Natural Heritage Commissioned Report No. 768.
[23] Loch of Skene SPA qualifying features: Supports a greylag goose population of international importance. Also supports non-breeding populations of goldeneye (*Bucephala clangula*) and goosander (*Mergus merganser*).
[24] Ythan Estuary, Sands of Forvie and Meikle Loch SPA, pSPA extension, and Ramsar qualifying features: Coastal site supporting a waterfowl assemblage of international importance. Includes pink-footed goose and Sandwich tern amongst the named species.
[25] Mitchell C. (2012) *Mapping the distribution of feeding Pink-footed and Iceland Greylag Geese in Scotland.* Wildfowl & Wetlands Trust & Scottish Natural Heritage Report, Slimbridge.

Appendix A18.3 **Phase 1 Habitat Survey Target Notes**

Appendix A18.3 **Phase 1 Habitat Survey Target Notes**

As part of the initial Phase 1 habitat mapping undertaken to inform the DMRB Stage 2 Assessment, specific details deemed of ecological relevance were recorded as short target notes. These target notes do not constitute a comprehensive assessment of the potential for any location to support protected species or notable habitats; their aim is to provide indicative, high-level notes to inform future surveys and gain a greater understanding about the ecological potential of an area in the early stages of assessment. A full suite of relevant protected species and notable habitat surveys will be undertaken as part of the DMRB Stage 3 Assessment (Chapter 18, Section 9).

Table 1.1 details protected and notable species, and general notes made during the Phase 1 habitat survey for DMRB Stage 2, to be cross referenced with Volume 5, Figures 18.1 to 18.21 (Phase 1 Habitat Survey mapping per route option) for details of location. Notes relating specifically to sensitive species (potentially subject to persecution) have been removed to align with best practice. Target notes may refer to multiple locations on the map where a similar feature was recorded. In some instances, a single location on the map is associated with more than one target note.

Table 1.1: Target Notes

Target Note Number	Target Note Details
1	Pond in poor suitability amphibian habitat
2	Potential hibernacula in suitable amphibian habitat
3	Pond in suitable amphibian habitat
4	Potential hibernacula in poor suitability amphibian habitat
5	Pond appears to have been removed following change in land management
6	Pond with diverse structure and diverse invertebrate community noted
7	Bird nest(s) recorded
8	Building suitable for barn owl
9	Habitat suitable for ground nesting birds
10	Skylark observed
11	Oystercatcher observed
12	Swallows observed
13	Building used by nesting birds
14	Corvid nest observed
15	Potential barn owl pellet
17	Waterfowl observed
18	Buzzard nest recorded
19	Snipe observed
20	Lapwing observed
21	Geese observed
22	Mute swan observed
23	Habitat suitable for waterfowl

Target Note Number	Target Note Details
24	Fieldfare observed
25	Sparrow hawk observed
26	Dipper observed
27	Suitable kingfisher habitat
28	Suitable nesting habitat for sand martin
29	Bird bricks present
30	Geese droppings observed
31	Flock of geese observed feeding
32	Flock of geese observed in flight
33	Potential foraging habitat for wintering birds
34	Gulls observed
35	Mixed flock of birds observed feeding (geese and curlew)
36	Goose feeding signs
37	Goose feathers noted
38	Two dead geese recorded
39	Potential hibernacula in poor suitability reptile habitat
40	Good reptile foraging habitat
41	Good reptile foraging and basking habitat
42	Good reptile foraging and basking habitat with potential hibernacula
43	Potential hibernacula in suitable reptile habitat
44	Suitable habitat for salmonid spawning
45	Potential for migratory fish
46	Poor habitat for migratory fish due to downstream barrier
47	Single tree with bat roost potential
48	Woodland or trees with bat roost potential
49	Building or structures (s) with bat roost potential
50	Habitat suitable for commuting and foraging bats
51	Bat box(es) observed
52	Parkland trees with bat foraging and roosting potential
53	Live bat observation whilst driving, unknown species
54	Rock face with bat roost potential
55	Potential otter resting place
56	Habitat suitable for otter
57	Otter field signs (for example, spraints, paw prints, otter paths, slides, and food remains)
58	Habitat unsuitable for otter

Target Note Number	Target Note Details
59	Habitat suitable for water vole
60	Habitat unsuitable for water vole
61	Habitat suitable for red squirrel
62	Squirrel field sign (for example, drey, feeding remains)
63	Red squirrel observed
64	Habitat unsuitable for red squirrel
65	Habitat suitable for pine marten
66	Brown hare observed
67	Beehives noted
68	Potential animal route under roadway through pipe/ culvert
69	Recent broadleaved woodland planting
70	Large burrow(s)
71	Dead fox
72	Commercially farmed turf
73	Well(s)
74	Giant hogweed recorded
75	Large rabbit population noted
76	Evidence of rabbit predation
77	No access
78	Three cornered leek (*Allium triquetrum*) recorded (listed on Schedule 9 of the Wildlife and Countryside Act)
79	Small wet valley bottom draining under road
80	Land management means otherwise suitable habitat currently unsuitable for geese
81	Derelict building
82	Wet woodland
83	Rank grassland
84	Flooding noted during survey
85	Bore hole
86	No access
87	Mature tree line with bat roosting and foraging potential
88	Stream habitat suitable for fresh water pearl mussel
89	Potential buzzard breeding activity observed
90	Rhododendron recorded, actively being controlled
91	Recently cleared land
92	Small patch of broadleaved trees with scattered scrub
93	Building noted on Ordnance Survey map no longer present

Target Note Number	Target Note Details
94	Construction of new building in progress

Appendix A18.4 **Habitat Loss Calculations**

Appendix A18.4 **Habitat Loss Calculations**

The Ancient Woodland Inventory (AWI) database was used to estimate the total area of each AWI category that would be lost under the footprint of each route option.

The Phase 1 Habitat survey data was digitised and overlaid on the footprint of the proposed earthworks for each route option[26]. All habitats falling within a route option footprint are considered non-functional during construction and operation and have been included in the habitat loss calculations.

Table 1.1 sets out the estimated habitat loss of ancient woodland and habitat type based on Phase 1 Habitat classifications for each route option.

Table 1.1: Habitat Loss Estimate per Route Option

Habitat Type	Direct Habitat Loss (ha) [27]					
	East of Huntly to Colpy		Colpy to Pitcaple		Pitcaple to Kintore	
	Red	Cyan	Pink	Brown	Orange	Violet
Habitat Loss: Ancient Woodland						
Ancient Woodland (LEPO[28])	0.5	0.3	5.5	11.7	10.5	2.2
Ancient Woodland (ASNO[28])						0.2
Habitat Loss: Phase 1 Classifications						
Woodland and Scrub Habitats						
Broadleaved woodland - semi-natural (A1.1.1)					2.0	<0.1
Broadleaved woodland – plantation (A1.1.2)	0.4		0.3	1.9	1.2	1.3
Coniferous woodland – plantation (A1.2.2)	7.4	0.3	0.6	6.3		3.1
Mixed woodland - semi-natural (A1.3.1)	1.9				3.8	1.8
Mixed woodland – plantation (A1.3.2)			0.1	1.2	8.3	
Scrub – dense/ continuous (A2.1)	0.8	3.1	0.4	0.4	1.2	
Scrub – scattered (A2.2)		0.2	1.3	1.4	0.7	0.8
Broadleaved parkland/ scattered trees (A3.1)			<0.1	0.1	<0.1	0.1

[26] Calculations set out in Table 1.1 of Appendix A18.4 are based on land accessed. Percentage (%) of un-surveyed footprint is listed at the end of Table 1.1 of Appendix A18.4.
[27] Linear habitats (e.g. hedgerows) have not been included in these calculations. All habitat losses are given to the nearest 0.1ha or marked as <0.1ha where loss is less than 0.05ha.
[28] Ancient woodland predicted to be lost as a result of each route option is predominantly Long Established of Plantation Origin (LEPO) with a single woodland block categorised as Ancient of Semi-natural Origin (ASNO).

Habitat Type	Direct Habitat Loss (ha) [27]					
	East of Huntly to Colpy		Colpy to Pitcaple		Pitcaple to Kintore	
	Red	Cyan	Pink	Brown	Orange	Violet
Mixed Parkland/scattered trees (A3.3)						0.3
Total woodland and scrub loss	10.5	3.6	2.7	11.7	17.3	7.5
Agricultural / Semi- improved Grassland Habitats						
Acid grassland – semi-improved (B1.2)						0.5
Neutral grassland - semi-improved (B2.2)	1.0	1.9				
Improved grassland (B4)	46.5	57.1	6.5	7.0	22.6	25.7
Poor semi-improved grassland (B6)	23.5	19.5	8.1	6.0	14.7	19.2
Cultivated /disturbed land – arable (J1.1)	31.9	16.9	57.7	63.0	54.7	64.8
Cultivated /disturbed land - ephemeral/short perennial (J1.3)				2.4		
Total agricultural / semi-improved grassland loss	102.9	95.4	72.3	78.4	92.0	110.2
Other Habitats						
Marsh/marshy grassland (B5)	0.1	0.3	0.3	0.1	2.7	
Other tall herb and fern – ruderal (C3.1)	1.5	0.1	1.3			
Open Water (G1 & G2)		<0.1			0.1	
Quarry (I2.1)					0.2	
Buildings (J3.6)					0.1	
Bare ground (J4)					<0.1	
Other Habitat (J5)						0.4
Total other habitats	1.66	0.4	1.6	0.1	3.0	0.4
Overall Habitat Loss	**115.56**	**99.7**	**82.1**	**101.9**	**122.8**	**120.5**
Total Route Option Footprint	148.7	144.4	86.9	102.5	167.8	174.3

Appendix A19.1 **Methodology for the Detailed Assessment of Impact on Groundwater Abstractions**

Appendix A19.1 **Methodology for the Detailed Assessment of Impact on Groundwater Abstractions**

This appendix should be read in conjunction with Volume 2, Part 3, Chapter 19, Geology, Soils, Contaminated Land and Groundwater.

The impact of the route options on existing groundwater abstractions has been determined by assessing the potential impact that the earthworks could have on the availability (yield) and quality of groundwater at each abstraction. An 850m buffer from each of the route option earthworks footprint has been used to identify potentially impacted abstractions on the scheme, in accordance with SEPA Regulatory Method WAT-RM-11.[1]

The impact on groundwater aquifers has not been assessed as the baseline assessment determined that all aquifers were of low productivity. The assessment of impact on individual abstractions is considered to form a suitably robust hydrogeological impact assessment.

The following groundwater abstractions have been assessed:

- 354 Private Water Supplies (PWS) recorded in the Aberdeenshire Council PWS dataset, within 850m of the route options. Of these, 113 are stated to be from a groundwater source, such as a well or borehole, and the remaining 241 PWS are from an unknown source;
- 600 wells, pumps or springs shown on the current and historic Ordnance Survey maps within 850m of the route options; and
- 365 SEPA Controlled Activities Regulation (CAR) licences for Groundwater Abstractions within 850m of the route options.

Some of the abstractions are located within 850m of multiple route options. For these abstractions, the impact of each route option on the abstraction has been assessed individually, and the abstractions are included in the overall assessment for each route option within 850m.

The following were taken into consideration to assess the potential impact on yield (availability) and quality of groundwater at each abstraction:

- Distance between the abstraction point and the route option;
- Proposed height of embankments and cuttings in vicinity of the abstraction;
- The ground elevation at the abstraction in relation to the proposed carriageway level; and
- Nearby surface water features, such as rivers, burns, streams and ponds.

The following assumptions have been made during the assessment of potential impacts on groundwater abstractions:

- All PWS, CAR licensed abstractions, wells, pumps and springs within 850m of the route options have the potential to be impacted;

[1] SEPA Regulatory Method WAT-RM-11: Licensing Groundwater Abstractions including Dewatering; (SEPA, 2017)

- All PWS where the source is stated to be a well, borehole or spring are assumed to be abstracting groundwater;
- All PWS where the source is stated to be 'unknown' are potentially abstracting groundwater, and have been regarded as groundwater abstractions during the assessment;
- All wells, pumps and springs shown on the historic maps are assumed to still be present and actively abstracting groundwater;
- Cuttings excavated below the groundwater table will require dewatering, and this will cause localised lowering of the groundwater table; and
- Construction and operation of the route options could increase the likelihood for reduced water quality at the abstractions, through potential migration of contaminants through the ground. For the purposes of the assessment it has been assumed that contaminants can migrate vertically and laterally within the groundwater.

The assessment is subject to the following limitations:

- The groundwater table has conservatively been modelled at the surface, as the depth to groundwater at each abstraction and beneath the route options is unknown at this stage due to limited ground condition and hydrogeological information;
- The depth of wells and pumps is unknown, and water is therefore potentially abstracted from any depth below the surface;
- The PWS data provided by Aberdeenshire Council is understood to show the location of addresses with PWS, and not the location of the abstraction point itself. The exact location of abstraction points is currently unknown, and the assessments are therefore based on the location of the licence point;
- Unregistered PWS may be present within the assessment boundary; and
- Potential hydrogeological properties of individual ground conditions have not been taken into account. No adjustments have been made to reflect the potential permeability of particular strata and groundwater flow is assumed to be uniform for all ground conditions due to the data available at this stage.

The following criteria (shown in Tables 1.1 to 1.4) have been used to assess the impact of the route option earthworks on the yield and quality of groundwater at a recorded abstraction point. Separate criteria have been used to assess the impact of embankments and cuttings, as these are predicted to have different effects on local hydrogeological regimes. Separate criteria have also been used for abstraction points located 'up-slope' or 'down-slope' of the earthworks.

The overall impact for one factor (e.g. Yield) is taken as the mean of the three impacts from the individual criteria. For example, if the criteria predicted yield impacts of Low + Medium + High for a particular abstraction, the overall yield impact would be Medium. There are some exceptions within the assessment where engineering judgement has been used, for example if multiple criteria for one impact factor on a particular abstraction were borderline, the overall impact may have been conservatively 'rounded up'.

Table 1.1: Groundwater Abstraction Up-slope of Earthworks – Impact on Yield

Criteria	Impact of cutting				Impact of embankment
	Negligible	Low	Medium	High	Negligible
Distance between groundwater abstraction and route option centreline	>1000m	500m to 1000m	100m to 500m	0 to 100m	Negligible
Height of earthworks	0 to 1m	1m to 6m	6m to 10m	>10m	
Potential hydraulic gradient (vertical: horizontal)	shallower than 1:150	1:100 to 1:150	1:50 to 1:100	steeper than 1:50	

Table 1.2: Groundwater Abstraction Up-slope of Earthworks – Impact on Quality

Criteria	Impact of cutting		Impact of embankment			
	Negligible	Low	Negligible	Low	Medium	High
Distance between groundwater abstraction and route option centreline	>100m	0 to 100m	>1000m	500m to 1000m	100m to 500m	0 to 100m
Height of earthworks	0 to 5m	>5m	0 to 1m	1m to 6m	6m to 10m	>10m
Potential hydraulic gradient (vertical: horizontal)	steeper than 1:50	1:0 to 1:50	shallower than 1:150	1:100 to 1:150	1:50 to 1:100	steeper than 1:50

Table 1.3: Water Abstraction Down-slope of Earthworks – Impact on Yield

Criteria	Impact of cutting	Impact of embankment
Distance between groundwater abstraction and route option centreline	Negligible	Negligible
Height of earthworks		
Potential hydraulic gradient (vertical: horizontal)		

Table 1.4: Water Abstraction Down-slope of Earthworks – Impact on Quality

Criteria	Impact of cutting		Impact of embankment			
	Negligible	Low	Negligible	Low	Medium	High
Distance between groundwater abstraction and route option centreline	>100m	0 to 100m	>1000m	500m to 1000m	100m to 500m	0 to 100m
Height of earthworks	0 to 5m	>5m	0 to 1m	1m to 6m	6m to 10m	>10m
Potential hydraulic gradient (vertical: horizontal)	shallower than 1:50	steeper than 1:50	shallower than 1:150	1:100 to 1:150	1:50 to 1:100	steeper than 1:50

The predicted magnitudes for impact on yield and quality at each groundwater abstraction were combined to provide an 'overall' impact assessment for each abstraction as shown in Table 1.5.

Table 1.5: Impact matrix

Impact matrix		Impact on Yield			
		High	**Medium**	**Low**	**Negligible**
Impact on Quality	**High**	High	High	Medium	Medium
	Medium	High	Medium	Medium	Low
	Low	Medium	Medium	Low	Negligible
	Negligible	Medium	Low	Negligible	Negligible

The findings of the assessment of impact on each groundwater abstraction in relation to the six route options is summarised in Tables 19.20 to 19.25 of Volume 2, Part 3, Chapter 19, Geology, Soils, Contaminated Land and Groundwater.

Overall impacts have been determined for each of the six route options, based on the number of groundwater abstractions that are impacted by the earthworks, and on the severity of the proposed impacts. Qualitative criteria for the magnitude of impact on groundwater resources are defined in Volume 2, Part 3, Chapter 19, Table 19.5.

Appendix A20.1 Road Drainage and the Water Environment - Assessment Methodology

Appendix A20.1 Road Drainage and the Water Environment - Assessment Methodology

This appendix presents the criteria used to assess the receptor sensitivity and magnitude of impacts in Table 1.1 and Table 1.2, respectively. These tables are based on Tables A4.3 and A4.4 in DMRB guidance document HD 45/09[1], with some amendments to reflect the qualitative approach used for the majority of the DMRB Stage 2 assessments. Table 1.3 provides the matrix used to assess significance of predicted effects and is taken directly from Table A4.5 in HD 45/09.

Table 1.1 Sensitivity criteria

Sensitivity	Sub-topic	Criteria
Very High	Hydrology and flood risk	Direct flood risk to adjacent receptors; more than 100 residential and/or commercial properties, or critical infrastructure. A watercourse or floodplain providing critical flood alleviation benefits (floodplain storage or conveyance). Watercourse of hydrological importance to statutory designated sites.
	Fluvial geomorphology	Water Framework Directive (WFD) status of 'High' for morphology attribute Watercourse exhibits a diverse range of morphological features and natural processes with very limited signs of modification.
	Water quality	Water quality/supply: WFD status of 'High' for physio-chemical or biological parameters. No known pollutant pressures. Regionally important potable water source. Site protected/ designated under EC or UK habitat legislation (Special Area of Conservation (SAC), Special Protection Area (SPA), Site of Special Scientific Interest (SSSI), Water Protection Zone, Ramsar Site/ species protected by EU legislation Dilution and removal of waste products: low/very low pollutant dilution and sediment dispersal capacity.
High	Hydrology and flood risk	Direct flood risk to adjacent receptors; 1-100 residential properties or commercial premises. Critical infrastructure not at risk. A watercourse or floodplain providing significant flood alleviation benefits (floodplain storage or conveyance). Watercourse of hydrological importance to locally designated sites.
	Fluvial geomorphology	WFD status of 'Good' for morphology attribute Watercourse exhibits a range of morphological features and natural process with limited signs of modification.

[1] Design Manual for Roads and Bridges Volume 11, Section 3, Part 10 HD 45/09 Road Drainage and the Water Environment

Sensitivity	Sub-topic	Criteria
	Water quality	Water quality/supply: WFD status of 'Good' for physio-chemical or biological parameters. Few pollutant pressures. Locally important potable water source. Species protected under EU or UK habitat legislation. Dilution and removal of waste products: low / moderate pollutant dilution and sediment dispersal capacity.
Medium	Hydrology and flood risk	Direct flood risk to adjacent receptors; with no residential properties and fewer than 10 commercial properties at risk. Direct flood risk to adjacent high grade agricultural land[2]. A watercourse or floodplain providing some flood alleviation benefits (floodplain storage or conveyance). Watercourse of hydrological importance to undesignated areas of water-dependent habitat.
	Fluvial geomorphology	WFD status of 'Medium' for morphology attribute. Watercourse with a limited range of morphological features and natural processes, with clear signs of modification.
	Water quality	Water quality/supply: WFD status of 'Moderate' for physio-chemical or biological parameters. Water quality could be affected by pollutant inputs or other pressures. Could support private water supplies. Dilution and removal of waste products: moderate/high pollutant dilution and sediment dispersal capacity.
Low	Hydrology and flood risk	Direct flood risk to adjacent receptors; low probability of flooding residential and industrial properties or high grade agricultural land. A watercourse or floodplain providing limited or no flood alleviation benefits (floodplain storage or conveyance). Watercourse does not directly support water-dependent habitats.
	Fluvial geomorphology	WFD status of 'Poor' or 'Bad' for morphology attribute. Watercourse with very limited diversity of morphological features and natural processes with widespread pressures or modifications.
	Water quality	Water quality/supply: WFD status of 'Poor' or 'Bad' for physio-chemical or biological parameters. Water quality likely to be affected by pollutant inputs or other pressures. Unlikely to be used for water supply. Dilution and removal of waste products: very high pollutant dilution and sediment dispersal capacity.

[2] High grade agricultural land is assumed to be classes 1 - 3.1 from the James Hutton Institute (JHI) land capability for agriculture, which are classed as suitable for arable farming.

Table 1.2 Magnitude criteria

Magnitude	Sub-topic	Criteria
Major adverse	Hydrology and flood risk	Increase in peak flood level >100mm and/or increase in flood risk to a substantial number of residential properties, industrial premises or critical infrastructure at risk (0.5% annual probability). Significant loss of existing functional floodplain capacity. Major change to flow regime.
	Fluvial geomorphology	Significant increase in the extent of watercourse modification e.g. more than one new crossing structure with in-channel works, significant channel realignment, new or extended embankments or bank protection works. Major change to the existing morphological processes and functioning of the watercourse that could lead to downgrading of WFD status.
	Water quality	Major change from baseline conditions that could lead to downgrading of WFD status. Loss or extensive change to a designated site or regionally important water supply.
Moderate adverse	Hydrology and flood risk	Increase in peak flood level 50 - 100mm and/or increase in flood risk to less than 10 residential properties or industrial premises at risk (0.5% annual probability). Moderate loss of existing functional floodplain. Moderate change to flow regime.
	Fluvial geomorphology	Moderate increase in extent of engineering pressures e.g. one new channel crossing with in-channel works, localised channel realignment, set-back embankments. Moderate change to the existing morphological processes and functioning of the watercourse.
	Water quality	Moderate change from baseline conditions that is unlikely to lead to downgrading of WFD status.
Slight adverse	Hydrology and flood risk	Increase in peak flood level >10mm and/or increase in flood risk to high grade agricultural land (0.5% annual probability). Minor loss of existing functional floodplain. Minor change to flow regime.
	Fluvial geomorphology	Minor increase in extent of engineering pressures e.g. upgrade or extension of existing watercourse crossing, or a new crossing with limited channel modification, minor channel realignment. Minor change to the existing morphological processes and functioning of the watercourse.
	Water quality	Minor change from baseline conditions.

Magnitude	Sub-topic	Criteria
Neutral	Hydrology and flood risk	Neutral change in peak flood level <±10mm and/or no change in flood risk to receptors (0.5% annual probability). No loss of existing functional floodplain. Neutral change to flow regime.
	Fluvial geomorphology	No change in extent of engineering pressures. Neutral change to the existing morphological processes and functioning of the watercourse.
	Water quality	No discernible change from baseline conditions.
Slight beneficial	Hydrology and flood risk	Reduction in peak flood level >10mm and / or minor reduction in flood risk to residential properties or industrial premises at existing risk (0.5% annual probability).
	Fluvial geomorphology	Minor improvements which may have a localised benefit for natural forms and processes.
	Water quality	Minor improvement from baseline conditions.
Moderate beneficial	Hydrology and flood risk	Reduction in peak flood level >50mm and/or moderate reduction in flood risk to residential properties or industrial premises currently at risk (0.5% annual probability).
	Fluvial geomorphology	Improvement to a watercourse e.g. through restoration or mitigation with moderate benefits for natural forms and processes.
	Water quality	Moderate improvement from baseline conditions.
Major beneficial	Hydrology and flood risk	Reduction in peak flood level >100mm and/or major reduction in flood risk to residential properties, industrial premises or critical infrastructure at existing risk (0.5% annual probability).
	Fluvial geomorphology	Significant improvement to a watercourse resulting from substantial restoration of natural forms and processes.
	Water quality	Removal of existing polluting discharge or removing the likelihood of polluting discharges occurring to a watercourse, resulting in a major improvement over baseline conditions.

Table 1.3 Significance of effects matrix (significant effects in bold)

Receptor sensitivity	Impact magnitude			
	Neutral	Minor	Moderate	Major
Very High	Neutral	**Moderate/Large**	**Large/Very Large**	**Very Large**
High	Neutral	Slight/**Moderate**	**Moderate/Large**	**Large/Very Large**
Medium	Neutral	Slight	**Moderate**	**Large**
Low	Neutral	Neutral	Slight	Slight/**Moderate**

Appendix A20.2 Baseline Conditions

Appendix A20.2 Baseline Conditions

Introduction

This appendix provides the supporting details for the water environment baseline conditions and sensitivity values within the following tables:

- Table 1.1 – East of Huntly to Colpy (Cyan and Red route options);
- Table 1.2 – Colpy to Pitcaple (Pink and Brown route options); and
- Table 1.3 – Pitcaple to Kintore (Violet and Orange route options).

The location of the watercourses referred to in Tables 1.1 to 1.3 are shown in Volume 5, Figures 20.1 to 20.13 Water Environment.

There are instances where a watercourse may be affected in more than one location by one or more of the route options. The baseline conditions were assessed within the study area at each location and a single sensitivity value, the highest, has been reported within this appendix.

The route option impacting upon each of the watercourses has also been provided for context, for example, Cyan, Red or both route options.

The following abbreviations are used within tables:

- WFD: Water Framework Directive.
- MPD: Morphological pressures database (SEPA's database of existing engineering pressures on channels which are monitored for WFD reporting).
- PWS: Private water supplies.
- OS: Ordnance Survey.
- SEPA: Scottish Environment Protection Agency.
- SuDS: Sustainable Drainage Systems.

Watercourses have only been flagged as being potential sources for PWS where there are PWS records located downstream of proposed infrastructure.

Table 1.1 Baseline Sensitivity - East of Huntly to Colpy

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Tributary of Burn of Slioch Not WFD monitored. Drains into Burn of Slioch within the Keithny Burn/Forgue Burn catchment. Catchment area: <0.5km² where the watercourse is crossed by the Cyan and Red route options.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Very small, straight channel situated in the catchment headwaters. Watercourse cuts across contours suggesting a low gradient, artificial channel with modified morphological form and processes. Overall fluvial geomorphology sensitivity: **Low**	• Small drainage channel which could experience ephemeral flow. • Flows through agricultural land (grazing). • Potential pollutant pressures: septic tank discharges and intermittent agricultural runoff. Existing A96 runs parallel to channel. Overall water quality sensitivity: **Low** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.
Burn of Bogside Not WFD monitored. Watercourse flows northwards to the confluence with the Keithny Burn/Forgue Burn WFD water body. Catchment area: <0.5km² where the Cyan and Red route options pass through the catchment.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance.	• No defined channel on OS mapping where the Cyan and Red route options pass through the catchment (appears to originate downstream of existing A96). • Very small, straight channel downstream of existing A96, likely to have been historically modified.	• Small channel which could experience ephemeral flow in the headwaters. • Flows through agricultural land (grazing). • Potential pollutant pressures: septic tank discharges and intermittent agricultural runoff. Existing A96 passes through headwaters. • Potential source for PWS.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
	Overall hydrological and flood risk sensitivity: **Low**	Overall fluvial geomorphology sensitivity: **Low**	Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.
Keithny Burn/Forgue Burn SEPA WFD ID: 23170 Overall WFD Status: Bad. Flows northwards towards River Deveron. Referred to as Burn of Drumblade on OS mapping. Catchment area: <0.5km^2 where the watercourse is crossed by the Cyan route option.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• WFD Morphology status: Bad. • Low gradient, straight headwater channel, draining from a small area of felled plantation. Gradient increases downstream of the existing A96. • High impact realignment pressure mapped within study extent (source: SEPA MPD); channel may have been realigned to accommodate the existing A96. Overall fluvial geomorphology sensitivity: **Low**	• WFD Physico-chemical status: Good. • WFD Biological status: Good. • Land use in catchment headwaters consists of agricultural land (grazing) and pockets of scrub/coniferous plantation. • Potential pollutant pressures: septic tank discharges and intermittent runoff from agricultural land. Existing A96 crosses the watercourse close to its source. Overall water quality sensitivity: **High** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity in the catchment headwaters.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
River Urie - source to Old Rayne. SEPA WFD ID: 23369 Overall WFD Status: Good. River Urie originates to west of the existing A96, flowing eastwards through Glens of Foudland before turning south towards Colpy and Old Rayne. Water body catchment area: 96km^2 Catchment area: 4.3km^2 to proposed crossing by Red route option, 12km^2 to proposed crossing by Cyan route option. The majority of the Cyan and Red route options fall within the catchment of this water body.	• It is unlikely that there are any built receptors at existing flood risk within the study extents for the Cyan and Red route options. Flood extents confined to relatively narrow valley (source: SEPA flood map). • The floodplain is likely to provide some flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Medium**	• WFD Morphology status: Good. • Small, moderate gradient watercourse within the study extent, with some sinuosity. Flows within a low relief local floodplain. • High and low impact realignment pressures mapped within the study extent (source: SEPA MPD). Mapping evidence of some channel migration. • Good degree of morphological and hydraulic diversity, with active processes and good evidence of natural recovery from past modifications. Overall fluvial geomorphology sensitivity: **High**	• WFD Physico-chemical status: Good. • WFD Biological status: Good. • Catchment land use predominately agricultural (grazing, arable), with moorland across Hill of Foudland and pockets of broadleaved woodland and coniferous plantation. • Potential pollutant pressures: septic tank discharges and intermittent agricultural runoff. Existing A96 runs parallel to the watercourse of much of this water body. • Potential source for PWS. Overall water quality sensitivity: **High** Estimated to have a very high pollutant/sediment dilution and dispersal capacity.
Glen Water Not WFD monitored. Tributary of River Urie (source to Old Rayne water body), flows south.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment).	• Artificial drainage channels within Rack Moss in headwaters. • Small channel within a narrow valley, opening out towards the confluence with the River Urie.	• May be ephemeral in upper reaches. • Land use mostly agricultural (grazing, arable), with scrub in upper catchment (Rack Moss).

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Catchment area: 1.3km² to the confluence with the River Urie. Red route option crosses the watercourse at several locations.	• The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Channel likely to have been historically modified (straightened). Overall fluvial geomorphology sensitivity: **Low**	• Potential pollutant pressures: intermittent runoff from agricultural land. • Potential source for PWS. Overall water quality sensitivity: **Medium** Estimated to have a moderate/high pollutant/sediment dilution and dispersal capacity.
Tributary of River Urie 2 Not WFD monitored. Tributary of River Urie (source to Old Rayne water body), flows south. Catchment area: 1km² to confluence with River Urie. Cyan route option crosses drainage channels in catchment headwaters	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Small, moderate gradient channel within a small v-shaped valley in the lower catchment. Some channel sinuosity. Overall fluvial geomorphology sensitivity: **Medium**	• Small headwater channel. Drainage channels in upper catchment may experience ephemeral flow. • Agricultural land use (grazing). • Potential pollutant pressures: intermittent agricultural runoff. Existing A96 located within the catchment. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Burn of Stodfold Not WFD monitored. Tributary of the River Urie (source to Old Rayne water body), flows north. Catchment area: 2.5km² to confluence with River Urie. Red route option crosses the watercourse close to the confluence.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Small, moderate gradient watercourse flowing within a relatively steep-sided valley. • Channel may have been historically modified (straightened) downstream of the proposed crossing by the Red route option. Overall fluvial geomorphology sensitivity: **Medium**	• Land use consists of moorland in upper catchment, with a mix of grazing, arable, broadleaved woodland and coniferous plantation across remainder of catchment. • Potential pollutant pressures: intermittent agricultural runoff. Overall water quality sensitivity: **Medium** Estimated to have a moderate/high pollutant/sediment dilution and dispersal capacity.
Burn of Lipsden Not WFD monitored. Tributary of the River Urie (source to Old Rayne water body), flows south. Catchment area: 0.9km² to confluence with River Urie. Cyan route option crosses the watercourse in the lower catchment.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Very small, moderate gradient channel. • Channel is relatively straight and may have been historically modified. • Existing A96 crosses watercourse in lower catchment. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (grazing, arable). • Potential pollutant pressures: intermittent runoff from agricultural land. Existing A96 crosses watercourse in lower catchment. Overall water quality sensitivity: **Medium** Estimated to have a moderate/high pollutant / sediment dilution and dispersal capacity.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Tributary of River Urie 3 Not WFD monitored. Tributary of River Urie (source to Old Rayne water body), flows north. Catchment area: <0.5km² to confluence with River Urie. Red route option crosses the watercourse near an existing minor road (U70S).	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Very small, moderate gradient watercourse. • Channel is likely to have been historically modified (straightened, deepened). Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (grazing, arable), with moorland and coniferous plantation on upper slopes. • Potential pollutant pressures: intermittent agricultural runoff. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant / sediment dilution and dispersal capacity.
Tributary of River Urie 4 Not WFD monitored. Tributary of River Urie (source to Old Rayne water body), flows north. Catchment area: <0.5km² to confluence with River Urie. Red route option crosses the watercourse near an existing minor road (U70S).	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Very small, moderate gradient watercourse. • Channel is likely to have been historically modified (straightened, deepened). Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (grazing, arable), with moorland on upper slopes. • Potential pollutant pressures: intermittent agricultural runoff. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Tributary of River Urie 5 Not WFD monitored. Tributary of River Urie (source to Old Rayne water body), flows north. Catchment area: <0.5km² to confluence with River Urie. Red route option crosses the watercourse near an existing minor road (U70S).	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Very short, straight channel. Appears to be a culverted drainage ditch downstream of the minor road. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (grazing, arable). • Potential pollutant pressures: intermittent agricultural runoff. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.
Tributary of River Urie 6 Not WFD monitored. Tributary of River Urie (source to Old Rayne water body), flows north. Catchment area: <0.5km² to confluence with River Urie. Red route option crosses the watercourse near an existing minor road (U70S).	• There may be several built receptors at existing fluvial flood risk upstream of the Red route option (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **High**	• Very small, moderate gradient watercourse. • Channel is likely to have been historically modified (straightened, deepened). Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (grazing, arable), with small pocket of mixed woodland. • Potential pollutant pressures: intermittent agricultural runoff. • Potential source for PWS. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Tributary of River Urie 7 Not WFD monitored. Tributary of River Urie (source to Old Rayne water body), flows south. Catchment area: 0.9km² to confluence with River Urie. Cyan route option crosses the watercourse south of the existing A96 crossing.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Very small, moderate gradient channel. • Channel is relatively straight and may have been historically modified. • Existing A96 crosses watercourse in lower catchment. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (grazing, arable). • Potential pollutant pressures: intermittent runoff from agricultural land. Existing A96 crosses watercourse in lower catchment. Overall water quality sensitivity: **Medium** Estimated to have a moderate/high pollutant/sediment dilution and dispersal capacity.
Tributary of River Urie 8 Not WFD monitored. Tributary of River Urie (source to Old Rayne water body), flows north. Catchment area: <0.5km² to confluence with River Urie. Red route option crosses the watercourse near an existing minor road (U70S). Cyan route option crosses the watercourse just upstream of the confluence.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent, although the minor road could be at flood risk (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Medium**	• Very small, moderate gradient watercourse. • Channel is likely to have been historically modified (straightened, deepened). Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (grazing, arable). • Potential pollutant pressures: intermittent runoff from agricultural land. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Tributary of River Urie 9 Not WFD monitored. Tributary of River Urie (source to Old Rayne water body), flows north. Catchment area: <0.5km² to confluence with River Urie. Red route option crosses the watercourse near an existing minor road (U70S). Cyan route option crosses the watercourse just upstream of the existing A96 crossing.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Very small, moderate gradient watercourse. • Channel is likely to have been historically modified (straightened, deepened), and appears to be culverted from downstream of the proposed crossing by the Cyan route option. • Existing A96 crosses watercourse in lower catchment. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (grazing). • Potential pollutant pressures: intermittent agricultural runoff. Existing A96 crosses watercourse in lower catchment. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.
Tributary of River Urie 10 Not WFD monitored. Tributary of River Urie (source to Old Rayne water body). Several channels flow northwards and join just prior to crossing the existing A96. Catchment area: <0.5km² to confluence with River Urie. Red route option crosses several of the channels in proximity to an existing minor road (U70S). Cyan route option crosses the watercourse just upstream of the existing A96.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Very small, moderate gradient channels. • Channel is likely to have been historically modified (straightened, deepened). • Existing A96 crosses watercourse in lower catchment. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (grazing). • Potential pollutant pressures: intermittent runoff from agricultural land. Existing A96 crosses watercourse in lower catchment. • Potential source for PWS. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Tributary of River Urie 11 Not WFD monitored. Tributary of River Urie (source to Old Rayne water body), flows north. Catchment area: <0.5km² to confluence with River Urie. Cyan route option passes to the south of the existing A96.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Very short length of straight drainage ditch originating to south of the existing A96 before passing under the road. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (grazing). • Very small drainage channel which could experience ephemeral flow. • Potential pollutant pressures: intermittent runoff from agricultural land. Existing A96 located within the catchment. Overall water quality sensitivity: **Low** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.
Tributary of River Urie 12 Not WFD monitored. Tributary of River Urie (source to Old Rayne water body), flows north. Catchment area: <0.5km² to confluence with River Urie. Cyan route option crosses watercourse to the north of the existing A96.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Very short, moderate gradient straight channel. • Existing A96 crosses watercourse in lower catchment. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (grazing). • Potential pollutant pressures: intermittent runoff from agricultural land. Existing A96 crosses watercourse in lower catchment. • Potential source for PWS. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Drain 1 Not WFD monitored. Drainage channel located on the edge of the floodplain of the River Urie (source to Old Rayne water body). Catchment area: <0.5km² to confluence with River Urie. Earthworks associated with Cyan route option side road could affect this drain.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (source: SEPA fluvial flood map – River Urie). • The floodplain (River Urie) is likely to provide some flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Medium**	• Short length of straight drainage ditch that receives runoff from hillslopes and discharges to the River Urie. Overall fluvial geomorphology sensitivity: **Low**	• Short length of drainage ditch which may experience ephemeral flow. • Agricultural land use (grazing) upslope and uncultivated land in floodplain of River Urie. • Potential pollutant pressures: intermittent runoff from agricultural land. Existing A96 located upslope of the drain. Overall water quality sensitivity: **Low** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.
Tributary of River Urie 13 Not WFD monitored. Tributary of River Urie (source to Old Rayne water body), flows east. Catchment area: <0.5km² to confluence with River Urie. Cyan route option crosses this watercourse adjacent to the existing A96.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Straight drainage channel located on the steep valley side of the River Urie. • Channel appears to have been culverted. Overall fluvial geomorphology sensitivity: **Low**	• Short length of culverted channel which may experience ephemeral flow. • Agricultural land use (grazing). • Potential pollutant pressures: intermittent runoff from agricultural land. Existing A96 located upslope of the channel. Overall water quality sensitivity: **Low** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Tributary of River Urie 14 Not WFD monitored. Tributary of River Urie (source to Old Rayne water body), flows south-east. Catchment area: <0.5km² to the existing A96. Cyan route option crosses watercourse at the same location as the existing A96.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Very small channel which appears to be culverted from just upstream of the existing A96 to the confluence with the River Urie. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (grazing), with coniferous plantation in upper catchment. • Potential pollutant pressures: intermittent runoff from agricultural land. Existing A96 crosses the watercourse where it appears to be culverted. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.
Jordan Burn Not WFD monitored. Tributary of River Urie (source to Old Rayne water body), flows south-east. Catchment area: 2.8km² at Colpy. Cyan route option crosses the watercourse just upstream of Colpy. Red route option runs parallel and north of the watercourse initially before following the valley and crossing the watercourse in the mid-catchment.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent. A minor road (C68S) and high grade agricultural land could be at flood risk (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Medium**	• Small, moderate gradient watercourse. The channel flows within a more confined valley at Jericho which widens towards Colpy. • Channel is likely to have been modified historically (straightened), although there are some signs of natural recovery and localised sinuosity to the planform. Overall fluvial geomorphology sensitivity: **Medium**	• Agricultural land use (grazing) with broadleaved woodland and coniferous plantation in upper catchment. • Potential pollutant pressures: septic tank discharges and intermittent runoff from agricultural land. • Potential source for PWS. Overall water quality sensitivity: **Medium** Estimated to have a moderate/high pollutant/sediment dilution and dispersal capacity.

Table 1.2 Baseline Sensitivity – Colpy to Pitcaple

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
River Urie - source to Old Rayne SEPA WFD ID: 23369 Overall WFD Status: Good. River Urie originates to west of the existing A96, flowing eastwards through Glens of Foudland before turning south towards Colpy and Old Rayne. Water body catchment area: 96km^2 Catchment area: 34km^2 to the proposed crossing by the Pink route option.	• Floodplain generally widens downstream of Colpy. • There are no built receptors at existing fluvial flood risk within the study extents, although there are several buildings just outside of the existing flood extents (source: SEPA flood map). These buildings have been included as potential flood risk receptors as a conservative approach. • The floodplain is likely to provide some flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **High**	• WFD Morphology status: Good • Moderate gradient watercourse which is relatively straight and incised at the proposed crossing by the Pink route option. • High impact realignment pressure mapped within study extent (source: SEPA MPD), and limited signs of natural recovery within this reach. Overall fluvial geomorphology sensitivity: **High**	• WFD Physico-chemical status: Good • WFD Biological status: Good • Catchment land use predominately agricultural (grazing, arable), with moorland across Hill of Foudland and pockets of broadleaved woodland and coniferous plantation. • Potential pollutant pressures: intermittent agricultural runoff. Existing A96 runs parallel to the watercourse of much of this water body. • Potential source for PWS. Overall water quality sensitivity: **High** Estimated to have a very high pollutant/sediment dilution and dispersal capacity.
Loch Insch Fishery Comprises of several lochs used for recreational angling. Site is located adjacent to The Kellock.	• Partially located within SEPA's fluvial flood extent (medium likelihood).	• Not applicable.	• Supports recreational angling.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
	Overall hydrological and flood risk sensitivity: Medium		• Adjacent to The Kellock which is classified as being at Good Status for WFD physico-chemical and biological attributes. Overall water quality sensitivity: **High**
The Kellock SEPA WFD ID: 23292 Overall WFD Status: Moderate. Flows south-eastwards to the confluence with the River Urie (source to Old Rayne water body). Water body catchment area: 18km². Catchment area: 17km² to the proposed crossing by the Brown route option.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (source: SEPA fluvial flood map). • The floodplain is likely to provide some flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Medium**	• WFD Morphology status: Moderate. • Moderate gradient, straightened channel flowing within gently sloping topography. • High impact realignment pressure mapped within study extent (source: SEPA MPD). Morphological diversity is limited, with little evidence of active channel migration or bank erosion at the crossing point. • Existing A96 crosses the watercourse close to the confluence with the River Urie. Overall fluvial geomorphology sensitivity: **Medium**	• WFD Physico-chemical status: Good • WFD Biological status: Good • Dominant land use within study extent is agricultural (mostly arable). • Potential pollutant pressures: intermittent agricultural runoff. Existing A96 crosses the watercourse close to the confluence with the River Urie. • Potential source for PWS. Overall water quality sensitivity: **High** Estimated to have a very high pollutant/sediment dilution and dispersal capacity.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Tributary of The Kellock 1 Not WFD monitored. Tributary of The Kellock, flows east. Catchment area: 1.3km² to the confluence.	• There may be a built receptor at existing fluvial flood risk (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide some flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **High**	• Small, low gradient channel which is likely to have been historically modified (straightened, deepened). Overall fluvial geomorphology sensitivity: **Low**	• Dominant land use within study extent is agricultural (mostly arable). • Potential pollutant pressures: intermittent agricultural runoff. Overall water quality sensitivity: **Medium** Estimated to have a moderate / high pollutant / sediment dilution and dispersal capacity.
Tributary of River Urie 15 Not WFD monitored. Tributary of River Urie (source to Old Rayne water body), flows south. Catchment area: 0.5km² where the watercourse is crossed by the Pink route option.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Pink route option crosses in the headwaters of this tributary where the channel is very small and may have been modified historically (straightening). Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use in upper catchment (grazing, arable). • Potential pollutant pressures: intermittent agricultural runoff. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Shevock Burn SEPA WFD ID: 23291 Overall WFD Status: Good. Flows eastwards to the confluence with the River Urie (source to Old Rayne water body). Water body catchment area: 40km². Brown route option crosses the watercourse just upstream of existing A96 and the confluence with the River Urie.	• There are no built receptors at existing fluvial flood risk within the study extents, although there are several buildings just outside of the existing flood extents (source: SEPA flood map). These buildings have been included as potential flood risk receptors as a conservative approach. • The floodplain is likely to provide some flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **High**	• WFD Morphology status: Good • Moderate gradient, straightened channel with a narrow floodplain and surrounded by relatively steeply sloping hillslopes. • High impact realignment pressure mapped within study extent (source: SEPA MPD), and limited signs of natural recovery or morphological diversity within this reach. • Little evidence of active channel migration or bank erosion at the crossing point. • Mapping evidence of channel migration downstream of the existing A96, which crosses the watercourse close to the confluence with the River Urie. Overall fluvial geomorphology sensitivity: **High**	• WFD Physico-chemical status: Good • WFD Biological status: Good • Agricultural land use (grazing, arable). • Potential pollutant pressures: septic tank discharges and intermittent agricultural runoff. Existing A96 crosses the watercourse close to the confluence with the River Urie. Overall water quality sensitivity: **High** Estimated to have a very high pollutant/sediment dilution and dispersal capacity.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Bonnyton Burn SEPA WFD ID: 23289 Overall WFD Status: Moderate. Flows south-west within a relatively confined valley towards the confluence with the River Urie at Old Rayne. Water body catchment area: 19km². Catchment area: 18km² to the proposed crossing by the Pink route option.	• There are no built receptors at existing fluvial flood risk within the study extents, although there are several buildings just outside of the existing flood extents (source: SEPA flood map). These buildings have been included as potential flood risk receptors as a conservative approach. • There are several properties at existing fluvial flood risk downstream in Old Rayne (source: SEPA flood map). • The floodplain is likely to provide significant flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **High**	• WFD Morphology status: Moderate • Moderate gradient channel with a relatively narrow floodplain, flowing within a steep valley. • High impact realignment pressure mapped within study extent (source: SEPA MPD). • Channel is likely to have been historically modified (straightened, deepened) with limited evidence of natural recovery and little evidence of active channel migration or bank erosion at the crossing point. Overall fluvial geomorphology sensitivity: **Medium**	• WFD Physico-chemical status: not provided within online dataset. • WFD Biological status: High. • Coniferous plantation located on valley sides in proximity to the Pink route option, with arable land beyond. • Potential pollutant pressures: intermittent agricultural runoff. Overall water quality sensitivity: **Very High** Estimated to have a very high pollutant/sediment dilution and dispersal capacity.
Tributary of Bonnyton Burn 1 Not WFD monitored. Tributary of Bonnyton Burn, flows east. Catchment area: <0.5km² to confluence.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance.	• Very small, short straightened channel flowing within gently sloping topography. • Channel appears to be culverted downstream of the proposed crossing by the Pink route option and it is assumed that it discharges to Bonnyton Burn.	• Agricultural land use (arable). • Potential pollutant pressures: intermittent agricultural runoff. Overall water quality sensitivity: **Medium**

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Pink route option crosses the watercourse.	• Overall hydrological and flood risk sensitivity: **Low**	• Overall fluvial geomorphology sensitivity: **Low**	• Estimated to have a low/very low pollutant/sediment dilution and dispersal capacity.
River Urie - Old Rayne to Pitcaple SEPA WFD ID: 23288 Overall WFD Status: Good. The River Urie (Old Rayne to Pitcaple water body) flows in a south-easterly direction. Water body catchment area: 196km^2. Catchment area: 123km^2 to the proposed crossing by the Brown route option.	• Floodplain is generally wide, with localised areas where the valley narrows. • It is unlikely that there are any built receptors at existing fluvial flood risk within the study extents (source: SEPA fluvial flood map). • The floodplain is likely to provide some flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Medium**	• WFD Morphology status: Good. • Moderate gradient channel, confined within a steep-sided valley at the proposed crossing by the Brown route option. • Relatively straight and incised; low impact realignment pressure mapped (source: SEPA MPD). • Little evidence of active channel migration or bank erosion at the crossing point. Overall fluvial geomorphology sensitivity: **High**	• WFD Physico-chemical status: Good. • WFD Biological status: Good. • Catchment land use predominantly agricultural (grazing, arable), with established riparian woodland in proximity to crossing. • Potential pollutant pressures: intermittent agricultural runoff. No discharge consents within the study extent, however septic tank and Old Rayne Sewage Treatment Works discharges located further upstream. Existing A96 runs parallel to the watercourse corridor for part of the water body. • Potential source for PWS. Overall water quality sensitivity: **High** Estimated to have a very high pollutant/sediment dilution and dispersal capacity.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Tributary of River Urie 16 Not WFD monitored. Tributary of River Urie (Old Rayne to Pitcaple water body), flow east. Catchment area: 1.2km² to the confluence with the River Urie. Brown route option crosses the watercourse just upstream of the existing A96.	• It is unlikely that there are any built receptors at existing fluvial flood risk, although high grade agricultural land may be at risk within the study extents (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Medium**	• Small, moderate gradient channel flowing within gently sloping topography. • Channel is likely to have been historically modified (straightened). • Existing A96 crosses the watercourse just upstream of confluence with River Urie. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (arable). • Potential pollutant pressures: septic tank discharges and intermittent runoff from agricultural land. Existing A96 crosses the watercourse just upstream of confluence with River Urie. Overall water quality sensitivity: **Medium** Estimated to have a moderate/high pollutant/sediment dilution and dispersal capacity.
Tributary of River Urie 17 Not WFD monitored. Tributary of River Urie (Old Rayne to Pitcaple water body), flows north-east. Catchment area: 0.7km² to the confluence with the River Urie. Brown route option crosses the watercourse just upstream of the existing A96.	• It is unlikely that there are any built receptors at existing fluvial flood risk, although high grade agricultural land may be at risk within the study extents (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Medium**	• Small, moderate gradient channel flowing within gently sloping topography. • Channel is likely to have been historically modified (straightened). • Existing A96 crosses watercourse just upstream of confluence with River Urie. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (arable). • Potential pollutant pressures: septic tank discharges and intermittent runoff from agricultural land. Existing A96 crosses watercourse just upstream of confluence with River Urie. Overall water quality sensitivity: **Medium** Estimated to have a moderate/high pollutant/sediment dilution and dispersal capacity.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Tributary of River Urie 18 Not WFD monitored. Tributary of River Urie (Old Rayne to Pitcaple water body), flows north-east. Catchment area: <0.5km² to the confluence with the River Urie. Brown route option crosses the watercourse just upstream of the existing A96.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Very small channel flowing within gently sloping topography. • Channel is likely to have been historically modified (straightened) and may be culverted downstream of the existing A96. • Existing A96 crosses watercourse just upstream of confluence with River Urie. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (arable). • Potential pollutant pressures: intermittent runoff from agricultural land. Existing A96 crosses watercourse just upstream of confluence with River Urie. • Potential source for PWS. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.
Tributary of River Urie 19 Not WFD monitored. Tributary of River Urie (Old Rayne to Pitcaple water body), flows south. Catchment area: <0.5km² at the proposed crossings by the Pink route option.	• It is unlikely that there are any built receptors at existing fluvial flood risk, although high grade agricultural land may be at risk within the study extents (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Medium**	• Very small, moderate gradient channels where the Pink route option crosses. • Channel is likely to have been historically modified (straightened). Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (grazing, arable). • Potential pollutant pressures: intermittent runoff. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Tributary of River Urie 20 Not WFD monitored. Tributary of River Urie (Old Rayne to Pitcaple water body), flows south-east to the confluence at Whiteford. Catchment area: <0.5km² at the proposed crossings by the Pink route option. 0.5 – 0.8km² at the proposed crossings by the Brown route option.	• There may be built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **High**	• Pink route option crosses a drainage ditch at the catchment divide and a small, straightened tributary channel. • Brown route option crosses two small tributary channels, both of which are likely to have been historically straightened. One of the channels appears to be culverted for a short length upstream of the Brown route option crossing. Overall fluvial geomorphology sensitivity: **Low**	• Land use predominantly agricultural (grazing, arable) with small areas of coniferous plantation. • Potential pollutant pressures: septic tank discharges and intermittent runoff from agricultural land. • Potential source for PWS. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.
Burn of Durno SEPA WFD ID: 23287 Overall WFD Status: Moderate. Flows southwards to the confluence with the River Urie. Water body catchment area: 20km². Catchment area: 19km² at the proposed crossing by the Pink and Brown route options (similar crossing location for both route options).	• It is unlikely that there are any built receptors, although high grade agricultural land may be at risk within the study extent (source: SEPA fluvial flood map). • The floodplain is likely to provide some flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Medium**	• WFD Morphology status: Moderate • Moderate gradient channel bounded by gently sloping land. • Historically straightened and becomes more incised further downstream; high impact realignment pressure mapped within study extent (source: SEPA MPD).	• WFD Physico-chemical status: Good. • WFD Biological status: Good. • Arable land adjacent to watercourse, with grazing and coniferous plantation elsewhere in the catchment. • Potential pollutant pressures: intermittent agricultural runoff and septic tank discharges. • Potential source for PWS.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
		• Limited signs of recovery or active channel migration, other than at short reach just downstream of proposed crossings where morphological diversity is increased. Overall fluvial geomorphology sensitivity: **Medium**	Overall water quality sensitivity: **High** Estimated to have a very high pollutant/sediment dilution and dispersal capacity.

Table 1.3 Baseline Sensitivity – Pitcaple to Kintore

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
River Urie - Pitcaple to Lochter Burn. SEPA WFD ID: 23283 Overall WFD Status: Good. Flows south-eastwards from Pitcaple to the north of Inverurie. Water body catchment area: 232km^2. Catchment area: 218km^2 to the proposed crossing by the Orange route option.	• Broad floodplain (for example >350m wide at the proposed crossing by the Orange route option). • Several properties at Pitcaple and Whiteford, and high grade agricultural land, are predicted to be at existing fluvial flood risk within the study extents (source: SEPA flood map). There are multiple receptors at existing flood risk downstream at Inverurie. • The floodplain is likely to provide significant flood alleviation benefits e.g. through storage or conveyance.	• WFD Morphology status: Good • Moderate gradient watercourse with some sinuosity as it flows within a broad valley bottom • High and low impact realignment pressures mapped within study extent (source: SEPA MPD). • There are signs of recovery at the meander bend, including mid-channel bars and minor bank erosion, and minor channel migration shown in the mapped record. Elsewhere within the study extent morphological diversity is limited.	• WFD Physico-chemical status: Good • WFD Biological status: Good • Catchment land use predominately agricultural (grazing, arable), including on the floodplain. • Potential pollutant pressures: septic tank discharges and intermittent agricultural runoff. Existing A96 and the Inverness to Aberdeen railway run parallel to the watercourse corridor for part of the water body. • Potential source for PWS.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
	Overall hydrological and flood risk sensitivity: **High**	Overall fluvial geomorphology sensitivity: **High**	Overall water quality sensitivity: **High** Estimated to have a very high pollutant/sediment dilution and dispersal capacity.
Tributary of Burn of Durno 1 Not WFD monitored. Tributary of Burn of Durno, flows northwards from Pitscurry Moss. Catchment area: <0.5km^2 where the Orange route option interacts with the watercourse. Orange route option includes a junction in the catchment headwaters.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Low gradient straight and likely artificial channels bound the edges of Pitscurry Moss. • Downstream, the channel is likely to have been historically modified (straightened) and is of moderate gradient. Channel may be culverted downstream of Pitscurry Moss. Overall fluvial geomorphology sensitivity: **Low**	• Catchment land use is predominantly agricultural (grazing, arable). • Pitscurry Moss, located in the headwaters, is designated as a Local Nature Conservation Site (LNCS) for wet woodland. • Potential pollutant pressures: septic tank discharges and intermittent runoff from agricultural land. Overall water quality sensitivity: **High** in proximity to Pitscurry Moss LNCS and **Medium** for the remainder of the watercourse. Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Tributary of River Urie 21 Not WFD monitored. Tributary of River Urie (Pitcaple to Lochter Burn water body), flows south from Pitscurry Moss. Catchment area: 1.1km^2 to confluence with River Urie. Orange and Violet route options cross the watercourse at the same locations at Pitscurry Moss. Orange route option then closely follows the watercourse and crosses it several times.	• It is unlikely that there are any built receptors at existing fluvial flood risk, although high grade agricultural land may be at risk in the lower catchment (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Medium**	• Low gradient straight and likely artificial channels bound the edges of Pitscurry Moss. • Downstream, the channel is likely to have been historically modified (straightened, deepened) and is of moderate gradient. It enters a more confined valley downstream of the minor road (C76C) before taking an artificial route across the River Urie floodplain to the confluence. Overall fluvial geomorphology sensitivity: **Low**	• Catchment land use is predominantly agricultural (grazing, arable) with pockets of mixed woodland and scrub. • Pitscurry Moss, located in the headwaters, is designated as a LNCS for wet woodland. • Potential pollutant pressures: septic tank discharges and intermittent runoff from agricultural land. Overall water quality sensitivity: **High** in proximity to Pitscurry Moss LNCS and **Medium** for the remainder of the watercourse. Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.
Strathnaterick Burn Not WFD monitored. Tributary of River Urie (Pitcaple to Lochter Burn water body), flows east. Catchment area: 5.2km² to the proposed crossing by the Orange route option.	• It is unlikely that there are any built receptors at existing fluvial flood risk, although high grade agricultural land may be at risk within the study extent (source: SEPA fluvial flood map). • The floodplain is likely to provide some flood alleviation benefits e.g. through storage or conveyance.	• Small, moderate gradient watercourse. • Channel is likely to have been historically modified (straightened and deepened). • Existing A96 crosses watercourse between the Orange route option and the confluence with the River Urie. Straightened watercourse.	• Agricultural land use (grazing, arable), with coniferous plantation in upper catchment. • Potential pollutant pressures: septic tank discharges and intermittent runoff from agricultural land. Existing A96 crosses watercourse. • Potential source for PWS.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
	Overall hydrological and flood risk sensitivity: **Medium**	Overall fluvial geomorphology sensitivity: **Low**	Overall water quality sensitivity: **Medium** Estimated to have a very high pollutant/sediment dilution and dispersal capacity.
Tributary of River Urie 22 Not WFD monitored. Tributary of River Urie (Pitcaple to Lochter Burn water body), flows east. Catchment area: 0.6km² to the confluence with the River Urie. Orange route option passes through upper catchment.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Small, moderate gradient watercourse. • Channel is likely to have been historically modified (straightened) and may be culverted downstream of the existing A96. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (grazing, arable). • Potential pollutant pressures: septic tank discharges and intermittent runoff from agricultural land. Existing A96 crosses watercourse. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.
Ides Burn Not WFD monitored. Tributary of the Lochter Burn, flows south-east alongside the B9001. Catchment area: 6.7km² to the confluence. Violet route option crosses the watercourse in the upper catchment	• Floodplain is generally limited to a narrow extent along the watercourse corridor, but an area of broad floodplain is located within an area of low-lying land within the mid-catchment.	• Small, moderate to low gradient watercourse. • Channel is likely to have been historically modified throughout study extent (straightened, deepened) and is located alongside the B9001 for much of the reach.	• Agricultural land use (grazing, arable). • Potential pollutant pressures: septic tank discharges and intermittent runoff from agricultural land. Daviot Sewage Treatment Works located further upstream. • Potential source for PWS.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
(3.6km^2) and runs parallel to the watercourse before crossing it again in the lower catchment.	• There may be built receptors at existing fluvial flood risk upstream of the Violet route option (where SEPA fluvial flood map not available due to size of catchment). • Where the SEPA flood map is available, it suggests high grade agricultural land and the B9001 may be at existing fluvial flood risk. • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **High** for Purple route option, **Low** for Orange route option.	Overall fluvial geomorphology sensitivity: **Low**	Overall water quality sensitivity: **Medium** Estimated to have a moderate/high pollutant/sediment dilution and dispersal capacity.
Lochter Burn / Kings Burn SEPA WFD ID: 23284 Overall WFD Status: Moderate. Flows south to the confluence with the River Urie to the north of Inverurie. Water body catchment area: 60km^2	• Several residential properties and commercial premises are predicted to be at existing fluvial flood risk within the study extent at Lethenty (source: SEPA flood map). • The floodplain is likely to provide significant flood alleviation benefits e.g. through storage or conveyance.	• WFD Morphology status: Moderate. • Moderate gradient watercourse with relatively steeply sloping valley sides at the crossing location. • High impact realignment pressure and short lengths of embankment mapped within study extent (source: SEPA MPD).	• WFD Physico-chemical status: Good • WFD Biological status: Good • Agricultural land use (grazing, arable), with the settlements of Daviot and Oldmeldrum located in the upper catchment. • Potential pollutant pressures: septic tank discharges and intermittent agricultural runoff.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Catchment area: 57km^2 to the proposed crossing by the Violet route option.	Overall hydrological and flood risk sensitivity: **High**	• Channel is likely to have been historically straightened and deepened with limited morphological diversity, signs of recovery or channel migration. Overall fluvial geomorphology sensitivity: **Medium**	Overall water quality sensitivity: **High** Estimated to have a very high pollutant/sediment dilution and dispersal capacity.
Tributary of Lochter Burn 1 Not WFD monitored. Tributary of the Lochter Burn, flows west towards Tullochmor before turning south towards the confluence. Catchment area: 1.4km² to the confluence. Violet route option passes in close proximity to the watercourse in the headwaters and crosses it several times in proximity to Tullochmor.	• There may be commercial properties and high grade agricultural land at existing fluvial flood risk (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Medium**	• Small, low to moderate gradient channel. • Channel is likely to have been historically modified (straightened throughout study extent). • Crossed by B9170 at Tullochmor. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use (grazing, arable). • Potential pollutant pressures: intermittent runoff from agricultural land. Overall water quality sensitivity: **Medium** Estimated to have a moderate/high pollutant/sediment dilution and dispersal capacity.
Tributary of River Urie 23 Not WFD monitored. Tributary of River Urie (Lochter Burn to Don water body), flows south-west.	• It is unlikely that there are any built receptors at existing fluvial flood risk within study extent, although high grade agricultural land may be at risk (SEPA fluvial flood map not available due to size of catchment).	• Very small, straightened channels within the upper catchment. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use in upper catchment (arable), with residential development in lower catchment (out with study extent). • Potential pollutant pressures: intermittent runoff from agricultural land.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Catchment area: <0.5km² at the proposed crossings by the Violet route option.	• The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Medium**		Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.
Tributary of River Urie 24 Not WFD monitored. Tributary of River Urie (Lochter Burn to Don water body), consists of a network of small channels. Catchment area: <0.5km² where the Violet route option passes through the upper catchment.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Very small, straightened channels within the upper catchment. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use in upper catchment (grazing, arable). • Potential pollutant pressures: intermittent runoff from agricultural land. • Potential source for PWS. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.
River Don - Alford to Inverurie SEPA WFD ID: 23293 Overall WFD Status: Moderate. Flows east towards Inverurie. Water body catchment area: 795km^2.	• Floodplain extent limited at the proposed crossing of the Orange route option due to confinement by the valley sides.	• WFD Morphology status: Good • Moderate gradient watercourse, confined within a steep-sided valley. • No pressures mapped in SEPA's MPD.	• WFD Physico-chemical status: High • WFD Biological status: Moderate • Catchment land use predominantly agricultural (grazing, arable) with pockets of moorland, coniferous plantation and broadleaved woodland.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Catchment area: 789km² to the proposed crossing by the Orange route option.	• Several properties are predicted to be at existing fluvial flood risk upstream at Burnhervie (source: SEPA flood map). Multiple properties predicted to be at existing fluvial flood risk downstream in Inverurie and Port Elphinstone. • The floodplain is likely to provide significant flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **High**	• Observations during site visit indicated natural morphological form and processes through this reach. Overall fluvial geomorphology sensitivity: **High**	• Potential pollutant pressures: intermittent agricultural runoff. • Potential source for PWS. Overall water quality sensitivity: **Very High** Estimated to have a very high pollutant/sediment dilution and dispersal capacity.
Tributary of River Don 1 Not WFD monitored. Tributary of the River Don (Alford to Inverurie water body), flows south. Catchment area: 3.7km² at the confluence with the River Don. Orange route option crosses the watercourse in the upper catchment (catchment area 1.0km²) and runs parallel to the watercourse to the River Don.	• It is unlikely that there are any built receptors at existing fluvial flood risk within study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide some flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Medium**	• Small channel draining relatively flat topography in upper catchment before flowing alongside the minor road. • Impounded by Polinar Dam approx. 500m upstream of the confluence with the River Don. • Downstream of Polinar Dam the channel gradient increases as it flows down to the River Don. • Channel is likely to have been historically modified (straightened, deepened and impounded by Polinar Dam).	• Agricultural land use (grazing, arable) with pockets of broadleaved woodland and coniferous plantation. • Potential pollutant pressures: intermittent runoff from agricultural land. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
		Overall fluvial geomorphology sensitivity: **Low**	
Woodend Burn Not WFD monitored. Tributary of the River Don (Alford to Inverurie water body), flows north. Catchment area: <0.5km^2 at the confluence with the River Don. Orange route option crosses the watercourse.	• There may be commercial receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Medium**	• Small, moderate gradient channel, becoming steeper as enters the River Don valley. • No obvious signs of historic modification from desk-based data sources. Overall fluvial geomorphology sensitivity: **Medium**	• Land use includes agriculture (grazing, arable) and mixed woodland. • Potential pollutant pressures: intermittent runoff from agricultural land. Overall water quality sensitivity: **Medium** Estimated to have a low/very low pollutant/sediment dilution and dispersal capacity.
River Don - Inverurie to Dyce SEPA WFD ID: 23269 Overall WFD Status: Good. Flows south between Port Elphinstone and Kintore. Water body catchment area: 1229km^2. Catchment area: 1109km^2 at the proposed crossing by the Violet route option.	• Extensive floodplain between Port Elphinstone and Kintore (>500m wide). • More than 100 residential properties or commercial premises are predicted to be at existing fluvial flood risk within the study extent at Kintore, Port Elphinstone and Inverurie (source: SEPA flood map). • The floodplain is likely to provide critical flood alleviation benefits e.g. through storage or conveyance.	• WFD Morphology status: Good. • Meandering, low gradient river flowing within a broad floodplain. • High impact realignment pressure and non-continuous embankments mapped within study extent (source: SEPA MPD). • Mapping evidence of minor changes to channel planform and depositional patterns over time.	• WFD Physico-chemical status: High • WFD Biological status: Good. • Agricultural land use within the floodplain (arable), and urban centres of Inverurie, Port Elphinstone and Kintore are located within the catchment.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
	Overall hydrological and flood risk sensitivity: **Very High**	• Walk over survey indicated limited active morphological processes, including bank erosion, within the study extent. Overall fluvial geomorphology sensitivity: **High**	• Potential pollutant pressures: septic tank/trade effluent discharges and intermittent agricultural runoff. Diffuse pollution from urban centres and landfill site (may now be closed). Existing A96 and the Inverness to Aberdeen railway are located to the west of the river corridor. • Potential source for PWS. • River Don Corridor LNCS (rich marginal vegetation) situated approx. 4km downstream. Overall water quality sensitivity: **Very High** Estimated to have a very high pollutant/sediment dilution and dispersal capacity.
Tributary of River Don 2 Not WFD monitored. Tributary of the River Don (Inverurie to Dyce water body), flows south-east. Catchment area: 0.5km² to the existing A96. Side road associated with the Orange route option crosses the	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance.	• Small, straight and incised channel located within gently sloping topography upstream of the existing A96. • Existing A96 crosses the watercourse. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land (arable) in upper catchment. • Potential pollutant pressures: intermittent agricultural runoff. Existing A96 crosses the watercourse. • Potential source for PWS and CAR licenced abstraction.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
watercourse just upstream of existing A96 and several drainage channels within this catchment.	Overall hydrological and flood risk sensitivity: **Low**		Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.
Tributary of River Don 3 Not WFD monitored. Tributary of the River Don (Inverurie to Dyce water body), flows east. Catchment area: 1.0km² to the existing A96. Side road associated with the Orange route option crosses the watercourse just upstream of the existing A96.	• There may be built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **High**	• Small, moderate gradient watercourse. • Channel is likely to have been historically modified (straightened, deepened). • Crossed by the existing A96 and the Inverness to Aberdeen railway. Overall fluvial geomorphology sensitivity: **Low**	• Land use upstream of existing A96 includes agricultural land, mixed woodland and commercial development • Potential pollutant pressures: septic tank discharges and intermittent agricultural runoff. Watercourse crossed by the existing A96 and the Inverness to Aberdeen railway. • Potential source for PWS. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.
Densy Burn Not WFD monitored. Tributary of the River Don (Inverurie to Dyce water body), flows south-	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment).	• Small, moderate gradient watercourse.	• Agricultural land use (grazing, arable). • Potential pollutant pressures: intermittent agricultural runoff

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
west to the edge of the River Don floodplain. Catchment area: 1.4km² to the edge of the River Don floodplain. Violet route option crosses the watercourse in the headwaters and runs parallel to the channel to the River Don crossing.	• The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Low**	• Channel is likely to have been historically modified (straightened) throughout the study extent. Channel has been diverted to flow parallel to the River Don once it reaches the floodplain. Overall fluvial geomorphology sensitivity: **Low**	Overall water quality sensitivity: **Medium** Estimated to have a low/very low pollutant/sediment dilution and dispersal capacity.
Bridgealehouse Burn Not WFD monitored. Tributary of the River Don (Inverurie to Dyce water body), flows east to the confluence at Kintore. Catchment area: 4.8km² where the existing A96 crosses the watercourse. Violet route option junction upgrade located within this catchment.	• Limited floodplain width associated with channel, except immediately upstream of the existing A96 where it broadens into low-lying land. • It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (source: SEPA fluvial flood map). • The floodplain is likely to provide some flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **Medium**	• Small, low gradient watercourse flowing through relatively flat topography. • Channel is likely to have been historically modified (straightened). • Existing A96 crosses the watercourse. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use upstream of existing A96 (grazing, arable). Urban land use downstream of the existing A96 (Kintore). • Potential pollutant pressures: septic tank discharges and intermittent agricultural runoff. Diffuse pollution from urban centre and landfill site (may now be closed). Existing A96 crosses the watercourse. • Potential source for PWS. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
Tributary of Tuach Burn 1 Not WFD monitored. Tributary of Tuach Burn, flows east. Catchment area: 0.5km² to the existing A96. Violet route option: changes to existing A96 likely limited to change in cover level.	• There may be built receptors at existing fluvial flood risk within study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **High**	• Very small, straight and over-deepened channel. • Channel appears to be culverted within the urban area of Kintore downstream of the existing A96. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use and coniferous woodland upstream of existing A96, urban land use downstream. • Potential pollutant pressures: septic tank discharges and intermittent agricultural runoff. Diffuse pollution from urban centre. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.
Rollomire Burn Not WFD monitored. Tributary of Tuach Burn, flows east. Catchment area: 0.5km² to the existing A96. Violet route option: changes to existing A96 likely limited to change in cover level.	• There may be built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. Overall hydrological and flood risk sensitivity: **High**	• Very small, straightened watercourse which may have been partially culverted upstream of the existing A96. • Downstream of the existing A96, the watercourse passes through low-lying open ground within Kintore prior to the confluence with Tuach Burn. Overall fluvial geomorphology sensitivity: **Low**	• Agricultural land use and coniferous woodland upstream of existing A96, urban land use downstream (Kintore). • Potential pollutant pressures: septic tank discharges and intermittent agricultural runoff. Diffuse pollution from urban centre. Existing A96 crosses the watercourse. • Potential source for PWS. Overall water quality sensitivity: **Medium**

Watercourse name	Flood risk and hydrology	Fluvial geomorphology	Water quality
			Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.
Tributary of Newmill Burn Not WFD monitored. Tributary of Newmill Burn, flows east. Catchment area: <0.5km^2 where the Violet route option passes through the upper catchment.	• It is unlikely that there are any built receptors at existing fluvial flood risk within the study extent (SEPA fluvial flood map not available due to size of catchment). • The floodplain is likely to provide limited flood alleviation benefits e.g. through storage or conveyance. • Overall hydrological and flood risk sensitivity: **Low**	• Very small, moderate gradient watercourse in study extent. • Channel is likely to have been historically modified (straightened). Overall fluvial geomorphology sensitivity: **Low**	• Watercourse flows within small area of deciduous woodland within study extent, with agricultural land beyond (grazing, arable). • Potential pollutant pressures: intermittent runoff from agricultural land. Overall water quality sensitivity: **Medium** Estimated to have a low/moderate pollutant/sediment dilution and dispersal capacity.

Appendix A20.3 Predicted Environmental Effects

Appendix A20.3 Predicted Environmental Effects

This appendix presents the supporting information for the predicted environmental effects summary tables in Volume 2, Part 3, Chapter 20, Road Drainage and the Water Environment. Predicted effects have initially been assessed in the absence of mitigation and the residual effects have then been evaluated assuming that mitigation measures are applied. The mitigation measures assumed are detailed in Chapter 20.

Only those watercourses for which significant effects are predicted for one or more sub-topics, in the absence of mitigation, are included in the following tables:

- Table 1.1 – Cyan route option;
- Table 1.2 – Red route option;
- Table 1.3 – Pink route option;
- Table 1.4 – Brown route option;
- Table 1.5 – Violet route option; and
- Table 1.6 – Orange route option.

Significant effects are those which are moderate or major and are highlighted in bold in the tables.

There are instances where a watercourse may be affected in more than one location by one of the route options. The impact magnitude and significance of effects were assessed at each location and the worst case is reported within this appendix.

Table 1.1: Cyan Route Option Predicted Effects

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[3]	Predicted significance of residual effects (and reasoning)
Burn of Bogside	Hydrology and Flood Risk	No significant effects predicted	Minor	Neutral	W1, W2	Neutral (Low sensitivity. Small increase in catchment area draining to headwaters via road outfalls, mitigated through SuDS attenuation, leading to Neutral residual magnitude).
	Fluvial Geomorphology	No significant effects predicted	Neutral	Neutral	W7	Neutral (Low sensitivity. No proposed infrastructure other than drainage outfalls which will be designed in accordance with SEPA best practice guidance[4]).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity; potential source for PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Tributary of River Urie 2	Hydrology and Flood Risk	No significant effects predicted	Minor	Neutral	W1, W2	Neutral (Low sensitivity. Implementation of SuDS attenuation, leading to Neutral residual magnitude).
	Fluvial Geomorphology	No significant effects predicted	Minor	Slight	W7	Neutral (Medium sensitivity. Drainage outfalls to be designed in accordance with SEPA best

[3] Mitigation options are outlined in sections 20.5.9 to 20.5.13 of Volume 2, Part 3, Chapter 20: Road Drainage and the Water Environment
[4] SEPA, *WAT-SG-28 Engineering in the Water Environment Good Practice Guide Intakes and Outfalls*, 2008

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[3]	Predicted significance of residual effects (and reasoning)
						practice guidance[5]. Sensitive design of channel modifications and consideration of functioning of downstream reaches where drainage channels removed, leading to Neutral residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Burn of Lipsden	Hydrology and Flood Risk	No significant effects predicted	Minor	Neutral	W1 - W5	Neutral (Low sensitivity. Appropriate sizing and design of new culvert will maintain conveyance of flows and reduce flood risk, leading to Neutral residual magnitude).
	Fluvial Geomorphology	No significant effects predicted	Moderate	Slight	W6, W7	Neutral (Low sensitivity. Culvert to be designed to minimise change to morphological processes, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).

[5] SEPA, *WAT-SG-28 Engineering in the Water Environment Good Practice Guide Intakes and Outfalls*, 2008

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[3]	Predicted significance of residual effects (and reasoning)
River Urie - source to Old Rayne (WFD)	Hydrology and Flood Risk	No significant effects predicted	Minor	Slight	W1 - W5	Neutral (Medium sensitivity; no built properties at fluvial flood risk within study extent. Appropriate sizing and design of new bridge and realignment, and provision of compensatory storage, leading to Neutral residual magnitude).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Moderate	**Large**	W6 - W8	Slight adverse (High sensitivity. Bridge to be designed to minimise change to morphological processes. Realignment (<200m) to be designed to replicate natural channel form and process as far as possible, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Large**	W1, W9	Slight adverse (High sensitivity; potential for PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Tributary of River Urie 7	Hydrology and Flood Risk	No significant effects predicted	Minor	Neutral	W1 - W5	Neutral (Low sensitivity. Appropriate sizing and design of new culvert will maintain conveyance of flow and reduce flood risk, leading to Neutral residual magnitude).
	Fluvial Geomorphology	No significant effects predicted	Moderate	Slight	W6, W7	Neutral (Low sensitivity. Culvert to be designed to minimise change to morphological processes, leading to Slight adverse residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[3]	Predicted significance of residual effects (and reasoning)
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Tributary of River Urie 9	Hydrology and Flood Risk	No significant effects predicted	Minor	Neutral	W1 - W5	Neutral (Low sensitivity. Appropriate sizing and design of extension of existing watercourse crossing and minor realignment, leading to Neutral residual magnitude).
	Fluvial Geomorphology	No significant effects predicted	Minor	Neutral	W6 - W8	Neutral (Low sensitivity. Extension to existing crossing and minor realignment to be designed to minimise change to morphological processes or provide improvement to existing conditions, leading to Neutral residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Tributary of River Urie 10	Hydrology and Flood Risk	No significant effects predicted	Minor	Neutral	W1 - W5	Neutral (Low sensitivity. Appropriate sizing and design of new culvert and minor realignment, leading to Neutral residual magnitude).
	Fluvial Geomorphology	No significant effects predicted	Moderate	Slight	W6 – W8	Neutral (Low sensitivity. Culvert and minor realignment to be designed to minimise change to morphological

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[3]	Predicted significance of residual effects (and reasoning)
						processes, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity; potential source for PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Jordan Burn	Hydrology and Flood Risk	No significant effects predicted	Minor	Slight	W1 - W5	Slight adverse (Medium sensitivity; no properties at fluvial flood risk within study extent, high grade agricultural land potentially at risk. Appropriate sizing and design of new culverts will maintain conveyance of flows and reduce flood risk, leading to Slight adverse residual magnitude).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Major	**Large**	W6, W7	Slight adverse (Medium sensitivity. Culverts to be designed to minimise change to morphological processes, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity; potential source for PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).

Table 1.2: Red Route Option Predicted Effects

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[6]	Predicted significance of residual effects (and reasoning)
Burn of Bogside	Hydrology and Flood Risk	No significant effects predicted	Minor	Neutral	W1, W2	Neutral (Low sensitivity. Small increase in catchment area draining to headwaters via road outfalls, mitigated through SuDS attenuation, leading to Neutral residual magnitude).
	Fluvial Geomorphology	No significant effects predicted	Neutral	Neutral	W7	Neutral (Low sensitivity. No proposed infrastructure other than drainage outfalls which will be designed in accordance with SEPA best practice guidance).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity; potential source for PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Glen Water	Hydrology and Flood Risk	No significant effects predicted	Minor	Neutral	W1 – W5	Neutral (Low sensitivity. Appropriate sizing and design of new culverts and minor realignment will maintain conveyance of flows and reduce flood risk, leading to Neutral residual magnitude).

[6] Mitigation options are outlined in sections 20.5.9 to 20.5.13 of Chapter 20: Road Drainage and the Water Environment

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[6]	Predicted significance of residual effects (and reasoning)
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Major	**Moderate**	W6 - W8	Neutral (Low sensitivity. Culverts and minor realignment to be designed to minimise change to morphological processes, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity; potential source for PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
River Urie - source to Old Rayne (WFD)	Hydrology and Flood Risk	No significant effects predicted	Minor	Slight	W1 - W5	Neutral (Medium sensitivity; no properties at fluvial flood risk within study extent. Appropriate sizing and design of new bridge and upgraded watercourse crossing, and provision of compensatory storage if necessary for upgrade of crossing, leading to Neutral residual magnitude).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Moderate	**Moderate**	W6, W7	Slight adverse (High sensitivity. Bridge and upgrade to existing watercourse crossing to be designed to minimise change to morphological processes (bridge abutments located outwith the floodplain), leading to Slight adverse residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[6]	Predicted significance of residual effects (and reasoning)
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Large**	W1, W9	Slight adverse (High sensitivity; potential source for PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Burn of Stodfold	Hydrology and Flood Risk	No significant effects predicted	Minor	Neutral	W1 - W5	Neutral (Low sensitivity. Appropriate sizing and design of new culvert will maintain conveyance of flows and reduce flood risk, leading to Neutral residual magnitude).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Moderate	**Moderate**	W6, W7	Slight adverse (Medium sensitivity. Culvert to be designed to minimise change to morphological processes, leading to Slight adverse residual magnitude).
	Water Quality	No significant effects predicted	Neutral	Neutral	W1, W9	Neutral (Medium sensitivity. Watercourse will not receive road drainage based on DMRB Stage 2 design).
Tributary of River Urie 6	Hydrology and Flood Risk	Alteration of flow pathways, reduction in floodplain storage or change in water levels due to new watercourse crossings or road embankments, leading to increase in flood risk to receptors.	Moderate	**Moderate**	W1 - W5	Neutral (High sensitivity; potential properties at fluvial flood risk within study extent. Appropriate sizing and design of new culvert will maintain conveyance of flows and reduce flood risk, leading to Neutral residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[6]	Predicted significance of residual effects (and reasoning)
	Fluvial Geomorphology	No significant effects predicted	Moderate	Slight	W6, W7	Neutral (Low sensitivity. Culvert to be designed to minimise change to morphological processes, leading to Slight adverse residual magnitude).
	Water Quality	No significant effects predicted	Neutral	Neutral	W1, W9	Neutral (Medium sensitivity; potential source for PWS. Watercourse will not receive road drainage based on the DMRB Stage 2 design).
Jordan Burn	Hydrology and Flood Risk	No significant effects predicted	Minor	Slight	W1 - W5	Slight adverse (Medium sensitivity; no properties at fluvial flood risk within study extent, high grade agricultural land potentially at risk. Appropriate sizing and design of new culverts and realignment will maintain conveyance of flows and reduce flood risk, leading to Slight adverse residual magnitude – residual risk to agricultural land).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Major	**Large**	W6 – W8	Slight adverse (Medium sensitivity. Culverts to be designed to minimise change to morphological processes. Realignment (>200m) to be designed to replicate natural channel form and process as far as possible and provide improvements where possible compared to existing modified state of this watercourse, leading to Slight adverse residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[6]	Predicted significance of residual effects (and reasoning)
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity; potential source for PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).

Table 1.3: Pink Route Option Predicted Effects

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[7]	Predicted significance of residual effects (and reasoning)
River Urie – source to Old Rayne (WFD)	Hydrology and Flood Risk	Alteration of flow pathways, reduction in floodplain storage or change in water levels due to new watercourse crossings or road embankments, leading to increase in flood risk to receptors.	Moderate	**Moderate**	W1 – W5	Neutral (High sensitivity; properties potentially at fluvial flood risk within study extent. Appropriate design of bridge to convey design flows and placement of abutments outwith the floodplain, leading to Neutral residual magnitude).

[7] Mitigation options are outlined in sections 20.5.9 to 20.5.13 of Chapter 20: Road Drainage and the Water Environment

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[7]	Predicted significance of residual effects (and reasoning)
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Major	**Large**	W6, W7	Slight adverse (High sensitivity. Limited evidence of active migration. Bridges to be designed to minimise change to morphological processes (bridge abutments located outwith the floodplain), leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Large**	W1, W9	Slight adverse (High sensitivity; potential source for PWS Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Loch Insch Fishery	Hydrology and Flood Risk	No significant effects predicted	Minor	Slight	W1 – W2	Neutral (Medium sensitivity; one commercial property potentially at fluvial flood risk within study extent. SuDS attenuation, leading to Neutral residual magnitude).
	Water Quality	No significant effects predicted	Negligible	Neutral	W1, W9	Neutral (High sensitivity. The adjacent watercourses will not receive road drainage based on DMRB Stage 2 design).
Tributary of River Urie 15	Hydrology and Flood Risk	No significant effects predicted	Minor	Neutral	W1 – W5	Neutral (Low sensitivity. Appropriate sizing and design of culvert and minor realignment will maintain conveyance of flows and reduce flood risk, leading to Neutral residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[7]	Predicted significance of residual effects (and reasoning)
	Fluvial Geomorphology	No significant effects predicted	Moderate	Slight	W6 - W8	Neutral (Low sensitivity. Culvert and minor realignment to be designed to minimise change to morphological processes, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Bonnyton Burn (WFD)	Hydrology and Flood Risk	Alteration of flow pathways, reduction in floodplain storage or change in water levels due to new watercourse crossings or road embankments, leading to increase in flood risk to receptors.	Major	**Large**	W1 - W5	Neutral (High sensitivity; properties potentially at fluvial flood risk within study extent. Appropriate design of bridge to convey design flows and placement of abutments outwith the floodplain, leading to Neutral residual magnitude).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Moderate	**Moderate**	W6, W7	Slight adverse (Medium sensitivity. Limited evidence of active processes or migration. Bridge to be designed to minimise change to morphological processes (bridge abutments located outwith the floodplain), leading to Slight adverse residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[7]	Predicted significance of residual effects (and reasoning)
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Large**	W1, W9	Slight adverse (Very high sensitivity WFD waterbody. SuDS to be designed to minimised change in water quality, leading to Slight adverse residual magnitude).
Tributary of River Urie 19	Hydrology and Flood Risk	No significant effects predicted	Minor	Slight	W1 - W5	Slight adverse (Medium sensitivity; no properties at fluvial flood risk within study extent, high grade agricultural land potentially at risk. Appropriate sizing and design of new culverts will maintain conveyance of flows and reduce flood risk, leading to Slight adverse residual magnitude – residual risk to agricultural land).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Major	**Moderate**	W6, W7	Neutral (Low sensitivity. Culverts to be designed to minimise change to morphological processes, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[7]	Predicted significance of residual effects (and reasoning)
Tributary of River Urie 20	Hydrology and Flood Risk	No significant effects predicted	Minor	Neutral	W1 – W5	Neutral (Low sensitivity within study extent for Pink route option (note High sensitivity for Brown route option). Appropriate sizing and design of new culvert will maintain conveyance of flows and reduce flood risk, leading to Neutral residual magnitude).
	Fluvial Geomorphology	No significant effects predicted	Moderate	Slight	W6, W7	Neutral (Low sensitivity. Culvert to be designed to minimise change to morphological processes, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity; potential source for PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Burn of Durno (WFD)	Hydrology and Flood Risk	No significant effects predicted	Minor	Slight	W1 - W5	Neutral (Medium sensitivity; no properties at fluvial flood risk within study extent, high grade agricultural land potentially at risk. Appropriate design of bridge to convey design flows and placement of abutments outwith the floodplain, leading to Neutral residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[7]	Predicted significance of residual effects (and reasoning)
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Moderate	**Moderate**	W6, W7	Slight adverse (Medium sensitivity. Limited signs of active processes or migration. Bridge to be designed to minimise change to morphological processes (bridge abutments located outwith the floodplain), leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Large**	W1, W9	Slight adverse (High sensitivity and potential PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).

Table 1.4: Brown Route Option Predicted Effects

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[8]	Predicted significance of residual effects (and reasoning)
Loch Insch Fishery	Hydrology and Flood Risk	No significant effects predicted	Minor	Slight	W1 – W2	Neutral (Medium sensitivity; one commercial property potentially at fluvial flood risk within study extent. SuDS attenuation, leading to Neutral residual magnitude).

[8] Mitigation options are outlined in sections 20.5.9 to 20.5.13 of Chapter 20: Road Drainage and the Water Environment

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[8]	Predicted significance of residual effects (and reasoning)
	Water Quality	No significant effects predicted	Negligible	Neutral	W1, W9	Neutral (High sensitivity. There will be no road drainage outfalls to the adjacent watercourses upstream of the fishery (The Kellock will receive drainage further downstream) based on DMRB Stage 2 design).
The Kellock (WFD)	Hydrology and Flood Risk	No significant effects predicted	Minor	Slight	W1 - W5	Neutral (Medium sensitivity; no properties at fluvial flood risk within study extent (note that Loch Insch Fishery is upstream of the predicted upstream influence of the bridge). Appropriate design of bridge to convey design flows and placement of abutments outwith the floodplain, leading to Neutral residual magnitude).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Moderate	**Moderate**	W6, W7	Slight adverse (Medium sensitivity. Limited signs of active processes or migration. Bridge to be designed to minimise change to morphological processes (bridge abutments located outwith the floodplain), leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Large**	W1, W9	Slight adverse (High sensitivity and potential PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[8]	Predicted significance of residual effects (and reasoning)
Tributary of The Kellock 1	Hydrology and Flood Risk	Alteration of flow pathways, reduction in floodplain storage or change in water levels due to new watercourse crossings or road embankments, leading to increase in flood risk to receptors.	Moderate	**Moderate**	W1 - W5	Neutral (High sensitivity; property potentially at fluvial flood risk within study extent. Appropriate sizing and design of culvert and bridge will maintain conveyance of flows and reduce flood risk, and provision of compensatory storage, leading to Neutral residual magnitude).
	Fluvial Geomorphology	No significant effects predicted	Moderate	Slight	W6, W7	Neutral (Low sensitivity. Culvert to be designed to minimise change to morphological processes, leading to Slight adverse residual magnitude).
	Water Quality	No significant effects predicted	Neutral	Neutral	W1, W9	Neutral (Medium sensitivity. Watercourse will not receive road drainage based on DMRB Stage 2 design).
Shevock Burn (WFD)	Hydrology and Flood Risk	Alteration of flow pathways, reduction in floodplain storage or change in water levels due to new watercourse crossings or road embankments, leading to increase in flood risk to receptors.	Major	**Large**	W1 - W5	Neutral (High sensitivity; residential properties potentially at fluvial flood risk within study extent. Appropriate design of bridge to convey design flows and placement of abutments outwith the floodplain, leading to Neutral residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[8]	Predicted significance of residual effects (and reasoning)
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Moderate	**Moderate**	W6, W7	Slight adverse (High sensitivity. Limited signs of active processes or migration. Bridge to be designed to minimise change to morphological processes (bridge abutments located outwith the floodplain), leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Large**	W1, W9	Slight adverse (High sensitivity. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
River Urie - Old Rayne to Pitcaple (WFD)	Hydrology and Flood Risk	No significant effects predicted	Minor	Slight	W1 - W5	Neutral (Medium sensitivity; no properties at fluvial flood risk within study extent. Appropriate design of bridge to convey design flows and placement of abutments outwith the floodplain, leading to Neutral residual magnitude).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Moderate	**Moderate**	W6, W7	Slight adverse (High sensitivity. Limited signs of active processes or migration. Bridge to be designed to minimise change to morphological processes (bridge abutments located outwith the floodplain), leading to Slight adverse residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[8]	Predicted significance of residual effects (and reasoning)
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Large**	W1, W9	Slight adverse (High sensitivity; potential source for PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Tributary of River Urie 20	Hydrology and Flood Risk	Alteration of flow pathways, reduction in floodplain storage or change in water levels due to new watercourse crossings or road embankments, leading to increase in flood risk to receptors.	Moderate	**Moderate**	W1 - W5	Slight adverse (High sensitivity; properties potentially at fluvial flood risk within study extent, high grade agricultural land potentially at risk. Appropriate sizing and design of culverts will maintain conveyance of flows and reduce flood risk, leading to Slight adverse residual magnitude – residual risk to agricultural land).
	Fluvial Geomorphology	No significant effects predicted	Moderate	Slight	W6, W7	Neutral (Low sensitivity. Culvert to be designed to minimise change to morphological processes, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity; potential source for PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[8]	Predicted significance of residual effects (and reasoning)
Burn of Durno (WFD)	Hydrology and Flood Risk	No significant effects predicted	Minor	Slight	W1 - W5	Neutral (Medium sensitivity; no properties at fluvial flood risk within study extent, high grade agricultural land potentially at risk. Appropriate design of bridge to convey design flows and placement of abutments out with the floodplain, leading to Neutral residual magnitude).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Moderate	**Moderate**	W6, W7	Slight adverse (Medium sensitivity. Limited signs of active processes or migration. Bridge to be designed to minimise change to morphological processes (bridge abutments located out with the floodplain), leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Large**	W1, W9	Slight adverse (High sensitivity and potential PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).

Table 1.5: Violet Route Option Predicted Effects

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[9]	Predicted significance of residual effects (and reasoning)
Tributary of River Urie 21	Hydrology and Flood Risk	No significant effects predicted	Minor	Neutral	W1 – W5	Neutral (Low sensitivity within study extent for Violet Route Option (note Medium within study extent for Orange Route Option). Sensitive design of drainage scheme and culverts, leading to Neutral residual magnitude).
	Fluvial Geomorphology	No significant effects predicted	Major	Slight	W6, W7	Neutral (Low sensitivity. Culverts to be designed to minimise change to morphological processes, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).

[9] Mitigation options are outlined in sections 20.5.9 to 20.5.13 of Chapter 20: Road Drainage and the Water Environment

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[9]	Predicted significance of residual effects (and reasoning)
Ides Burn	Hydrology and Flood Risk	Alteration of flow pathways, reduction in floodplain storage or change in water levels due to new watercourse crossings or road embankments, leading to increase in flood risk to receptors.	Moderate	**Moderate**	W1 - W5	Slight adverse (High sensitivity; properties and high grade agricultural land potentially at fluvial flood risk within study extent. Appropriate sizing and design of new culverts and realignment, and provision of compensatory storage will maintain conveyance of flows and reduce flood risk, leading to Slight adverse residual magnitude – residual risk to agricultural land).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Major	**Moderate**	W6 - W8	Neutral (Low sensitivity. Culverts to be designed to minimise change to morphological processes. Realignment (>200m) to be designed to replicate natural channel form and process as far as possible and provide improvements where possible compared to existing modified state of this watercourse, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity, potential source of PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[9]	Predicted significance of residual effects (and reasoning)
Lochter Burn/Kings Burn (WFD)	Hydrology and Flood Risk	Alteration of flow pathways, reduction in floodplain storage or change in water levels due to new watercourse crossings or road embankments, leading to increase in flood risk to receptors.	Moderate	**Large**	W1 - W5	Neutral (High sensitivity; properties potentially at fluvial flood risk within study extent. Appropriate design of bridge to convey design flows and placement of abutments outwith the floodplain, leading to Neutral residual magnitude).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and / or channel realignments.	Moderate	**Moderate**	W6, W7	Slight adverse (Medium sensitivity. Limited signs of active processes or migration. Bridge to be designed to minimise change to morphological processes (bridge abutments located outwith the floodplain), leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Large**	W1, W9	Slight adverse (High sensitivity. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[9]	Predicted significance of residual effects (and reasoning)
Tributary of Lochter Burn 1	Hydrology and Flood Risk	Alteration of flow pathways, reduction in floodplain storage or change in water levels due to new watercourse crossings or road embankments, leading to increase in flood risk to receptors.	Moderate	**Moderate**	W1 - W5	Slight adverse (Medium sensitivity; commercial properties and high grade agricultural land potentially at fluvial flood risk within study extent. Appropriate sizing and design of new culverts and realignments will maintain conveyance of flows and reduce flood risk, leading to Slight adverse residual magnitude – residual risk to agricultural land).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Major	**Moderate**	W6 - W8	Neutral (Low sensitivity. Culverts to be designed to minimise change to morphological processes. Realignments (>200m) to be designed to replicate natural channel form and process as far as possible and provide improvements where possible compared to existing modified state of this watercourse, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[9]	Predicted significance of residual effects (and reasoning)
Tributary of River Urie 23	Hydrology and Flood Risk	No significant effects predicted	Minor	Slight	W1 - W5	Slight adverse (Medium sensitivity; no properties at fluvial flood risk within study extent, high grade agricultural land potentially at risk. Appropriate sizing and design of culvert will maintain conveyance of flows and reduce flood risk, leading to Slight adverse residual magnitude – residual risk to agricultural land).
	Fluvial Geomorphology	No significant effects predicted	Moderate	Slight	W6, W7	Neutral (Low sensitivity. Culvert to be designed to minimise change to morphological processes, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Tributary of River Urie 24	Hydrology and Flood Risk	No significant effects predicted	Moderate	Slight	W1, W2	Neutral (Low sensitivity. Increase in catchment area draining to headwaters via road outfalls, mitigated through SuDS attenuation, leading to Slight adverse residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[9]	Predicted significance of residual effects (and reasoning)
	Fluvial Geomorphology	No significant effects predicted	Neutral	Neutral	W7	Neutral (Low sensitivity. No proposed infrastructure other than drainage outfalls which will be designed in accordance with SEPA best practice guidance).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity, potential source of PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Tributary of Newmill Burn	Hydrology and Flood Risk	No significant effects predicted	Moderate	Slight	W1, W2	Neutral (Low sensitivity. Increase in catchment area draining to headwaters via road outfalls, mitigated through SuDS attenuation, leading to Slight adverse residual magnitude).
	Fluvial Geomorphology	No significant effects predicted	Neutral	Neutral	W7	Neutral (Low sensitivity. No proposed infrastructure other than drainage outfalls which will be designed in accordance with SEPA best practice guidance).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[9]	Predicted significance of residual effects (and reasoning)
Densy Burn	Hydrology and Flood Risk	No significant effects predicted	Minor	Neutral	W1 – W5	Neutral (Low sensitivity. Appropriate sizing and design of new culverts and realignment will maintain conveyance of flows and reduce flood risk, leading to Neutral residual magnitude).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Major	**Moderate**	W6 – W8	Neutral (Low sensitivity. Culverts to be designed to minimise change to morphological processes. Realignment (>200m) to be designed to replicate natural channel form and process as far as possible and provide improvements where possible compared to existing modified state of this watercourse, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
River Don - Inverurie to Dyce (WFD)	Hydrology and Flood Risk	Increase in surface water runoff from new impermeable areas, leading to increase in flood risk to receptors.	Minor	**Moderate**	W1 – W2	Neutral (Very High sensitivity; large number of properties potentially at fluvial flood risk within study extent. SuDS attenuation, leading to Neutral residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[9]	Predicted significance of residual effects (and reasoning)
		Alteration of flow pathways, reduction in floodplain storage or change in water levels due to new watercourse crossings or road embankments, leading to increase in flood risk to receptors.	Major	**Very Large**	W1 - W5	Neutral (Very High sensitivity; large number of properties and high grade agricultural land potentially at fluvial flood risk within study extent. Viaduct structure designed to convey 1 in 200-year flow including climate change allowance, with no embankments or abutments in the floodplain. Hydraulic modelling of outline design shows impact of intermediate piers on upstream and downstream flood risk is neutral, leading to Neutral residual magnitude).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and / or channel realignments.	Moderate	**Moderate**	W6, W7	Slight adverse (High sensitivity. Limited signs of active processes or migration at the crossing point. Viaduct design means that impact is limited to intermediate piers in the floodplain with no changes to the channel anticipated, leading to Slight adverse residual magnitude).
	Water Quality	No significant effects predicted	Neutral	Neutral	W1, W9	Neutral (Very high sensitivity, potential source of PWS. Watercourse will not receive road drainage based on DMRB Stage 2 design).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[9]	Predicted significance of residual effects (and reasoning)
Bridgealehouse Burn	Hydrology and Flood Risk	No significant effects predicted	Minor	Slight	W1 – W5	Neutral (Medium sensitivity; no properties at fluvial flood risk within study extent upstream of existing A96. Appropriate sizing and design of extension of existing crossing under A96 and provision of compensatory storage will maintain conveyance of flows and reduce flood risk, leading to Neutral residual magnitude).
	Fluvial Geomorphology	No significant effects predicted	Minor	Neutral	W6 – W8	Neutral (Low sensitivity. Culvert and minor realignment to be designed to minimise change to morphological processes on this already modified watercourse, leading to Neutral residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity, potential source of PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).

Table 1.6: Orange Route Option Predicted Effects

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[10]	Predicted significance of residual effects (and reasoning)
Tributary of Burn of Durno 1	Hydrology and Flood Risk	No significant effects predicted	Minor	Neutral	W1, W2	Neutral (Low sensitivity. Implementation of SuDS attenuation and appropriate design of change to drainage channels, leading to Neutral residual magnitude).
	Fluvial Geomorphology	No significant effects predicted	Minor	Neutral	W7	Neutral (Low sensitivity. Drainage outfalls to be designed in accordance with SEPA best practice guidance. Sensitive design and consideration of functioning of downstream reaches where drainage channels removed, leading to Neutral residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity downstream of Pitscurry Moss LNCS – it is anticipated that the LNCS will be significantly impacted due to physical loss of habitat (see Volume 2, Part 3, Chapter 18). Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).

[10] Mitigation options are outlined in sections 20.5.9 to 20.5.13 of Chapter 20: Road Drainage and the Water Environment

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[10]	Predicted significance of residual effects (and reasoning)
Tributary of River Urie 21	Hydrology and Flood Risk	No significant effects predicted	Minor	Slight	W1 – W5	Slight adverse (Medium sensitivity; no properties at fluvial flood risk within study extent, high grade agricultural land potentially at risk. Appropriate sizing and design of new culverts and realignments will maintain conveyance of flows and reduce flood risk, leading to Slight adverse residual magnitude – residual risk to agricultural land).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Major	**Moderate**	W6 – W8	Neutral (Low sensitivity. Culverts to be designed to minimise change to morphological processes. Realignments (>200m) to be designed to replicate natural channel form and process as far as possible and provide improvements where possible compared to existing modified state of this watercourse, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity downstream of Pitscurry Moss LNCS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Ides Burn	Hydrology and Flood Risk	No significant effects predicted	Minor	Neutral	W1, W2	Neutral (Low sensitivity. Implementation of SuDS attenuation, leading to Neutral residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[10]	Predicted significance of residual effects (and reasoning)
	Fluvial Geomorphology	No significant effects predicted	Minor	Neutral	W7	Neutral (Low sensitivity. Drainage outfalls to be designed in accordance with SEPA best practice guidance, leading to Neutral residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
River Urie - Pitcaple to Lochter Burn (WFD)	Hydrology and Flood Risk	Alteration of flow pathways, reduction in floodplain storage or change in water levels due to new watercourse crossings or road embankments, leading to increase in flood risk to receptors.	Major	**Large**	W1 - W5	Neutral (High sensitivity; properties and high grade agricultural land at fluvial flood risk within study extent. Viaduct structure designed to convey 1 in 200-year flow including climate change allowance, with no embankments or abutments in the floodplain. Hydraulic modelling of outline design shows impact of intermediate piers on upstream and downstream flood risk is neutral, leading to Neutral residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[10]	Predicted significance of residual effects (and reasoning)
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Moderate	**Moderate**	W6, W7	Slight adverse (High sensitivity. Some evidence of localised bank erosion and active processes. Viaduct design means that impact is limited to intermediate piers in the floodplain with no changes to the channel anticipated, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Large**	W1, W9	Slight adverse (High sensitivity, potential source of PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Strathnaterick Burn	Hydrology and Flood Risk	Alteration of flow pathways, reduction in floodplain storage or change in water levels due to new watercourse crossings or road embankments, leading to increase in flood risk to receptors.	Moderate	**Moderate**	W1 - W5	Slight adverse (Medium sensitivity; no properties at fluvial flood risk within study extent, high grade agricultural land potentially at risk. Appropriate sizing and design of new culverts and realignment, and provision of compensatory storage will maintain conveyance of flows and reduce flood risk, leading to Slight adverse residual magnitude – residual risk to agricultural land).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[10]	Predicted significance of residual effects (and reasoning)
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Major	**Moderate**	W6 - W8	Neutral (Low sensitivity. Culverts to be designed to minimise change to morphological processes. Realignment (>200m) to be designed to replicate natural channel form and process as far as possible and provide improvements where possible compared to existing modified state of this watercourse, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Tributary of River Urie 22	Hydrology and Flood Risk	No significant effects predicted	Minor	Neutral	W1, W2	Neutral (Low sensitivity. Implementation of SuDS attenuation, leading to Neutral residual magnitude).
	Fluvial Geomorphology	No significant effects predicted	Neutral	Neutral	W7	Neutral (Low sensitivity. No proposed infrastructure other than drainage outfalls which will be designed in accordance with SEPA best practice guidance).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[10]	Predicted significance of residual effects (and reasoning)
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Tributary of River Don 1	Hydrology and Flood Risk	No significant effects predicted	Minor	Slight	W1 – W5	Neutral (Medium sensitivity. Appropriate sizing and design of new culverts and realignment, and provision of compensatory storage will maintain conveyance of flows and reduce flood risk, leading to Neutral residual magnitude).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Major	**Moderate**	W6 – W8	Neutral (Low sensitivity. Culverts to be designed to minimise change to morphological processes. Realignment (>200m) to be designed to replicate natural channel form and process as far as possible and provide improvements where possible compared to existing modified state of this watercourse, leading to Slight adverse residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[10]	Predicted significance of residual effects (and reasoning)
River Don – Alford to Inverurie (WFD)	Hydrology and Flood Risk	Alteration of flow pathways, reduction in floodplain storage or change in water levels due to new watercourse crossings or road embankments, leading to increase in flood risk to receptors.	Moderate	**Moderate**	W1 – W5	Neutral (High sensitivity; properties potentially at fluvial flood risk within study extent. Viaduct structure designed to convey 1 in 200-year flow including climate change allowance, with no embankments, abutments or intermediate piers in the floodplain, leading to Neutral residual magnitude).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Moderate	**Moderate**	W6, W7	Neutral (High sensitivity. Viaduct design places abutments and intermediate piers outwith the floodplain, which is narrow at this location due to confinement by the valley sides, leading to Neutral residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Large**	W1, W9	Slight adverse (Very high sensitivity WFD waterbody. SuDS to be designed to minimised change in water quality, leading to Slight adverse residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[10]	Predicted significance of residual effects (and reasoning)
Woodend Burn	Hydrology and Flood Risk	Alteration of flow pathways, reduction in floodplain storage or change in water levels due to new watercourse crossings or road embankments, leading to increase in flood risk to receptors.	Moderate	**Moderate**	W1 – W5	Neutral (Medium sensitivity; commercial property potentially at fluvial flood risk within study extent. Appropriate sizing and design of new culvert will maintain conveyance of flows and reduce flood risk, leading to Neutral residual magnitude).
	Fluvial Geomorphology	Alteration of morphological forms and processes due to the introduction of new watercourse crossings, road embankments and/or channel realignments.	Moderate	**Moderate**	W6, W7	Slight adverse (Medium sensitivity. Culvert to be designed to minimise change to morphological processes, leading to Slight adverse residual magnitude).
	Water Quality	No significant effects predicted	Neutral	Neutral	W1, W9	Neutral (Medium sensitivity. Watercourse will not receive road drainage based on DMRB Stage 2 design).
Tributary of River Don 2	Hydrology and Flood Risk	No significant effects predicted	Minor	Neutral	W1 – W5	Neutral (Low sensitivity. Appropriate sizing and design of crossing upgrade and change to drainage channels will maintain conveyance of flows and reduce flood risk, leading to Neutral residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[10]	Predicted significance of residual effects (and reasoning)
	Fluvial Geomorphology	No significant effects predicted	Minor	Neutral	W6, W7	Neutral (Low sensitivity. Drainage outfalls to be designed in accordance with SEPA best practice guidance. Sensitive design of channel modifications and consideration of functioning of downstream reaches where drainage channels removed, leading to Neutral residual magnitude).
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity. Potential source for PWS and CAR abstraction. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).
Tributary of River Don 3	Hydrology and Flood Risk	No significant effects predicted	Minor	Slight	W1 – W5	Neutral (High sensitivity; commercial and residential properties potentially at fluvial flood risk within study extent. Appropriate sizing and design of crossing extension. Implementation of SuDS attenuation, leading to Neutral residual magnitude).
	Fluvial Geomorphology	No significant effects predicted	Moderate	Slight	W6, W7	Neutral (Low sensitivity. Crossing extension to be designed to minimise change to morphological processes or improve on existing conditions, leading to Neutral residual magnitude).

Watercourse	Sub-topic	Predicted effects	Magnitude of effects	Significance of predicted effects	Assumed mitigation[10]	Predicted significance of residual effects (and reasoning)
	Water Quality	Reduction in water quality due to road runoff and accidental vehicle spillages entering the watercourse via drainage outfalls.	Moderate	**Moderate**	W1, W9	Slight adverse (Medium sensitivity, potential source of PWS. Implementation and maintenance of SuDS, leading to Slight adverse residual magnitude).

Appendix A20.4 **Flood Risk Simple Assessment**

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1 Introduction

The A96 Dualling from East of Huntly to Aberdeen comprises the provision of between approximately 35km and 42km of new dual carriageway depending on which route option is considered and is largely achieved through offline construction. The existing A96 single carriageway would be de-trunked and reclassified as a local road to maintain local access. Due to the size and layout of this scheme, there are several areas where interactions between a route option and an existing watercourse has the potential to impact the level of flood risk.

A Flood Risk Assessment (FRA) is therefore required to demonstrate that the proposals meet the requirements of national and local planning policy and is considered appropriate from a flood risk perspective.

The assessment focusses on the risks associated with fluvial flooding, though flooding from other sources are considered at high level, including pluvial flooding (surface water) and flooding from groundwater. Due to the location of the scheme, tidal flooding has been scoped out at this stage whilst flooding from artificial drainage systems and infrastructure failure will be considered at DMRB (Design Manual for Roads and Bridges) Stage 3.

The overriding principle with regards to flood risk is that the impact of the scheme should be neutral. The purpose of the scheme is not to reduce the risk to receptors already at risk of flooding, although opportunities to do so will be considered at DMRB Stage 3. Conversely, it would not be acceptable to increase the risk of flooding to a potentially sensitive receptor.

1.1 Scope

A qualitative approach has been taken to this Simple Assessment of flood risk for DMRB Stage 2. Its purpose at this stage is to identify the various interfaces between the scheme and the water environment and assess whether there is a risk posed to a sensitive receptor. The qualitative assessment has identified higher risk locations for which a quantitative assessment (using hydraulic modelling) is required at DMRB Stage 2. The results of the subsequent hydraulic modelling are documented in this report.

This report has been prepared concurrently with the DMRB Stage 2 Assessment report, being prepared for the A96 Dualling East of Huntly to Aberdeen Scheme. There are eight end-to-end options made up of six route options referenced as Cyan, Red, Pink, Brown, Violet and Orange.

The Scottish Environment Protection Agency (SEPA) have stated that they do not want to see any option progressing from DMRB Stage 2 that poses an impact to flood risk that is potentially unmitigable at the next stage. This assessment sets out to demonstrate that the six route options satisfy this criterion.

2 Guidance and Legislation

2.1 The DMRB

The primary guidance document relating to the design, assessment and operation of trunk roads and motorways in Scotland is the DMRB (Design Manual for Roads and Bridges). The DMRB is split into 15 volumes, with Volume 4 covering Geotechnics and Drainage and Volume 11 covering Environmental Assessment.

DMRB HD 45/09

Volume 11 of the DMRB, HD 45/09[1] gives guidance on the assessment and management of the impacts that new construction, improvement, technology and maintenance projects may have on the water environment.

2.2 The Flood Risk Management (Scotland) Act

The Flood Risk Management (Scotland) Act[2] sets in place a statutory framework for delivering a sustainable and risk-based approach to managing flooding. This includes the preparation of assessments of the likelihood and impacts of flooding, as well as catchment focused plans to address these impacts. The Act also places a duty on Scottish Ministers, SEPA, Local Authorities, Scottish Water and other responsible authorities to exercise their functions with a view to managing and reducing flood risk and to promote sustainable flood risk management.

2.3 Scottish Planning Policy

Scottish Government guidance on flood risk is found within Scottish Planning Policy[3] (SPP). SPP, in tandem with the National Planning Framework[4] (NPF), supports a catchment-scale approach to sustainable flood risk management. The strategy aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Flooding can impact on people and businesses. Climate change will increase the risk of flooding in some parts of the country. Planning can play an important part in reducing the vulnerability of existing and future development to flooding.

The planning system should promote:

- A precautionary approach to flood risk from all sources, including coastal, water course (fluvial), surface water (pluvial), groundwater, reservoirs and drainage systems (sewers and culverts), taking account of the predicted effects of climate change;

[1] Design Manual for Roads and Bridges, Volume 11, Section 3, Part 10; HD 45/09 Road Drainage and the Water Environment (November 2009)
[2] The Flood Risk Management (Scotland) Act, HMSO, (2009)
[3] Scottish Planning Policy, The Scottish Government (2014)
[4] Scotland's Third National Planning Framework, The Scottish Government (2014)

- Flood avoidance: by safeguarding flood storage and conveying capacity, and locating development away from functional flood plains and medium to high risk areas;
- Flood reduction: assessing flood risk and, where appropriate, undertaking natural and structural flood management measures, including flood protection, restoring natural features and characteristics, enhancing flood storage capacity, avoiding the construction of new culverts and opening existing culverts where possible; and
- Avoidance of increased surface water flooding through requirements for Sustainable Drainage Systems (SuDS) and minimising the area of impermeable surface.

To achieve this, the planning system should prevent development which would have a significant probability of being affected by flooding or would increase the probability of flooding elsewhere.

All land is to some degree susceptible to flooding. The likelihood of a site being flooded is measured in terms of probabilities per annum, which range from very low (close to 0% probability) to very high (up to 100% probability). Even in areas generally free from flooding, local conditions and exceptional rainfall can lead to flooding. It is therefore not possible to set planning policy and determine applications solely according to the calculated probability of flooding. Developers and planning authorities should take a precautionary approach in taking decisions when flood risk is an issue.

Functional flood plains store and convey flood water during times of flood. These functions are important in the wider flood management system. For planning purposes, the functional flood plain will generally have a greater than 0.5% (1:200) annual exceedance probability (AEP) of flooding in any year. Development on the functional flood plain will only be allowed in exceptional circumstances.

The following risk framework should be used to guide development. This risk framework divides flood risk into three categories and outlines an appropriate planning response:

- Areas with an annual probability of flooding of 0.1% (1:1000) or less are defined as little or no risk and should have no planning constraints due to flooding;
- Areas with an annual probability of 0.1% - 0.5% (1:1000 – 1:200) are defined as low to medium risk. These areas will be suitable for most development but may not be suitable for essential civil infrastructure such as hospitals, fire stations, emergency depots etc. Where such infrastructure must be in these areas or is being substantially extended it should be capable of remaining operational and accessible during extreme flooding events; and
- Areas with an annual probability of greater than 0.5% (1:200) are defined as high to medium risk. If built development is permitted, appropriate measures to manage flood risk will be required and the loss of flood storage capacity mitigated to produce a neutral or better outcome. In undeveloped and sparsely developed areas, medium to high risk areas are generally not suitable for additional development.

Culverts are a frequent cause of local flooding, particularly if design or maintenance is inadequate. Watercourses should not be culverted as part of a new development

unless there are no practical alternatives, and existing culverts should be opened wherever possible. If culverts are unavoidable, they should be designed to maintain or improve existing flow conditions and aquatic life. A culvert may be acceptable as part of a scheme to manage flood risk or where it is used to carry a watercourse under a road or railway.

2.4 Planning Advice on Flood Risk

The Scottish Government webpage, Planning Advice on Flood Risk[5] provides background information and best practice advice in support of Scottish Planning Policy. Sections 32, 33 and 34 give information on Flood Risk Assessments (FRA). These sections highlight that an FRA should assess the likely risk to the proposed development and to adjacent people and property. The FRA should assess factors such as the source and type of potential flood, flood depths, extent, speeds, flow pathways across a site and details of structures which may influence site hydraulics. It will also detail flood mitigation options.

2.5 The Water Environment (Controlled Activities) (Scotland) Regulations

The Water Environment (Controlled Activities) (Scotland) Regulations[6] require all surface water from new development to be treated through a Sustainable Drainage System (SuDS) before it is discharged into the water environment, except for single houses or where the discharge will be into coastal water. The aim of SuDS is to mimic natural drainage, encourage infiltration and attenuate both hydraulic and pollutant impacts to minimise adverse impacts on people and the environment. Surface water drainage measures proposed as part of a planning application should have a neutral or better effect on the risk of flooding both on and off the site. Where flooding is an issue, SuDS should be designed to mitigate the adverse effects of a storm inflow into the watercourse or sewer.

2.6 SEPA Technical Flood Risk Guidance for Stakeholders

SEPA's Technical Flood Risk Guidance document[7] is intended to outline methodologies that may be appropriate for hydrological and hydraulic modelling and set out what information SEPA requires to be submitted as part of an FRA. It gives guidance on the use of SEPA's online Flood Maps as well as reporting requirements and information on various flood modelling techniques.

[5] Flood Risk: Planning Advice, The Scottish Government (June 2015)
[6] The Water Environment (Controlled Activities) (Scotland) Regulations, HMSO (March 2011)
[7] Technical Flood Risk Guidance for Stakeholders, SS-NFR-P-002, SEPA (May2019)

2.7 Aberdeenshire Council

Local Flood Risk Management Plan 2016 – 2022

The Aberdeenshire Council Local Flood Risk Management Plan[8] has been developed to detail the actions adopted to reduce the impact of flooding in the North East Local Plan District. The Plan supplements the North East Flood Risk Management Strategy which coordinates the efforts of all organisations that tackle flooding, be it in urban or rural areas and be it from rivers, the sea or from surface water.

The Strategy identifies where the risk of flooding and benefits of investment are greatest. Three potentially vulnerable areas are identified within the study area associated with the A96 Dualling East of Huntly to Aberdeen scheme: at Huntly, Insch and Inverurie/Kintore.

Aberdeen City and Shire Strategic Development Plan

As part of their sustainable development objective, as set out in the Aberdeen City and Shire Strategic Development Plan[9], Aberdeenshire Council target to avoid developments on land which is at an unacceptable risk from coastal or river flooding (as defined by the 'Indicative River and Coastal Flood Map for Scotland' or through a detailed flood risk assessment), except in exceptional circumstances.

Aberdeenshire Local Development Plan

As part of their commitment to protecting important resources, under policy PR1 of Aberdeenshire Council Local Development Plan 2017[10], Aberdeenshire Council will not approve developments that have a negative effect on important environmental resources associated with the water environment. Development will only be permitted when public economic or social benefits clearly outweigh the value of the site to the local community, and there are no reasonable alternative sites. New development which will generate discharges or other impacts on existing water bodies, or which could affect the water quality, quantity, flow rate, ecological status, riparian habitat, protected species or flood plains of water bodies (including their catchment area) must not prejudice water quality or flow rates, or their ability to achieve or maintain good ecological status.

Policy C4 specifically covers flood risk stating where flood risk assessments will be required and reflects the requirements set out in SPP. Development should avoid areas of medium to high risk, functional floodplain or other areas where the risks are otherwise assessed as heightened or unacceptable except where:

- It is a development to effect flooding or erosion;
- It is consistent with the flood storage function of a floodplain;
- It would otherwise be unaffected by flooding (such as a play area or car park);
- It is essential infrastructure; or

[8] Local Flood Risk Management Plan 2016 – 2022, Aberdeenshire Council (June 2016)
[9] Aberdeen City and Shire Strategic Development Plan, Aberdeenshire Council (March 2014)
[10] Aberdeenshire Local Development Plan, Aberdeenshire Council (April 2014)

- The location is essential for operational reasons for example for water-based navigation, agriculture, transport or utilities infrastructure and an alternative lower risk location is not available.

Aberdeenshire Council will not approve development that may contribute to flooding issues elsewhere. Sustainable Urban Drainage principles apply to all sites.

3 Earlier Work

3.1 Process

To date, an open and collaborative approach has been undertaken with the various statutory bodies to set in place a clear approach to flood risk on the scheme and to discuss and agree assessment criteria. This chapter sets out the work done to date and agreements reached in the process.

3.2 Flood Modelling Scope

As part of preliminary consultations with SEPA, a Flood Modelling Scope[11] was prepared and submitted for comment in October 2018. The purpose of this note was to set out the AmeyArup proposed approach to assessing flood risk at DMRB Stage 2, for discussion with SEPA.

This is covered further in the Consultations Section below.

3.3 Flood Risk Scoping Exercise

A Flood Risk Scoping Exercise[12] was prepared and submitted to SEPA and Aberdeenshire Council in November 2018. In accordance with DMRB guidance, this identified each point, noted as an interface, where a route option had the potential to affect a watercourse or floodplain.

The interfaces were split into three categories: Floodplain, Watercourse Crossing and Watercourse Realignment. Locations were also identified where known existing field drains would need to be removed and where existing culverts would likely require to be extended.

A total of 310 interfaces were identified along the route options, whilst a further 44 interfaces were identified as part of an initial assessment of the indicative junction locations, as they were at that time.

36 watercourses, large enough to be given a name on OS maps, were noted as being potentially impacted, along with numerous un-named tributaries.

[11] DMRB Stage 2 – Flood Modelling Scope, A96PEA-AMAR-EWE-SWI-TN-YH-000001, AmeyArup (October 2018)
[12] DMRB Stage 2 – Flood Risk Scoping, A96PEA-AMAR-EWE-SWI-TN-YH-000003, AmeyArup (October 2018)

Table 1 Interfaces Identified as part of the Flood Risk Scoping Exercise

Interface	Count (Route Options)	Count (Indicative Junctions)
New Watercourse Crossing	182	31
Floodplain	35	13
Watercourse Realignment	43	N/A
Field Drain to be Removed	42	N/A
Existing Culvert to be Extended	8	N/A
Totals	310	44

Since this exercise was carried out, the DMRB Stage 2 process has progressed and several initial route options developed earlier have dropped out. The indicative junction locations have also progressed to preliminary junction layouts whilst new side roads and potential amendments to existing side roads have also been identified.

This design development is picked up as part of this exercise.

3.4 Consultations

Preliminary consultations regarding flood risk began in late 2017 and AmeyArup have been working closely with the statutory bodies ever since. Consultations have been undertaken with both SEPA and Aberdeenshire Council, whilst public consultation events were held in October 2018 and May 2019.

To achieve a level of consistency across the A96 dualling programme, AmeyArup have been taking part in consultants' forums, organised by Transport Scotland. These forums have allowed the team to learn from processes followed by other consultants and adapt an approach to suit this scheme.

A summary of key agreements and decisions made to date are covered in the sections below.

SEPA

SEPA have made it clear from the beginning that they would like to see more work done in relation to flood risk at DMRB Stage 2 to ensure that options are not taken forward which are later found to have associated flood risks that are challenging to mitigate. It is essential that enough land is obtained through Compulsory Purchase Orders for compensatory storage, SuDS and watercourse diversions.

In terms of SuDS, SEPA have stated that they expect two levels of treatment to be provided, in line with the 2007 version of the SuDS Manual (C697)[13], as opposed to following the risk-based approach, set out in the latest version of the SuDS Manual (C753)[14]. They also wish to see this level of treatment confirmed as

[13] The SUDS Manual, C697, CIRIA (2007)
[14] The SuDS Manual, C753, CIRIA (2015)

appropriate using the Highways Agency Water Risk Assessment Tool (HAWRAT)[15].

This exercise has already been carried out and it was concluded that, in all but the most extreme examples where a large area was to discharge to a very small watercourse, a filter drain in series with a basin will provide sufficient treatment. SEPA confirmed their acceptance of the findings on 21 February 2019.

SEPA have advised that a sequential approach to flood risk should be followed, where:

- the floodplain should be avoided where possible;
- impact should be reduced where avoidance is not possible; and
- mitigation will be necessary to offset any remaining impact.

It is seen as key that the function of the floodplain is safeguarded to ensure there is no increase in flood risk resulting from the scheme. The same sequential approach should be applied to any necessary watercourse realignments.

SEPA have stated a preference of bridges over culverts, but culverts are acceptable assuming capacity provided is adequate. Culverts should be able to convey the 200-year event with a 20% allowance for climate change and a 600mm freeboard.

With regards to any detailed modelling of flood risk to be carried out at DMRB Stage 2, AmeyArup proposed to make use of two flood models already prepared for Aberdeenshire Council. These models cover a large proportion of the study area and all the potential major watercourse crossings identified at this stage.

The use of these models is to be limited to a few key areas during DMRB Stage 2, with the approach to flood risk largely qualitative at this stage, with judgement used to assess whether a potential impact would be mitigatable or not.

SEPA have concerns over the use of the ReFH2 method for flow estimation in this area, in the knowledge that it generally underestimates flows in the adjacent Moray region. It was agreed that if AmeyArup are to use this method, a note will be required to justify the approach for SEPA comment.

Discussions have also been held regarding the appropriate allowance for climate change. It was agreed that AmeyArup will use a 20% allowance for the duration of DMRB Stage 2. SEPA's guidance note LUPS-CC1 was published in April 2019[16] and SEPA have advised AmeyArup that this guidance is likely to be updated within the next six to twelve months to incorporate the most recent UK climate change predictions, UKCP18[17]. The climate change allowance will be revisited at DMRB Stage 3 following review of any updated guidance and continuing consultation with SEPA.

Based on the proposals as they stood in October/November 2018, SEPA's greatest point of interest was the potential crossing of the River Don at Kintore.

[15] Highways Agency Water Risk Assessment Tool, Highways Agency (November 2009)
[16] Climate Change Allowances for Flood Risk Assessment in Land Use Planning, LUPS-CC1, SEPA (April 2019)
[17] UK Climate Projections (UKCP), Met Office

AmeyArup have agreed to further investigate this at DMRB Stage 2 using the Aberdeenshire Council Inverurie model.

Aberdeenshire Council

Preliminary consultations with Aberdeenshire Council were largely related to design criteria for drainage design. However, because Aberdeenshire Council have had flood models prepared for their proposed flood prevention schemes, they have also been actively involved in the consultation process for the flood risk assessment.

Proposed discharge limits and general design criteria for the drainage design was discussed with Aberdeenshire Council in July 2018. In summary:

- Carrier drains should accommodate the 1-year event without surcharge;
- Roadside features, such as filter drains, are to be designed so as not to overflow in the 10-year event. This supersedes the 5-year criteria set out in the DMRB;
- Attenuation measures, such as basins, should be designed so as not to overflow in the 30-year event;
- A sensitivity test should be carried out to assess the effect of the 50-year event on the road network and surrounding property; and
- A further sensitivity test should be carried out to ensure there is no increased flooding to property in the 200-year event.

The latest version of the Flood Estimation Handbook (FEH) rainfall model should be used, whilst a 30% allowance should be applied for climate change.

The discharge rates should not exceed the 10-year greenfield runoff rate of an equivalent greenfield site, for any return period, up to and including the 30-year event.

The flood models being prepared for Aberdeenshire Council were first discussed in August 2018. It was confirmed in October 2018 that Aberdeenshire Council would be able to share these models with AmeyArup for assessing the impact of proposed watercourse crossings associated with the A96 dualling. Interim models were received for this purpose on 22 March 2019.

3.5 The Sequential Approach

Background

SEPA have advised that a sequential approach to flood risk should be followed. It was agreed at the meeting of 27 November 2018 that the Flood Risk Simple Assessment would include a section on how the sequential approach had been incorporated into the design and assessment process.

The Sifting Process

At the beginning of the process, the study area was split into a series of corridors and an assessment was carried out on each of these corridors to establish whether there were feasible routes within any given corridor.

A series of designs and assessments were then carried out, each time reducing the number of potential options by deselecting those which were worst performing. The route options have been through first fix, second fix and a third fix which will feed into the final DMRB Stage 2 Assessment report.

As part of each fix, the route options were reviewed against a series of metrics set up under three broad disciplines of Transportation, Engineering and Environmental. As part of this, interactions with the floodplain were assessed, along with watercourse crossings and attenuation challenges.

Any route option passing through an area of active floodplain, was noted as a Large Adverse Impact. Whilst any route option passing adjacent to active floodplain was noted as a Moderate or Slight Adverse Impact, depending on the likelihood of an interaction. These impacts then fed into an overall assessment of all constraints, allowing the poorer performing route options to be identified and deselected from the process. This does not mean all interaction with floodplain was avoided, as other competing constraints may have made it such that alternative route options were deemed within the overall assessment to be poorer performing.

Once the floodplain had been avoided wherever possible, a process of improving the remaining route options was undertaken with the impact on sensitive receptors, including the floodplain, reduced wherever possible. For example, route options were adjusted where possible to cross watercourses at the point with least impact.

For third fix, floodplains have been avoided where possible and the impact has been reduced where avoidance was not possible. Consideration was also given to any remaining impact and the likelihood that it could be mitigated. Efforts to reduce the impact of the scheme on flood risk will continue through design development into DMRB Stage 3.

4 Methodology

4.1 DMRB Guidance

Guidance for the management of flood risk is set out in DMRB HD 45/09. The mandatory requirements state:

Transport infrastructure in the functional floodplain must be designed and constructed to:

i. Remain operational and safe for users in times of flood;

ii. Result in no net loss of floodplain storage;

iii. Not impede water flows; and

iv. Not increase flood risk elsewhere

The guidance goes on to state:

"*Construction in floodplains can affect the nature and extent of the flood envelope in the area of construction and for some distance upstream and downstream. This could have a serious impact on property owners within or near the floodplain, who may become exposed to a new or increased risk of flooding."*

New roads or improvements should only be located within functional floodplains if there is no acceptable alternative and should be restricted to the shortest practical crossing, avoiding extensive construction within the floodplain. Where this is unavoidable, the level of the road should be above the level of the predicted flood event, i.e. an event with a 1% annual probability of occurrence for river floodplains, or the 0.5% annual event for tidal floodplains.

Any construction within a river or estuarial floodplain will occupy areas which were previously available for flood storage or flows. Therefore, flood storage compensation should be provided.

SEPA should be consulted as early as possible where proposed projects may have an impact on a floodplain or local drainage and the parameters for the assessment established."

It is worth noting that although the DMRB sets guidance for road levels based on the 1% annual probability, through consultation, SEPA expect the 0.5% AEP event to be used which has been adopted within this assessment.

A series of procedures are set out for assessing the impacts on the water environment. Methods E and F, as defined in the appendices of DMRB HD 45/09, relate to Flood Risk. Guidance is also given on the appropriate level of assessment to be used when assessing the potential impacts of flooding.

The level of assessment is consequential, and progression is dependent on the type of proposed project, the location of the site and local circumstances, as well as the nature of the potential impact. The process is also cyclical and is only completed when either no adverse impacts are predicted, or other options avoid, treat or mitigate the potential impact, or an adverse impact is deemed to be outweighed by a beneficial impact. Where there is an adverse impact resulting in

a change of project, design or mitigation or treatment, there is an obligation to reassess the changed design or efficacy of treatment.

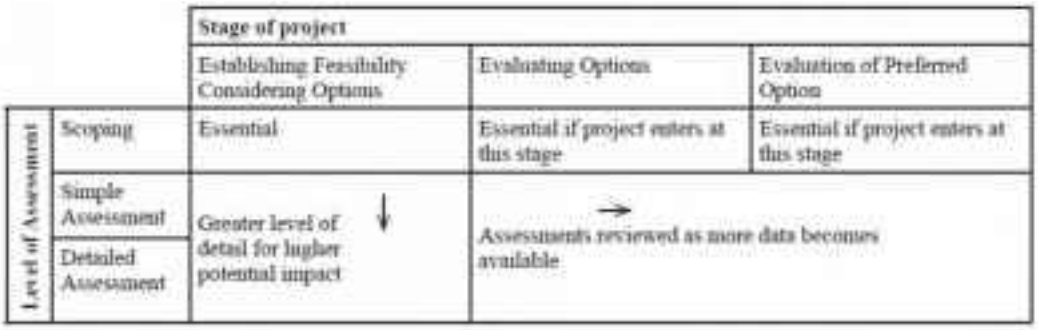


Figure 1 Extract from DMRB HD 45/09 “Figure 6.1 – Levels of Assessment Needed at Various Stages of Project Development”

As can be seen in Figure 1, the level of assessment is split into three stages: Scoping, Simple Assessment and Detailed Assessment, and shows how the level of detail of assessment should increase as more data becomes available through the project stages and that a higher level of detail is required at earlier project stages for higher potential impacts.

The procedure for assessment of potential flood risk impacts is outlined in Figure 6.2 and Figure 6.3 in DMRB HD 45/09 in the form of flow charts. For ease of reference, these charts have been reproduced on the pages below. In the context of flood risk, paragraph 6.8 asks, “Will the project affect an existing watercourse or floodplain?”.

In simple terms, anywhere a route option will affect a watercourse or floodplain, a simple assessment will be required as a minimum.

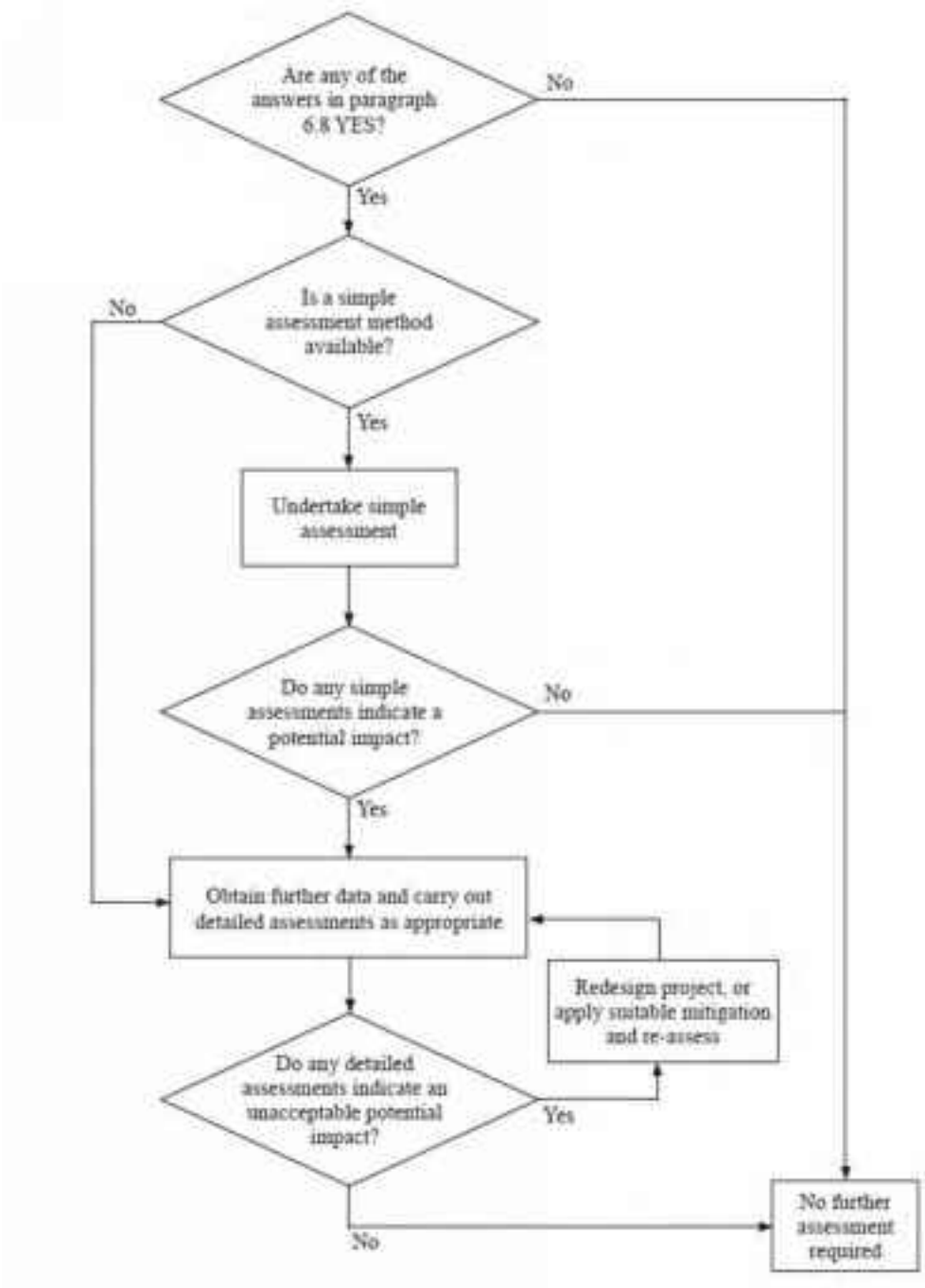


Figure 2 Extract from DMRB HD 45/09 “Figure 6.2 – Procedure for Assessment of Potential Impacts to the Water Environment”

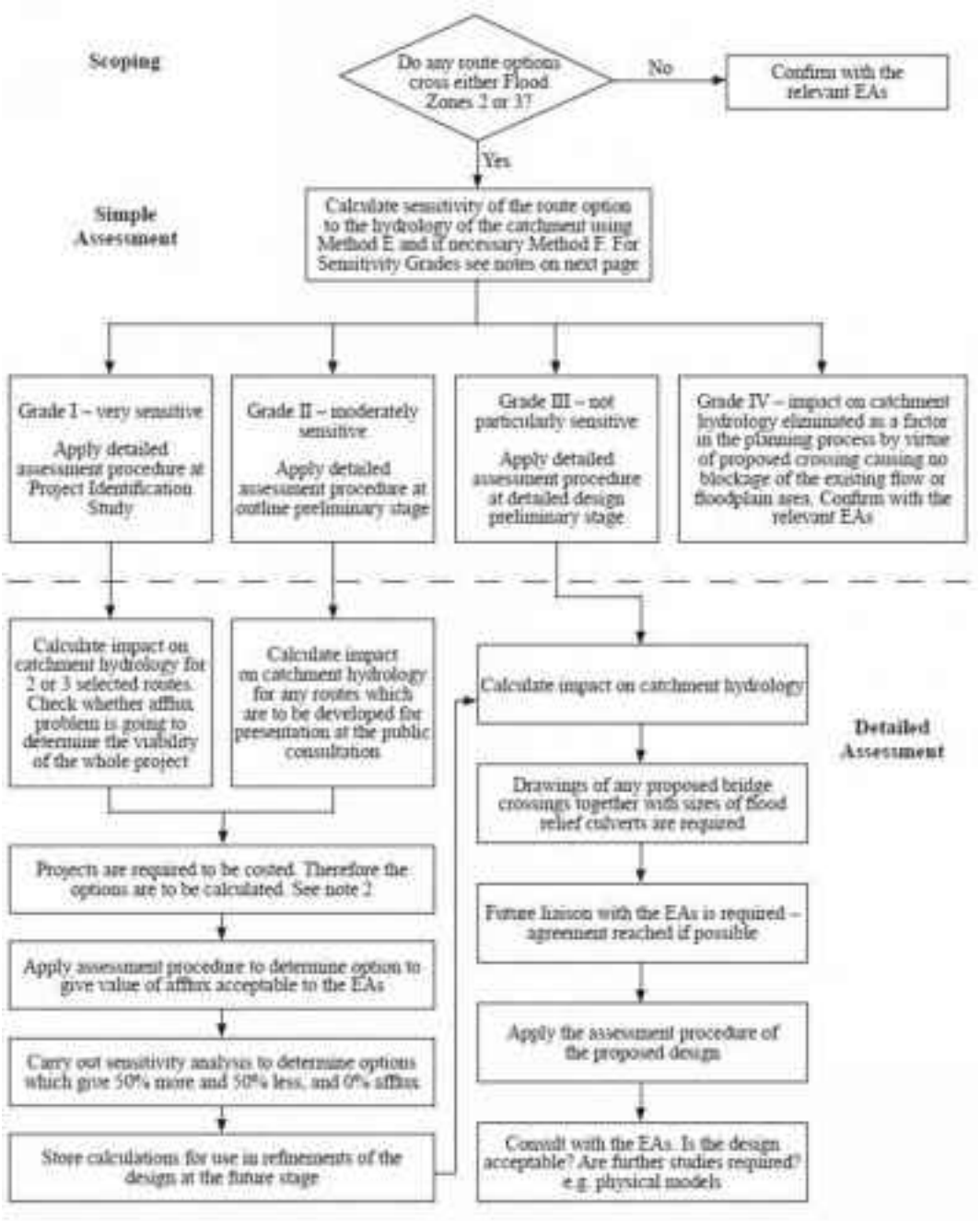


Figure 3 Extract from DMRB HD 45/09 “Figure 6.3 – Flowchart for Implementing the Assessment of Flood Risk due to Projects Crossing a Floodplain”

4.2 Proposed Assessment Approach

The simple assessment is largely a desk-based exercise using the collected data to determine if there is a potential for impact on the water environment. It is therefore predominantly a qualitative assessment. This section outlines the proposed approach to the assessment as agreed with SEPA.

As per the flowchart in Figure 3, the DMRB approach to the Simple Assessment requires calculation of the sensitivity of the route option to the hydrology of the

catchment. AmeyArup have agreed with SEPA an adapted approach where the risk posed to potential receptors will be used to define sensitivity. All the potential route options that were taken forward after the Second Fix Sifting Assessment include crossings of extensive floodplain, with potentially high cost differentials, and numerous watercourse crossings. However, the study area is predominantly rural with relatively few receptors at flood risk. The proposed method therefore provides a risk-based approach, targeting the detailed assessments at DMRB Stage 2 to those locations which could have the highest potential impact on flood risk.

The method proposed for the Simple Assessment was as follows:

- Identify all locations where the route options cross or impinge on an area of functional floodplain or a watercourse. SEPA's flood map (medium likelihood) will be used to define the functional floodplain;
- Identify built receptors potentially at flood risk under baseline conditions upstream of each of these crossings;
- Built receptors within SEPA's medium likelihood flood extents are identified using the OS Address Point dataset. Built receptors on the edge or just outside of these flood extents will also be included;
- The distance upstream considered for each crossing is dependent upon the watercourse gradient; crossings of lower gradient channels have the potential to raise water levels for a greater distance upstream than steeper channels. A minimum of 500m has been used, with a maximum of 5km used for the crossing of the River Don downstream of Inverurie;
- Identify the proposed crossing type and the potential impact it may have on upstream flood risk; and
- Define the sensitivity of each crossing according to Table 2.

It is worth noting that SEPA's flood maps do not provide flood extents for watercourses with a catchment area of less than 3km^2, therefore any proposed crossings of these smaller watercourses will not be included in the Simple Assessment. It is considered at this stage of the project that an appropriately sized structure should be able to convey the flood flows associated with these smaller watercourses, which will be confirmed for the preferred option during DMRB Stage 3.

The method for the Simple Assessment focuses on the potential for new crossings to increase upstream flood levels. Downstream flood risk could also be affected if the route option encroaches into the floodplain. At this stage of the project it is anticipated that any loss of floodplain storage capacity will be mitigated through provision of equivalent compensatory storage. The assessment of compensatory storage requirements at DMRB Stage 2 will be qualitative only.

4.3 Developed Assessment Approach

During the assessment, the method described in Section 4.2 has been enhanced to make better use of the information available and present a more comprehensive assessment of risk. Potential flood risk receptors for watercourses with a

catchment area smaller than 3km² have been identified using available desk-based data sources (including SEPA's pluvial flood risk maps) and included as part of the assessment.

Greater attention has also been given to any potential loss of floodplain and the impact this may have downstream of any interaction. The definitions in Table 3 have therefore been updated to reflect this enhanced approach. The sensitivity grades in Table 2 have been colour coded, using a red-orange-yellow-green approach to reflect the sensitivity. This same colour coding is then reflected in the analysis sections of the report.

In accordance with the methodology agreed with SEPA and Aberdeenshire Council, each location where a route option crosses or impinges on an area of functional floodplain or a watercourse has been identified.

Built receptors, potentially at flood risk, have then been identified using the OS Address Point Data Set and SEPA flood maps where available. A qualitative assessment of risk posed by each route option has been made by judgement. The sensitivity of each point has then been defined in accordance with Table 2.

The points are referenced in order of chainage along the main alignment, starting at the north-west and working towards the south-east.

Where the qualitative assessment assigned sensitivity grade II, as defined in Table 2, the further hydraulic modelling approach undertaken at DMRB Stage 2 is described in Chapters 12 and 13.

Sizing of Crossings

An estimate of flow has been made using catchment characteristics. These flows have been used to give an indicative size of culvert required to convey the 200-year event plus a 20% allowance for climate change with a 600mm freeboard.

For simplicity at this stage, the crossings have been split into four broad bands, based on capacity:

- A 1200mm Ø pipe can convey up to 0.83 m³/s;
- A 2 x 3m box culvert can convey up to 4.19 m³/s;
- A 3 x 5m box culvert can convey up to 14.91 m³/s; and
- It is assumed that any watercourse calculated to have a flow greater than 14.91 m³/s in the 200-year event with a 20% allowance for climate change applied, will require a bridge to cross it.

Detailed hydrological assessment will be undertaken at DMRB Stage 3 to produce flow estimates using Flood Estimation Handbook methodologies and crossings will be sized individually during the detailed design at DMRB Stage 3.

Mitigation

The sequential approach taken during the sifting process described in Section 3.5 has been applied during the development of the DMRB Stage 2 design and will continue into DMRB Stage 3. Measures to minimise the impact of the route options on the water environment during the operational phase have also been defined for use in the DMRB Stage 2 Environmental Assessment. The flood risk assessment

presented in Chapters 6 - 11 of this report takes into consideration the outline design and these operational mitigation measures, which include:

- Structures will be used where possible to cross floodplains rather than embankments, placing the abutments outside of the functional floodplain;
- Retaining walls have been incorporated into the outline design in certain locations to avoid encroachment into the functional floodplain. Opportunities to take this approach elsewhere along the route options will be explored in more detail at DMRB Stage 3;
- SuDS basins will avoid the functional floodplain where possible;
- Where encroachment into the functional floodplain cannot be avoided, appropriate mitigation measures will be used to maintain floodplain conveyance and storage, for example, provision of flood relief culverts and/or like-for-like compensatory flood storage as close to the area lost as possible;
- Bridges, culverts and channel realignments will be designed as far as possible to avoid increasing flood risk to upstream and downstream receptors. Bridges and culverts will be sized to convey the 1 in 200-year return period flood event, including allowances for both climate change and freeboard;
- Discharges from the SuDS to watercourses will be restricted to the equivalent of a 10-year greenfield runoff rate, for all events up to the 30-year rainfall event, as agreed with Aberdeenshire Council. SuDS will be maintained in accordance with CIRIA guidance; and
- The drainage design (road drainage, management of runoff from the wider catchment and drainage at road cuttings) will consider the natural drainage catchments and existing flow pathways, replicating the existing drainage patterns and preventing the build-up of surface water runoff wherever possible.

Table 2 Definition of Sensitivity

Sensitivity (DMRB Definition)	Definition	Action
Grade I – very sensitive Apply detailed assessment procedure at Project Identification Study	N/A – project has already progressed beyond the Project Identification Stage	N/A
Grade II – moderately sensitive Apply detailed assessment procedure at outline preliminary stage	Potential flood risk impacts are high: • Large number of built receptors at risk of flooding upstream of the crossing; and/or • Based on the location and proposed crossing type, potential impacts may be challenging to mitigate (including downstream impacts due to loss of floodplain storage).	Hydraulic modelling to be carried out at DMRB Stage 2 to improve the understanding of existing flood risk and potential impacts of the crossing (DMRB Method E and F).
Grade III – not particularly sensitive Apply detailed assessment procedure at detailed design preliminary stage	• Potential flood risk impacts limited to a small number of built receptors and, based on the proposed crossing solution, are likely to be mitigatable; and/or • The initial review indicates that the design of any required compensatory storage or channel realignments should be feasible and is unlikely to result in an increase in flood risk to built receptors.	No hydraulic modelling required at DMRB Stage 2. Further assessment to be carried out at DMRB Stage 3, including hydraulic modelling in more sensitive locations (DMRB Method E and F).
Grade IV – impact on catchment hydrology eliminated as a factor in the planning process by virtue of proposed crossing causing no blockage of the existing flow or floodplain area.	• No built flood risk receptors upstream of the proposed crossing; and • No requirements for compensatory storage or channel realignment.	Further assessment will be undertaken at DMRB Stage 3 to confirm the results of the Simple Assessment.

5 Sources and Mechanisms of Flooding

5.1 Historic Flood Risk

There are several areas within the study area which have experienced flooding historically. Information on some of these is set out in the North East Local Plan District – Local Flood Risk Management Plan, under the potentially vulnerable areas, as discussed in Section 2.7 of this report.

In summary:

Huntly has flooded from the River Deveron, River Bogie and Meadow Burn. The earliest recorded flood was in 1829, but more recently, 12 flood events have been recorded since 1997. The highest impact flood on record occurred in November 2009 when over 100 people had to be evacuated from the Meadows area, including from a nursing home, due to flooding from the Meadow Burn.

The earliest recorded flooding in Insch is from 1864 associated with the Shevock Burn. Seven flood events have been recorded since 2002 attributed to both the Shevock and the Valentines Burn. The highest impact flood on record within this potentially vulnerable area occurred in November 2002, when a nursing home had to be evacuated due to flooding by Shevock Burn; residential properties were also affected.

Inverurie and Kintore are regularly impacted by flooding from the River Don and the River Urie, with the earliest recorded event occurring in 1768. The highest flow recorded at the Parkhill gauging station was in 2016, whilst the highest water level at the Bridge of Don was recorded in 2002. Flood events have been recorded in most years since 2002, with almost 150 properties damaged by two events in January 2016.

5.2 Principal Categories

In accordance with SPP, an FRA should consider the probability of flooding from all sources. The principal categories of flooding mechanisms include:

- Tidal/Coastal;
- Fluvial;
- Pluvial;
- Groundwater:
- Artificial Drainage Systems; and
- Infrastructure Failure.

5.3 Tidal/Coastal Flooding

Tidal/coastal flooding originates from the sea (either open coast or estuary) where water levels exceed the normal tidal range and flood onto the low-lying areas that define the coastline.

Based on the SEPA Flood Maps[18], none of the route options pass through areas estimated to be at risk of Tidal/Coastal flooding, and none of the proposals are considered to pose a risk of increasing coastal flooding elsewhere.

The risk of Tidal/Coastal flooding will therefore not be considered any further as part of this assessment.

5.4 Fluvial Flooding

Fluvial flooding occurs when a watercourse is overwhelmed or obstructed and bursts its banks.

Each of the six remaining route options have several interactions with various watercourses. The risk associated with fluvial flooding is therefore considered to be high to medium in accordance with the risk framework set out in SPP in several areas. These areas are therefore considered in more detail for each route option in Chapters 6-11 of this report.

5.5 Pluvial Flooding

Pluvial flooding is defined as flooding that occurs because of rainfall-generated overland flow, where the rate of rainfall exceeds the infiltration capacity of the surface substrate or the rate at which any drainage system in place can convey the water away from the surface. In addition, areas with no natural outlet due to ground levels, i.e. sink-shaped, are prone to attract and retain surface water.

Given the undulating nature of this largely rural study area, there is a significant risk of pluvial flooding, particularly where steep hill sides naturally shed towards the route options. This risk is therefore considered to be high to medium in various locations.

Pluvial flooding is therefore considered at a high level for each of the six route options, focussing on the potential for runoff to affect the proposed infrastructure. Pluvial flow pathways and potential receptors will be considered in greater detail at DMRB Stage 3.

5.6 Groundwater Flooding

Groundwater flooding occurs as a result of water rising up from the underlying strata or from water flowing from springs. This tends to occur after long periods of sustained high rainfall.

[18] SEPA Flood Maps, SEPA (http://map.sepa.org.uk/floodmap/map.htm)

SEPA's flood map shows locations where groundwater could influence the duration and extent of flooding from other sources. There are no such locations shown within the study area and at this stage, no specific ground investigation works have been carried out.

For this reason, any discussion regarding groundwater flooding is limited to lengths of the route options which are in cut, with potentially challenging outfalls or where springs or issues are noted on OS plans. The assessment focuses on the potential for groundwater flooding to impact upon the proposed infrastructure. The potential impact of the route options on the groundwater regime will be assessed in the DMRB Stage 2 Environmental Assessment.

5.7 Flooding from Artificial Drainage Systems

During heavy rainfall, flooding from artificial drainage systems may occur if the rainfall event exceeds the capacity of the drainage system or if the system becomes blocked by debris or sediment. This will also occur if the system surcharges due to a high-water level in the receiving watercourse. Flooding will result if water overflows from the drainage system or if water is unable to enter a drainage system that is blocked or has inadequate capacity.

Any existing drainage systems will be removed or adapted to suit the scheme, whilst new sections of road will have associated new drainage systems, designed in accordance with current standards and criteria agreed with SEPA and Aberdeenshire Council.

The risk of flooding from artificial drainage systems is therefore considered to be low and will therefore be dealt with as part of the detailed drainage design during DMRB Stage 3.

5.8 Flooding from the Failure of Infrastructure

This source poses a threat where existing infrastructure retains, transmits or controls the flow of water. Flooding may result if there is a structural, hydraulic, geotechnical, mechanical or operational failure.

There is currently no known infrastructure, upstream of the study area, that performs any of these functions. This mechanism will therefore not be considered further at this stage.

Several flood prevention schemes are currently being considered by Aberdeenshire Council. Depending on the chosen solution, these may be considered as infrastructure with the potential to cause flooding through failure. As these schemes progress, AmeyArup will consult with Aberdeenshire Council to understand the interaction of the schemes in relation to flood risk.

5.9 Summary

The following flood mechanisms will therefore be considered further as part of this assessment:

Table 3 Summary of Existing Flood Risk Generally

Mechanism	**Risk**	**Action**
Tidal/Coastal	N/A	No action
Fluvial	High to Medium	Further consideration required
Pluvial	High to Medium	Further consideration required
Groundwater	Unknown	Further consideration required
Artificial Drainage Systems	Low	Consider at DMRB Stage 3
Infrastructure Failure	N/A	Monitor going forward

6 Cyan Route Option

6.1 Location

The Cyan route option is 13.3km long and links the existing A96 east of Huntly to the south of Colpy, where the route option would continue onto either the Brown or Pink route option. The Cyan route option is a largely on-line section, closely following the alignment of the existing A96.

The Cyan route option is illustrated in the following drawings:

Drawing 1 A96PEA–AMAR–EWE–SWI–MP–YH–00111

Drawing 2 A96PEA–AMAR–EWE–SWI–MP–YH–00112

6.2 Catchment Characteristics

This area is almost entirely rural, with no large settlements within the localised study area. Colpy is the largest settlement on the Cyan route option, with a population of 127 based on the 2011 census.

The route option falls into three main watercourse catchments:

- Ch000 – 1100 falls within the catchment of the Burn of Slioch;
- Ch1100 – 3100 falls within the catchment of the Burn of Bogside; and
- Ch3100 – 13272 (end) falls within the catchment of the River Urie (source to Old Rayne waterbody), which is referred to as the Glen Water on the OS mapping in these upper reaches.

The watercourses are referenced on the associated drawings.

Burn of Slioch

The Burn of Slioch is a small tributary of the Knightland Burn, which in turn feeds the Burn of Cobairdy 5.6km north east of Huntly. The burn has a catchment area of 2.5km² and flows to the north with approximately 0.4km² of this area originating from the south of the existing A96.

Burn of Bogside

The Burn of Bogside is a tributary of the Burn of Drumblade. The Burn of Drumblade and the Burn of Cobairdy combine 7.2km north east of Huntly to become the Burn of Forgue. The Burn of Bogside has a catchment area of approximately 3.8km² and flows to the north with approximately 0.8km² of this area coming from an area to the south of the existing A96.

River Urie – Source to Old Rayne

The River Urie is a significant watercourse with a catchment area of over 300km² at its confluence with the River Don, to the south-east of Inverurie. In the context of the Cyan route option, the River Urie has a catchment of approximately 28.8km², prior to its confluence with the Jordan Burn at Colpy.

The SAAR (Standard Annual Average Rainfall) value varies along the length of the route option, with a value 875mm recorded to the north-west at the Burn of Slioch, 922mm recorded at the Burn of Bogside and values of between 892mm and 964mm given depending on where along the length of the River Urie the measurement is taken. All SAAR values are based on the latest FEH[19] Data.

6.3 Route Option Alignment

The Cyan route option, has a high point of around 277m above ordnance datum (mAOD) at around Ch3125. The alignment falls to a level of approximately 144mAOD at Colpy and around 178mAOD at the tie-in east of Huntly. The topography in this area is generally hilly in nature and the route option lies at or near the top of the catchment of the various watercourses in the vicinity.

Based on the structures inventory for the equivalent section of the A96, there are 13 known watercourse crossings for this route option of existing road.

6.4 Fluvial Flood Risk

Based on the SEPA Flood Maps, and as shown on the associated drawings, there is little or no floodplain in the area associated with the Cyan route option. This means that most of the fluvial risk areas on the Cyan route option are associated with new watercourse crossings.

West of Ch4000, none of the watercourses are large enough to show up on the SEPA fluvial flood maps, which only show data for watercourses with a catchment area greater than 3.0km². East of this point, the estimated 200-year flood extents for the River Urie are shown to be very limited and largely confined to the channel of the watercourse.

Analysis

The following tables take each point in turn and assesses the fluvial flood risk associated with the interaction of the route option and watercourse should this route option be taken forward. Each interaction point is marked on the associated drawings.

[19] Flood Estimation Handbook, UK Centre for Ecology and Hydrology (https://fehweb.ceh.ac.uk/)

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 125	355917, 837809	Tributary to the Burn of Slioch	< 0.5	1200mm
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (60m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 2950	357446, 835576	Keithny Burn/Forgue Burn	< 0.5	N/A
Main Route/Side Road: Main route **Type of Interaction:** Existing drainage to be removed **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 360m upstream from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** This field drain will be removed. Any overland flow to be picked up by exterior catchment drainage.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 3525	357912, 835280	Field Drain	< 0.5	N/A
Main Route/Side Road: Main route **Type of Interaction:** Existing drainage to be removed **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** This field drain will be removed. Any overland flow to be picked up by exterior catchment drainage.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 4900	359160, 834727	Burn of Lipsden	0.9	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (90m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 5875	360123, 834931	Tributary of River Urie 7	0.8	1200mm
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (30m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 350m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** The realigned existing road is to pass beneath the proposed route option at this location, immediately adjacent to the watercourse. Further work required at DMRB Stage 3 to ensure the risk of flooding to the road is acceptable.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 5900	360132, 834917	Tributary of River Urie 7	0.9	Bridge
Main Route/Side Road: Main route **Type of Interaction:** Bridge **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 375m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** An underbridge is proposed at this location, incorporating the watercourse crossing. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 6000	360248, 834903	River Urie – source to Old Rayne	12.3	Bridge
Main Route/Side Road: Main route **Type of Interaction:** Bridge **Built Receptors Adjacent or Upstream:** There no built receptors identified within SEPA's mapped flood extents within 500m upstream. **Potential Floodplain Encroachment:** Yes. An underbridge is proposed in this location, with abutments located outwith the floodplain. Compensatory storage not required. **Comment:** An underbridge is proposed at this location, incorporating the watercourse crossing. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 6525	360754, 834821	Tributary of River Urie 8	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (50m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 175m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** The existing buildings are around 12m higher than the proposed crossing. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 6950	361184, 834796	Tributary of River Urie 9	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (60m) + minor watercourse realignment **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 220m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 7475	361667, 834609	Tributary of River Urie 10	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (100m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 140m from this point, but the existing buildings are approximately 10m higher than the proposed crossing, therefore are not considered to be at existing flood risk. **Potential Floodplain Encroachment:** No **Comment:** The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 7500	361690, 834595	Tributary of River Urie 10	< 0.5	N/A
Main Route/Side Road: Main route **Type of Interaction:** Watercourse realignment **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 140m from this point, but the existing buildings are approximately 10m higher than the proposed crossing, therefore are not considered to be at existing flood risk. **Potential Floodplain Encroachment:** No **Comment:** This realignment ties into the crossing at Ch7475. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 7750	361933, 834590	Tributary of River Urie 11	< 0.5	Existing
Main Route/Side Road: Side road **Type of Interaction:** Extend existing culvert (20m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 90m from this point, however, are not considered to be at existing flood risk due to the elevation difference with the crossing and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Although not shown on the existing structures inventory, it is assumed there is an existing culvert in this location. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 9000	363116, 834397	Tributary of River Urie 12	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (60m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 90m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** The existing buildings are around 15m higher than the proposed crossing. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 9350 – 9500	N/A	River Urie – source to Old Rayne	19.8	N/A
Main Route/Side Road: Main route **Type of Interaction:** Watercourse realignment **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** Yes. The watercourse is to be realigned in this location and there appears to be space available for the provision of compensatory storage. To be assessed in detail at DMRB Stage 3. **Comment:** A length of approximately 150m of the River Urie will need to be realigned to accommodate the proposed route option. The realignment design will incorporate any required compensatory floodplain storage. The risk of flooding associated with this realignment is low.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 10100	364259, 834510	River Urie – source to Old Rayne	25.2	N/A
Main Route/Side Road: Main route **Type of Interaction:** Earthworks encroach into floodplain **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** Yes. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** It is anticipated that design development during DMRB Stage 3 may be able to steepen the earthworks slope at this location to avoid any impact on the functional floodplain.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 10275	364279, 834264	Tributary of River Urie 13	< 0.5	1200mm
Main Route/Side Road: Main route and side road **Type of Interaction:** Proposed new culvert (200m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** There is an existing 675mm culvert shown on the structures inventory, associated with the adjacent section of the existing A96. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 10500	36442, 834034	River Urie – source to Old Rayne	25.9	N/A
Main Route/Side Road: Main route **Type of Interaction:** Earthworks encroach into floodplain **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** Yes. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** It is anticipated that design development during DMRB Stage 3 may be able to steepen the earthworks slope at this location to avoid any impact on the functional floodplain.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 11525	364264, 833024	Tributary of River Urie 14	< 0.5	1200mm
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (90m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 90m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** The existing buildings are around 5m higher than the proposed crossing. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 11550	364187, 833048	Tributary of River Urie 14	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (40m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 140m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** The existing buildings are around 5m higher than the proposed crossing. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 12225	364017, 832374	Jordan Burn	2.8	2 x 3m box
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (40m) **Built Receptors Adjacent or Upstream:** There is an existing building approximately 280m from this point, but it is not considered to be at existing flood risk and is not considered as a potential receptor. **Potential Floodplain Encroachment:** No **Comment:** The existing building is around 15m higher than the proposed crossing. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 12250	364017, 832374	Jordan Burn	2.8	2 x 3m box
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (120m) **Built Receptors Adjacent or Upstream:** There is an existing building approximately 340m from this point, but it is not considered to be at existing flood risk and is not considered as a potential receptor. **Potential Floodplain Encroachment:** No **Comment:** The existing building is around 15m higher than the proposed crossing. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 12350	363987, 832273	Tributary to the Jordan Burn	< 0.5	1200mm
Main Route/Side Road: Side road + Main route **Type of Interaction:** Proposed new culvert (140m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 60m from this point, however, they are not considered to be at existing flood risk due to the elevation difference with the crossing and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
C 12650	363948, 831993	Field drain	< 0.5	N/A
Main Route/Side Road: Side road + Main route **Type of Interaction:** Existing drainage to be removed **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 150m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** This field drain will be removed. Any overland flow to be picked up by exterior catchment drainage.				
			Sensitivity:	Grade IV

Summary

23 individual points on the Cyan route option have been assessed with regards to fluvial flood risk:

- 13 new culverts are proposed;
- One existing culvert is to be extended;
- Three watercourse realignments are necessary;
- Two crossings are incorporated into bridging structures;
- In three instances, existing field drains are to be removed; and
- In two instances, earthworks are shown to encroach on the floodplain.

In terms of sensitivity:

- Four of the 23 points have been assessed as Grade III, not particularly sensitive. This means that, although there are a small number of built receptors upstream of the point under consideration, any risk has been assumed to be mitigatable; and
- 19 of the 23 points have been assessed as Grade IV, meaning there are no receptors deemed to be at risk of flooding.

6.5 Pluvial Flood Risk

Based on the topography of the catchment in which the Cyan route option is set, there are several areas where specific consideration will have to be given to the overland flow from the exterior catchment. Another key consideration is to maintain the existing catchment areas and runoff regimes wherever possible. This will be considered in detail during DMRB Stage 3.

At DMRB Stage 2, the areas likely to require the most attention have been identified. The Cyan route option has therefore been split into sections. The section boundaries have been chosen as they cover areas where the runoff regime is similar, and the overland flow will therefore be dealt with in a similar manner.

Analysis

Ch000 – Ch3200; There is small area to the south of the route option, which naturally sheds north. There are existing watercourses in this area and small-scale drainage will be required to intercept overland flow and maintain these catchments.

Ch3200 – Ch4050; The topography naturally sheds from the north towards the River Urie, though again the areas are small. The runoff is expected to be picked up by the existing A96 drainage, which will remain in place over this length.

Ch4050 – Ch5800; Over this length, the natural catchment continues to shed water from the north towards the River Urie, but the route option is positioned to the north of the existing road. Cut off drains will therefore be necessary to intercept any overland flow.

Ch5800 – Ch6100; The route option is on a raised structure and is not subject to pluvial flood risk.

Ch6100 – Ch8250; Over this section, there is an area of approximately 200ha which sheds north from the Hill of Foudland towards the Cyan route option. There are several existing field drains and ditches which will need to be maintained whilst cut off drainage will be required to intercept overland flow.

Ch8250 - Ch12450; Over this section, the existing A96, some of which is to be realigned, lies between the new A96 and the runoff from the Hill of Skares. The existing cut off drains associated with this road will need to be maintained, reinstated and in some places upgraded to accommodate the runoff from an area of around 200ha, shedding from the adjacent Hill of Skares.

Ch12450 – Ch13272; There is a small area to the west of the route option which will naturally shed runoff towards the new road. This will be collected and will continue to discharge to the Jordan Burn, as it does at present.

Summary

Around half of the Cyan route option lies high within the catchment of the various watercourses in the area, where the risk of pluvial flooding is generally low. However, between Ch6100 and Ch12450, there is a significant risk of pluvial flooding associated with the runoff from the adjacent Hills of Foudland and Skares.

During the detailed design, attention will be given to the collection of the runoff from these areas.

6.6 Groundwater Flooding

As discussed in Chapter 5, no specific information on groundwater flooding is available and at this stage no specific ground investigation works have been carried out. Any discussion regarding groundwater flooding is therefore limited to sections of the Cyan route option which are in cut, with potentially challenging outfalls.

Analysis

Ch900 – Ch1800; The Cyan route option is shown to be in cut over this length, to a maximum depth of around 12m. However, the route option is on a relatively steep longitudinal gradient over this length and groundwater flooding is unlikely to be an issue.

Ch2100 – Ch2700; The Cyan route option is shown to be in cut over this length, to a maximum depth of around 15m. Again, this section is through a hill and the route option has a steep longitudinal gradient. There is unlikely to be a significant risk of groundwater flooding.

Ch4200 – Ch4650; This section is again in cut, with a maximum depth of approximately 12m. The route option passes through a hill at this point, on a relatively steep gradient. Groundwater flooding is unlikely to be an issue.

Ch5000 – Ch5550; The Cyan route option is again shown to be in cut over this length, this time with a maximum depth of approaching 9m. The proposed gradient of the alignment is relatively steep over this section and groundwater flooding is unlikely to be an issue.

Ch7550 – Ch8950; The Cyan route option is shown to be in cut for around 1.4km through this section, with a maximum depth of around 13m. The longitudinal gradient is relatively flat, whilst the Hills of Foudland and Skares lie to the south, shedding runoff towards the road. Although there is a clear pathway to the River Urie to the north, greater care must be taken in this area to make sure groundwater does not become an issue.

Ch12950 – Ch13272; The Cyan route option is shown to be in cut over this section, with a maximum depth approaching 13m. The route option passes through a hill and has a relatively steep longitudinal gradient. Groundwater flooding is unlikely to be an issue, but cognisance must be taken of what happens as the Cyan route option joins either the Pink or Brown route options.

Summary

Subject to site investigation, groundwater flooding is considered unlikely to be an issue for the Cyan route option. Care must be taken not to cut off the natural flow paths for groundwater, coming from the Hill of Foudland and the Hill of Skares, feeding the River Urie.

7 Red Route Option

7.1 Location

The Red route option is 12.2km long and links the existing A96 east of Huntly to the south of Colpy, where the route option would continue onto either the Brown or Pink route option. The route option is largely off-line, running to the south of the existing A96 and is a direct alternative to the Cyan route option covered in Chapter 6.

The Red route option is illustrated in the following drawings:

Drawing 3 A96PEA–AMAR–EWE–SWI–MP–YH–00121

Drawing 4 A96PEA–AMAR–EWE–SWI–MP–YH–00122

7.2 Catchment Characteristics

This area is almost entirely rural, with no large settlements within the localised study area. Colpy is the largest settlement on the route option, with a population of 127 based on the 2011 census.

The route option falls into four main watercourse catchments:

- Ch000 – 1100 falls within the catchment of the Burn of Slioch;
- Ch1100 – 2950 falls within the catchment of the Burn of Bogside;
- Ch2950 – 8950 falls within the catchment of the River Urie (source to Old Rayne);
- Ch8950 – 11650 falls within the catchment of the Jordan Burn; and
- Ch11650 - Ch12154 (end) falls within the catchment of the River Urie (source to Old Rayne).

The River Urie (source to Old Rayne waterbody) is referred to as the Glen Water on the OS mapping in the upper reaches, whilst the Jordan Burn flows to the east of Ch12000, south of Colpy.

The watercourses are referenced on the associated drawings.

Burn of Slioch

The Burn of Slioch is a small tributary of the Knightland Burn, which in turn feeds the Burn of Cobairdy around 5.6km north east of Huntly. The burn has a catchment of around 2.5km² and flows to the north with just around 0.4km² of this area coming from the south of the existing A96.

Burn of Bogside

The Burn of Bogside is a tributary of the Burn of Drumblade. The Burn of Drumblade and the Burn of Cobairdy combine around 7.2km north east of Huntly to become the Burn of Forgue. The Burn of Bogside has a catchment area of

approximately 3.8km² and flows to the north with approximately 0.4km² of this area coming from an area to the south of the existing A96.

River Urie (Source to Old Rayne)

The River Urie is a significant watercourse with a catchment area of over 300km² by the time it reaches its confluence with the River Don, to the south-east of Inverurie. In the context of the Red route option, the River Urie has a catchment of approximately 18.8km², opposite Ch8950, where the Red route option passes into the Jordan Burn catchment.

The River Urie has a catchment area of approximately 32.9km² adjacent to the eastern end of the Red route option at Ch 12154.

Jordan Burn

The Jordan Burn is a tributary to the Urie with a catchment area of approximately 3.4km², with 2.5km² of this coming from west of the Red route option. It is largely fed by runoff from the Hills of Foudland and Skares to the north.

The SAAR value varies along the length of the route option, with a value 875mm recorded to the north at the at the Burn of Slioch, 922mm recorded at the Burn of Bogside and 892mm given for the Jordan Burn.

Values of between 892mm and 964mm are given depending on where along the length of the River Urie the measurement is taken. All SAAR values are based on the latest FEH Data.

7.3 Route Option Alignment

The Red route option traverses the highest part of the overall scheme, with a high point of approximately 271mAOD at around Ch3150. The alignment falls to a level of approximately 144mAOD at Colpy and around 178mAOD at the tie in east of Huntly. The catchment in this area is therefore generally hilly in nature and lies at or near the top of the catchment of the various watercourses in the vicinity.

Based on the structures inventory for the equivalent section of the A96, there are 13 known watercourse crossings for this route option of existing road.

7.4 Fluvial Flood Risk

Based on the SEPA Flood Maps, and as shown on the associated drawings, there is little or no floodplain in the area associated with the Red route option. This means that the clear majority of the fluvial risk areas on the Red route option are associated with new watercourse crossings.

West of Ch4100, none of the watercourses are large enough to show up on the SEPA fluvial flood maps, which only show data for watercourses with a catchment area greater than 3.0km². East of this point, the estimated 200-year flood extents for the River Urie are shown to be very limited and largely confined to the channel of the watercourse. The catchment area of the Jordan Burn only surpasses 3km² beyond the route option.

Analysis

The following tables take each point in turn and assess the fluvial flood risk associated with the interaction of the route option and watercourse should this route option be taken forward. Each interaction point is individually marked on the associated drawings.

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 125	355917, 837809	Tributary to the Burn of Slioch	< 0.5	1200mm
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (60m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 3150	357444, 835278	Field Drain	< 0.5	N/A
Main Route/Side Road: Main route **Type of Interaction:** Existing drainage to be removed **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 350m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** This field drain will be removed. Any overland flow to be picked up by exterior catchment drainage.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 3450	357549, 835003	Glen Water	1.0	1200mm
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (70m) + minor watercourse realignment **Built Receptors Adjacent or Upstream:** None within 500m. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert and realignment are sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 4050	357886, 834461	Glen Water	1.3	2 x 3m box
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (60m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 240m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** The existing buildings are around 15m higher than the proposed crossing. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 4200	357947, 834332	River Urie – source to Old Rayne	3.9	2 x 3m box
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (20m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 350m from this point, but they are not considered to be at existing flood risk (note that SEPA flood maps cease just upstream of the interaction point) and are not considered as potential receptors. **Potential Floodplain Encroachment:** Yes. A culvert is proposed in this location, with road embankments in the floodplain. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** The existing buildings are around 20m higher than the proposed crossing. The risk of flooding associated with this crossing is low assuming any required compensatory storage is provided.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 4625	358418, 834213	River Urie – source to Old Rayne	4.3	Bridge
Main Route/Side Road: Main route **Type of Interaction:** Bridge **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** Yes. An underbridge is proposed in this location, with abutments located outwith the floodplain. Compensatory storage not required. **Comment:** An underbridge is proposed at this location, incorporating the watercourse crossing. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 4950	358731, 834168	Burn of Stodfold	2.5	2 x 3m box
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (80m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 5675	359412, 834409	Tributary of River Urie 3	< 0.5	1200mm
Main Route/Side Road: Main road **Type of Interaction:** Proposed new culvert (40m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 210m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** The existing buildings are around 10m higher than the proposed crossing. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 5700	359389, 834483	Tributary of River Urie 4	< 0.5	1200mm
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (40m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 270m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** The existing buildings are around 15m higher than the proposed crossing. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 5850	359551, 834490	Tributary of River Urie 4	< 0.5	1200mm
Main Route/Side Road: Side road + Main route **Type of Interaction:** Proposed new culvert (100m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 150m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** The existing buildings are around 10m higher than the proposed crossing. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 6150	359809, 834627	Tributary of River Urie 5	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (70m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 210m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** The existing buildings are around 20m higher than the proposed crossing. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 6275	359940, 834669	Tributary of River Urie 6	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (90m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 50m from this point which are adjacent to the watercourse and could potentially be at existing flood risk. **Potential Floodplain Encroachment:** No **Comment:** The existing buildings are around 2m higher than the proposed crossing and the residential property appears to be set-back from the watercourse. Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 7050	360698, 834574	Tributary of River Urie 8	0.3	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (60m) **Built Receptors Adjacent or Upstream:** No properties within 500m. A minor road 100m upstream of the interaction point. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 7250	360886, 834502	Tributary of River Urie 9	< 0.5	N/A
Main Route/Side Road: Main route **Type of Interaction:** Existing drainage to be removed **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** This field drain will be removed. Any overland flow to be picked up by exterior catchment drainage.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 7475	361090, 834421	Tributary of River Urie 9	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (60m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 7750	361333, 834336	Tributary of River Urie 10	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (60m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 8025	361603, 834253	Tributary of River Urie 10	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (120m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 8250	361785, 834065	Field Drain	< 0.5	N/A
Main Route/Side Road: Main route **Type of Interaction:** Existing drainage to be removed **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** This field drain will be removed. Any overland flow to be picked up by exterior catchment drainage.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 9550	362842, 833375	Tributary to the Jordan Burn	< 0.5	1200mm
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (100m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low. The channel may extend upstream under the earthworks associated with the main route, which could require additional culverting.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 9600	362842, 833375	Tributary to the Jordan Burn	< 0.5	1200mm
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (140m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low. The channel may extend upstream under the earthworks associated with the main route, which could require additional culverting.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 10200 - 11200	N/A	Jordan Burn	2.2	N/A
Main Route/Side Road: Main route and side road **Type of Interaction:** Watercourse realignment **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 180m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** A length of approximately 1km of the Jordan Burn will need to be realigned to accommodate the proposed route option. The proposed realignment will be designed to ensure that there is no increase in flood risk to receptors (detailed assessment will be carried out at DMRB Stage 3).				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 10450	363551, 832918	Jordan Burn	2.3	2 x 3m box
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (60m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 180m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** The existing buildings are around 20m higher than the proposed crossing. Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 10900	363805, 832583	Jordan Burn	2.5	2 x 3m box
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (30m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 11075	363917, 832432	Jordan Burn	2.6	2 x 3m box
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (120m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 180m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low. Any overland flow would naturally shed to the next culvert downstream, rather than towards the buildings.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 11250	363942, 832275	Tributary to the Jordan Burn	< 0.5	1200mm
Main Route/Side Road: Main route and side road **Type of Interaction:** Proposed new culvert (150m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 60m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** The existing buildings are around 5m higher than the proposed crossing. Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low. Further assessment will be carried out at DMRB Stage 3 to confirm that there will be no increase in flood risk to these receptors given their proximity to the watercourse.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
R 11525	363947, 831995	Field Drain	< 0.5	N/A
Main Route/Side Road: Side road + Main route **Type of Interaction:** Existing drainage to be removed **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 160m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** This field drain will be removed. Any overland flow to be picked up by exterior catchment drainage.				
			Sensitivity:	Grade IV

Summary

26 individual points on the Red route option have been assessed with regards to fluvial flood risk:

- 20 new culverts are proposed;
- No existing culverts need to be extended;
- Two watercourse realignments are necessary;
- One crossing is incorporated into a bridging structure;
- In four instances, existing field drains are to be removed; and
- There are no instances where earthworks encroach on the floodplain

In terms of sensitivity:

- Four of the 26 points have been assessed as Grade III, not particularly sensitive. This means that, although there are a small number of built receptors upstream of the point under consideration, any risk has been adjudged to be mitigatable; and
- 22 of the 26 points have been assessed as Grade IV, meaning there are no receptors deemed to be at risk of flooding.

7.5 Pluvial Flood Risk

Based on the topography of the catchment in which the Red route option is set, there are several areas where specific consideration will have to be given to the overland flow from the exterior catchment. Another key consideration is to maintain the existing catchment areas and runoff regimes wherever possible. This will be considered in detail during DMRB Stage 3.

At DMRB Stage 2, the areas likely to require the most attention have been identified. The Red route option has been split into sections. The section

boundaries have been chosen as they cover areas where the runoff regime is similar, and the overland flow will therefore be dealt with in a similar manner.

Analysis

Ch000 – Ch3000; There is small area to the south of the route option, which naturally sheds north. There are existing watercourses in this area and small-scale drainage will be required to intercept overland flow and maintain these catchments.

Ch3000 – Ch4200; An area of approximately 100ha, from Saddle Hill to the west, naturally sheds water towards the River Urie. Cut off drains will have to be installed to intercept this runoff to allow it to continue to feed the River Urie.

Ch4200 – Ch4700; An area from Wishach Hill, to the south will continue to shed towards the River Urie. Over this length, little runoff from the exterior catchment is anticipated.

Ch4700 – Ch8900; As the Red route option skirts around the bottom of the Hill of Foudland, substantial drainage is expected to be required to intercept the runoff from an area of almost 600ha. Cut off drains will be installed and the catchments of the existing watercourses and ditches will be maintained as closely as possible.

Ch8900 – Ch10500; The route option moves through the catchment of the Jordan Burn, with runoff naturally shedding south towards the route option from the Hill of Skares to the north. An area of approximately 55ha will have to be allowed for.

Ch10500 – Ch12154; The route option moves between the Jordan Burn catchment and the River Urie catchment, with runoff naturally shedding from the hills to the west towards the route option. Areas are smaller and will be collected through cut off drains whilst existing catchments will be maintained.

Summary

The start of the Red route option lies high within the catchment of the various watercourses in the area, where the risk of pluvial flooding is generally low, due the smaller areas involved. However, between Ch3000 and Ch12154, there is a significant risk of pluvial flooding associated with the runoff from the adjacent Hills.

During the detailed design, significant attention will be given to the collection of the runoff from these areas.

7.6 Groundwater Flooding

As discussed in Chapter 5, no specific information on groundwater flooding is available and at this stage no specific ground investigation works have been carried out. Any discussion regarding groundwater flooding is therefore limited to sections of the route option which are in cut, with potentially challenging outfalls.

Analysis

Ch900 – Ch1800; The Red route option is shown to be in cut over this length, to a maximum depth of around 12m. However, the route option is on a relatively steep longitudinal gradient over this length and groundwater flooding is unlikely to be an issue.

Ch2100 – Ch2950; The Red route option is shown to be in cut over this length, to a maximum depth of over 18m. Again, this section is through a hill and the route option has a steep longitudinal gradient. There is unlikely to be a significant risk of groundwater flooding.

Ch3400 – Ch4450; This section is again in cut, with a maximum depth of over 12m. The route option passes through a hill at this point and has a relatively steep longitudinal gradient. Groundwater flooding is unlikely to be an issue.

Ch5000 – Ch5700; The Red route option is again shown to be in cut over this length, this time with a maximum depth of over 6m. The route option passes from one vertical curve to another through this area, creating a relative flat section at Ch5200, in over 5m of cut. This area will need further consideration when more information on groundwater is available.

Ch7100 – Ch7650; This section is shown to be in cut to a maximum depth approaching 7m. This section lies adjacent to the Hill of Foudland and care must be taken not to cut off the route of the groundwater feeding the River Urie to the north. There are also several existing drains in this area which will need to be lowered with the road.

Ch8400 – Ch9350; The route option is shown to be in cut to a maximum depth of around 26m as it passes between the Hill of Foudland and the Hill of Skares, though the longitudinal gradient of this section is relatively steep, which should allow for a pathway to maintain a route to the Jordan Burn.

Ch11850 – Ch12154; The Red route option is shown to be in cut over this section, with a maximum depth of approximately 13m. The route option passes through a hill with a steep longitudinal gradient. Groundwater flooding is unlikely to be an issue, but cognisance must be taken of what happens as the Red route option joins either the Pink or Brown route options.

Summary

Subject to site investigation, groundwater flooding is considered unlikely to be an issue for the Red route option. Care must be taken not to cut off the natural flow paths for groundwater coming from the Hill of Foudland and the Hill of Skares, feeding the River Urie and the Jordan Burn.

8 Pink Route Option

8.1 Location

The Pink route option is 10.0km long and links the end of either the Red or Cyan route options, at a point to the south of Colpy, to another point to the north of Pitcaple. The route option would continue by either the Orange or Violet route option. The route option is largely off-line, running to the north of the existing A96 and is considered as a direct alternative to the Brown route option covered in Chapter 9.

The Pink route option is illustrated in the following drawings:

Drawing 5 A96PEA–AMAR–EWE–SWI–MP–YH–00131

Drawing 6 A96PEA–AMAR–EWE–SWI–MP–YH–00132

8.2 Catchment Characteristics

This area is almost entirely rural, with no large settlements within the localised study area. Old Rayne is the largest settlement on the route option, with a population of 259 based on the 2011 census. Durno lies to the eastern end of the route option and based on the same census, the greater area around Durno has a population of 194.

The route option falls entirely within the catchment area of the River Urie, along which there are five notable tributaries:

- Ch2750 – 4000 falls within the catchment area of an un-named tributary to the Urie (referenced as Tributary of River Urie 15);
- Ch4000 – 5750 falls within the catchment of the Bonnyton Burn;
- Ch5750 – 7600 falls within the catchment of another un-named tributary (referenced as Tributary of River Urie 19);
- Ch7600 – 8600 falls within the catchment of another un-named tributary (referenced as Tributary of River Urie 20); and
- Ch8600 – Ch9961 (end) falls within the catchment of the Burn of Durno.

The watercourses are referenced on the associated drawings.

Tributary of River Urie 15

This is a small tributary with a catchment area of approximately 0.8km². This tributary drains an area around Lawrence Road and the associated areas of farmland. Around 0.4km² of the catchment comes from north to south, crossing the Pink route option.

Bonnyton Burn

The Bonnyton Burn is a large tributary to the River Urie, with a catchment area of approximately 19.2km². Around 17.6km² of this area comes from the north and crosses the Pink route option to reach the River Urie.

Tributary of River Urie 19

This is a small tributary with a catchment area of approximately 2.4km². This tributary primarily drains the area of farmland to the south of the existing road between Old Rayne and Durno. Around 1km² of this catchment passes from north to south across the route option, via a series of small field drains.

Tributary of River Urie 20

With a catchment area of around 2.1km², this tributary drains the area around Lourin Close to the River Urie. The Pink route option passes through the very upper reaches of this catchment, with the area crossing the route option minimal.

Burn of Durno

The Burn of Durno has a catchment area of over 20km² and discharges to the River Urie to the northeast of Pitcaple Castle. The proposed crossing of the Burn is in the lower reaches of this catchment with the runoff from around 18.8km² of mostly farmland draining to this point.

River Urie

The River Urie is a significant watercourse with a catchment area of over 300km² by the time it reaches its confluence with the River Don, to the south-east of Inverurie. In the context of the Pink route option, the River Urie has a catchment area of approximately 34.6km² at the proposed crossing at Ch1425 (River Urie – source to Old Rayne). The catchment has increased to 215.8km² by the time the Burn of Durno joins the Urie at the end of the route option (River Urie – Old Rayne to Pitcaple).

The SAAR value varies along the length of the route option, but generally lies between 830mm and 800mm. A value of 892mm is given for the Jordan Burn which lies to the north-west of this route option with a catchment at a higher altitude than the rest of this route option. All SAAR values are based on the latest FEH Data.

8.3 Route Option Alignment

The Pink route option provides a link between the two western route options (Cyan or Red) and the two eastern route options (Violet or Orange) at each end of the Pink route option. It provides a transition from the hilly areas to the northwest to the flatter, more populated areas, to the southeast, through an area of undulating farmland.

The Pink route option starts off at a high level of around 144mAOD at Colpy, with a secondary high point of around 141mAOD approaching Lawrence Road. The rest of the profile is gently undulating until around Ch8000, from where it falls more steeply, from a level of around 127mAOD down to approximately 84mAOD at the Burn of Durno crossing.

The catchment is therefore generally flatter than that of the western sections with larger watercourses in the area.

Based on the structures inventory for the equivalent section of the A96, there are nine known watercourse crossings for this route option of existing road.

8.4 Fluvial Flood Risk

Based on the SEPA Flood Maps, and as shown on the associated drawings, there are areas of significant floodplain in the area associated with the Pink route option.

The floodplain associated with the Urie increases in size beyond the confluence with the Jordan Burn to the north-west of the route option, with floodplain widths approaching 150m indicated on the SEPA flood maps.

There are further areas of floodplain shown to be in the region of 150 – 200m wide beyond the confluence with the Kellock.

The Urie, the Shevock and the Bonnyton Burn meet within a short length to the northwest of Old Rayne, with the floodplain associated with this confluence up to 250m wide in places.

Finally, at the eastern end of the route option, the floodplain associated with the confluence of the Urie and the Burn of Durno is substantial and is not confined to the channel of the watercourses. The width measured from the flood maps is up to around 400m wide.

A sequential approach was undertaken during the sifting process and an alignment has been taken which limits the interactions with the various watercourses as far as possible. This means that the clear majority of the fluvial flood risk points on the Pink route option are associated with proposed new watercourse crossings, which themselves have been positioned to minimise impact.

Analysis

The following tables take each point in turn and assess the fluvial flood risk associated with the interaction of the route option and watercourse should this route option be taken forward. Each interaction point is individually marked on the associated drawings.

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
P 1425	365110, 830463	River Urie – source to Old Rayne	34.4	Bridge
Main Route/Side Road: Main Route and Slip Road **Type of Interaction:** Bridge **Built Receptors Adjacent or Upstream:** There is one property approximately 115m upstream of the crossing. It is not currently at risk based on SEPA flood maps but is considered as a potential receptor due to being located just outside of the floodplain. **Potential Floodplain Encroachment:** Yes. An underbridge is proposed in this location, with abutments located outwith the floodplain. Compensatory storage not required. **Comment:** An underbridge is proposed at this location, incorporating the watercourse crossing. A comparison between the proposed road level and existing ground levels (>5m) suggests that a bridge structure can be designed to ensure no increase in flood risk to the upstream receptor (to be confirmed through detailed assessment at DMRB Stage 3).				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
P 1425	365101, 830463	River Urie – source to Old Rayne	34.4	Bridge
Main Route/Side Road: Slip Road **Type of Interaction:** Bridge **Built Receptors Adjacent or Upstream:** There is one property approximately 165m upstream of the crossing. It is not currently at risk based on SEPA flood maps but is considered as a potential receptor due to being located just outside of the floodplain. **Potential Floodplain Encroachment:** Yes. An underbridge is proposed in this location, with abutments located outwith the floodplain. Compensatory storage not required. **Comment:** An underbridge is proposed at this location, incorporating the watercourse crossing. A comparison between the proposed road level and existing ground levels (>5m) suggests that a bridge structure can be designed to ensure no increase in flood risk to the upstream receptor (to be confirmed through detailed assessment at DMRB Stage 3).				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
P 3700	367176, 829888	Tributary of River Urie 15	0.5	1200mm
Main Route/Side Road: Main Route **Type of Interaction:** Proposed new culvert (110m) + minor watercourse realignment **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert and realigned channel are sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
P 4775 - 4950	368060, 829373	Tributary of Bonnyton Burn 1	< 0.5	N/A
Main Route/Side Road: Main Route **Type of Interaction:** Watercourse realignment **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** A length of approximately 175m of this burn will need to be realigned to accommodate the proposed route option.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
P 5050	368296, 829181	Bonnyton Burn	17.6	Bridge
Main Route/Side Road: Main route **Type of Interaction:** Bridge **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 140m upstream of the crossing. These buildings are not currently at risk based on SEPA flood maps but are considered as potential receptors due to being located in close proximity to the floodplain extent. **Potential Floodplain Encroachment:** Yes. An underbridge is proposed in this location, with abutments located outwith the floodplain. Compensatory storage not required. **Comment:** An underbridge is proposed at this location, incorporating the watercourse crossing. A comparison between the proposed road level and existing ground levels (~10m) suggests that a bridge structure can be designed to ensure no increase in flood risk to the upstream receptors (to be confirmed through detailed assessment at DMRB Stage 3).				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
P 6225	369045, 828308	Tributary of River Urie 19	< 0.5	Bridge
Main Route/Side Road: Main route **Type of Interaction:** Bridge **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 210m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** An underbridge is proposed at this location, incorporating the watercourse crossing. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
P 6900	369652, 827993	Tributary of River Urie 19	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (40m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 260m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
P 7150	369854, 827885	Tributary of River Urie 19	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (80m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 260m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
P 7350	370046, 827758	Tributary of River Urie 19	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (60m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 260m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
P 7675	370292, 827589	Tributary of River Urie 20	< 0.5	N/A
Main Route/Side Road: Main route **Type of Interaction:** Existing drainage to be removed **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 290m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** This field drain will be removed. Any overland flow to be picked up by exterior catchment drainage.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
P 8275	370862, 827359	Tributary of River Urie 20	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (70m) **Built Receptors Adjacent or Upstream:** None within 500m. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
P 9450	372030, 827371	Burn of Durno	18.6	Bridge
Main Route/Side Road: Main route **Type of Interaction:** Bridge **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 240m from this point, but they are not currently at risk based on SEPA flood maps and are not considered as potential receptors. **Potential Floodplain Encroachment:** Yes. An underbridge is proposed in this location, with abutments located outwith the floodplain. Compensatory storage not required. **Comment:** An underbridge is proposed at this location, incorporating the watercourse crossing. The risk of flooding associated with this crossing is low. **Further Information:** SEPA hold information on flooding downstream of the proposed crossing from January 2016 and as such further consideration of the channel should be given at Stage 3 to ensure there is no impact on the floodplain.				
			Sensitivity:	Grade III

Summary

12 individual points on the Pink route option have been assessed with regards to fluvial flood risk:

- Five new culverts are proposed;
- No existing culverts need to be extended;
- Two watercourse realignments are necessary;
- Five crossings are incorporated into bridging structures;
- In one instance, an existing field drain is to be removed; and
- There are no instances where earthworks encroach on the floodplain.

In terms of sensitivity:

- Four of the 12 points have been assessed as Grade III, not particularly sensitive. This means that, although there are a small number of built receptors upstream of the point under consideration, any risk has been adjudged to be mitigatable; and
- Eight of the 12 points have been assessed as Grade IV, meaning there are no receptors deemed to be at risk of flooding.

8.5 Pluvial Flood Risk

Based on the topography of the catchment in which the Pink route option is set, there are few areas where specific consideration will have to be given to the overland flow from the exterior catchment. Another key consideration is to maintain the existing catchment areas and runoff regimes wherever possible. This will be considered in detail during DMRB Stage 3.

At DMRB Stage 2, the areas likely to require the most attention have been identified. The Pink route option has been split into sections. The section boundaries have been chosen as they cover areas where the runoff regime is similar, and the overland flow will therefore be dealt with in a similar manner.

Analysis

Ch000 – Ch1400; The route option generally sits higher than existing ground level through this section, with runoff either side shedding south towards the Kellock or east towards the Urie. Little runoff is expected from the exterior.

Ch1400 – Ch8500; The route option passes several small hillsides which naturally shed water to the south towards the Urie. An allowance will have to be made to intercept the runoff from an area of around 180ha over this length to allow it to continue to discharge to the Urie. Care should be taken to maintain the size and connectivity of the existing catchments.

Ch8500 – Ch9961; Over the final 1.5km of the section, the route option falls with the contours down towards the proposed crossing of the Burn of Durno. Little in the way of overland flow is expected in this section.

Summary

The Pink route option passes through an area of gently undulating topography with no large areas of exterior catchment expected to shed large volumes of runoff towards the road. Standard cut off ditches would be expected to pick up runoff where necessary and maintain existing catchments as best as possible.

8.6 Groundwater Flooding

As discussed in Chapter 5, no specific information on groundwater flooding is available and at this stage no specific ground investigation works have been carried out. Any discussion regarding groundwater flooding is therefore limited to sections of the route option which are in cut, with potentially challenging outfalls.

Analysis

Ch000 – Ch800; The Pink route option is in initially in cut east of the tie in with either the Cyan or Red route options, with a maximum depth of around 7m. However, with a relatively steep vertical alignment, groundwater flooding is unlikely to be an issue.

Ch1700 – Ch2400; The Pink route option is again in cut over this section, to a maximum depth of approaching 11m, but with a relatively steep longitudinal gradient, it should be possible to drain this to the Burn of Durno.

Ch3900 – Ch4800; This section is again in cut to a depth of around 8m. With a relatively flat longitudinal fall towards the Bonnyton Burn, this section will need to be given more careful consideration for groundwater flooding.

Ch5000 - Ch5900; With cut as deep as around 12m as this section passes through a hill, groundwater will likely have to be catered for over this section. A relatively steep longitudinal fall will allow any excess to be drained towards the Bonnyton Burn.

Ch6350 – Ch6950; There are many existing field drains in this area, suggesting a higher water table. With cut approaching 7m deep over this section, care must be taken to ensure this can be drained. A relatively steep longitudinal fall should ensure excess groundwater can be dealt with.

Ch7450 – Ch7950; Passing through a relatively flat area, between several small hills, this section of the Pink route option is shown to be in cut to a depth of around 6m. The route option falls steeply away from a high point at Ch7800, which will allow this section to be drained, but existing drainage is shown to be removed over this section, so greater care should be taken.

Ch8400 – Ch9100; The Pink route option is shown to be in around 11m of cut as it falls steeply to cross the Burn of Durno. Any groundwater will follow the road to the watercourse.

Ch9800 – Ch9961; With cut approaching 16m deep as the Pink route option joins into either the Orange or Violet route option, this section falls back towards the Burn of Durno. Groundwater is considered unlikely to cause significant issues.

Summary

Subject to site investigation, groundwater flooding is considered unlikely to be an issue for the Pink route option. Care should be taken through the flatter section between the Bonnyton Burn and the Burn of Durno to ensure gradients are such that the whole route option can be suitably drained.

9 Brown Route Option

9.1 Location

The Brown route option is 11.0km long and links the end of either the Red or Cyan route options, at a point to the south of Colpy, to another point to the north of Pitcaple. The route option would continue by either the Orange or Violet route options. The route option runs close to the existing A96 alignment until around Ch7000, before moving offline to the north.

The Brown route option is illustrated in the following drawings:

Drawing 7 A96PEA–AMAR–EWE–SWI–MP–YH–00141

Drawing 8 A96PEA–AMAR–EWE–SWI–MP–YH–00142

9.2 Catchment Characteristics

This area is almost entirely rural, with no large settlements within the localised study area. Old Rayne is the largest settlement on the route option, with a population of 259 based on the 2011 census. Durno lies to the eastern end of the route option and based on the same census, the greater area around Durno has a population of 194.

The route option falls entirely within the catchment area of the River Urie, along which there are four notable tributaries:

- Ch1200 – Ch2200 falls within the catchment of The Kellock;
- Ch3400 – Ch4300 falls within the catchment of the Shevock Burn;
- Ch8400 – Ch9750 falls within the catchment area of an un-named tributary to the Urie (referenced as tributary to the Urie 20); and
- Ch9750 – Ch10985 (end) falls within the catchment of the Burn of Durno.

The watercourses are referenced on the associated drawings.

The Kellock

The Kellock is a large tributary to the River Urie, with a catchment area of approximately 18.3km². The proposed crossing of the Kellock is near its confluence with the Urie, therefore 16.8km² of this area must cross the Brown route option to reach the Urie.

Shevock Burn

With a catchment area of 39.6km², the Shevock is another sizable tributary to the Urie. Again, the proposed crossing is next to the confluence with the Urie, therefore runoff from 39.5km² of catchment must cross the route option to reach the Urie.

Tributary of River Urie 20

With a catchment area of around 2.1km², this tributary drains the area around Lourin Close to the River Urie. The Brown route option passes through the middle

of this catchment, with the area crossing the route option around 1.0km², via two noted burns.

Burn of Durno

The Burn of Durno has a catchment area of over 20km² and discharges to the River Urie to the north-east of Pitcaple Castle. The proposed crossing of the Burn is in the lower reaches of this catchment with the runoff from around 18.8km² of mostly farmland draining to this point.

River Urie

The River Urie is a significant watercourse with a catchment area of over 300km² by the time it reaches its confluence with the River Don, to the south-east of Inverurie. In the context of the Brown route option, the River Urie has a catchment area of approximately 34.9km² prior to the confluence with the Kellock. The catchment has increased to 215.8km² by the time the Burn of Durno joins the Urie at the eastern end of the route option.

The SAAR value varies along the length of the route option, but generally lies between 830mm and 800mm. All SAAR values are based on the latest FEH Data.

9.3 Route Option Alignment

The Brown route option provides a link between the two western route options (Cyan or Red) and the two eastern route options (Violet or Orange) at each end of the Brown route option. It provides a transition from the hilly areas to the north to the flatter, more populated areas, to the south, through an area of undulating farmland.

The Brown route option starts off at a high level of around 144mAOD at Colpy and gradually falls with the natural contours until it reaches the Shevock around Ch4150 with a level of around 104mAOD.

The levels vary gently between approximately 90mAOD and 110mAOD for the next 5-6km before falling more steeply from a high point of around 110mAOD at Ch9200 to a level of approximately 86mAOD at the crossing of the Burn of Durno.

The catchment is therefore generally flatter than the northern sections with larger watercourses in the area.

Based on the structures inventory for the equivalent section of the A96, there are nine known watercourse crossings for this route option of existing road.

9.4 Fluvial Flood Risk

Based on the SEPA Flood Maps, and as shown on the associated drawings, there are areas of significant floodplain in the area associated with the Brown route option.

The floodplains associated with the Kellock and the Shevock are narrow and largely confined to the watercourse channels. The larger floodplain associated with the Urie is separated from the route option by the existing A96.

At the eastern end of the route option, the floodplain associated with the confluence of the Urie and the Burn of Durno is substantial and is not confined to the channel of the watercourses. The width measured from the flood maps is up to around 400m wide.

The Brown route option is well removed from this area and crosses both the Urie and the Burn of Durno in locations where the floodplain is at its narrowest.

A sequential approach was undertaken during the sifting process and an alignment has been taken which limits the interactions with the various watercourses as far as possible. This means that the clear majority of the points picked up on the Brown route option are associated with new watercourse crossings, which themselves have been positioned to minimise impact.

Analysis

The following tables take each point in turn and assess the fluvial flood risk associated with the interaction of the route option and watercourse should this route option be taken forward. Each interaction point is individually marked on the associated drawings.

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
Br 1675	364748, 829881	The Kellock	16.8	Bridge
Main Route/Side Road: Main route **Type of Interaction:** Bridge **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** Yes. An underbridge is proposed in this location, with abutments located outwith the floodplain. Compensatory storage not required. **Comment:** An underbridge is proposed at this location, incorporating the watercourse crossing. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
Br 1800	364766, 829738	Tributary to the Kellock 1	1.3	2 x 3m box
Main Route/Side Road: Side road + main route **Type of Interaction:** Proposed new culvert (110m) **Built Receptors Adjacent or Upstream:** There is an existing building approximately 260m from this point which could potentially be at existing flood risk and is therefore considered as a potential receptor. **Potential Floodplain Encroachment:** Yes. A culvert is proposed in this location, with road embankments in the floodplain. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** The existing building is around 3m higher than the proposed crossing. Assuming the proposed culvert is sized appropriately, and compensatory storage provided, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
Br 4150	366741, 828624	Shevock Burn	39.6	Bridge
Main Route/Side Road: Main route **Type of Interaction:** Bridge **Built Receptors Adjacent or Upstream:** There is an existing building approximately 340m from this point. It is not currently at risk based on SEPA flood maps but is considered as a potential receptor due to being located in close proximity to the floodplain extent. **Potential Floodplain Encroachment:** Yes. An underbridge is proposed in this location, with abutments located outwith the floodplain. Compensatory storage not required. **Comment:** An underbridge is proposed at this location, incorporating the watercourse crossing. A comparison between the proposed road level and existing ground levels (>7m) suggests that a bridge structure can be designed to ensure no increase in flood risk to the upstream receptor (to be confirmed through detailed assessment at DMRB Stage 3). **Further Information:** SEPA hold further information on existing downstream flood risk, which should also be considered at Stage 3.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
Br 5000	367195, 827885	Tributary of River Urie 16	1.2	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (90m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** Yes. A culvert is proposed in this location, with road embankments in the floodplain. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** Assuming the proposed culvert is sized appropriately, and compensatory storage provided, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
Br 5400	367365, 827532	Tributary of River Urie 17	0.7	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (70m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 450m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
Br 5875	367706, 827224	Tributary of River Urie 18	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (50m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
Br 7800	369558, 826618	River Urie – Old Rayne to Pitcaple	122.8	Bridge
Main Route/Side Road: Main route **Type of Interaction:** Bridge **Built Receptors Adjacent or Upstream:** There is an existing building approximately 220m from this point. It is not currently at risk based on SEPA flood maps and is not considered as a potential receptor. **Potential Floodplain Encroachment:** Yes. An underbridge is proposed in this location, with abutments located outwith the floodplain. Compensatory storage not required. **Comment:** An underbridge is proposed at this location, incorporating the watercourse crossing. The risk of flooding associated with this crossing is low. **Further Information**: SEPA hold information on flood extents, from a storm in September 1995, which suggests there may be properties upstream that are at risk. This information should be considered further at Stage 3.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
Br 9025	370760, 826663	Tributary of River Urie 20	0.8	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (120m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 100m upstream of the crossing which are potentially at existing flood risk and are therefore considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
Br 9275	371004, 826717	Tributary of River Urie 20	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (200m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 260m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
Br 10450	372017, 827304	Burn of Durno	18.6	Bridge
Main Route/Side Road: Main route Type of Interaction: Bridge Built Receptors Adjacent or Upstream: There are existing buildings approximately 300m from this point, but they are not currently at risk based on SEPA flood maps and are not considered as potential receptors. Potential Floodplain Encroachment: Yes. An underbridge is proposed in this location, with abutments located outwith the floodplain. Compensatory storage not required. Comment: An underbridge is proposed at this location, incorporating the watercourse crossing. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Summary

10 individual points on the Brown route option have been assessed with regards to fluvial flood risk:

- Six new culverts are proposed;
- No existing culverts need to be extended;
- No watercourse realignments are necessary;
- Four crossings are incorporated into bridging structures;
- No existing field drains are to be removed; and
- There are no instances where earthworks encroach on the floodplain.

In terms of sensitivity:

- Five of the 10 points have been assessed as Grade III, not particularly sensitive. This means that, although there are a small number of built receptors upstream of the point under consideration, any risk has been adjudged to be mitigatable; and
- Five of the 10 points have been assessed as Grade IV, meaning there are no receptors deemed to be at risk of flooding.

9.5 Pluvial Flood Risk

Based on the topography of the catchment in which the Brown route option is located, there are few areas where specific consideration will have to be given to the overland flow from the exterior catchment. Another key consideration is to maintain the existing catchment areas and runoff regimes wherever possible. This will be considered in detail during DMRB Stage 3.

At DMRB Stage 2, the areas likely to require the most attention have been identified. The Brown route option has therefore been split into sections. The section boundaries have been chosen as they cover areas where the runoff regime is similar, and the overland flow will therefore be dealt with in a similar manner.

Analysis

Ch000 – Ch4150; The exterior catchment generally slopes towards the Kellock and the Shevock, which the route option crosses. Little runoff along the length of the route option is therefore expected to shed towards the route option through this section.

Ch4150 – Ch7800; Between the Shevock crossing at Ch4150 and the Urie crossing at Ch7800, the catchment is characterised by several smaller tributaries. Through this section, an area of around 80ha sheds towards the Brown route option. This would be picked up by cut off drains with the aim of maintaining existing catchments to discharge to the Urie.

Ch7800 – Ch10450; On crossing the Urie, the catchment flips and runoff sheds from the north towards the Brown route option. Most of this area is picked up by several small tributaries, but around 50ha would be expected to shed runoff towards the route option and would need to be collected.

Ch10450 – Ch10985; In the area beyond the Durno crossing, the route option runs perpendicular the natural topography. The runoff will therefore continue to shed towards the Burn of Durno and little is expected by way of exterior catchment runoff.

Summary

The Brown route option passes through an area of gently undulating topography with no large areas of exterior catchment expected to shed large volumes of runoff towards the road. Standard cut off ditches would be expected to pick up runoff where necessary and maintain existing catchments as best as possible.

9.6 Groundwater Flooding

As discussed in Chapter 5, no specific information on groundwater flooding is available and at this stage no specific ground investigation works have been carried out. Any discussion regarding groundwater flooding is therefore limited to sections of the route option which are in cut, with potentially challenging outfalls.

Analysis

Ch000 – Ch1400; The Brown route option is in initially in cut east of the tie in with either the Cyan or Red route options, with a maximum depth of around 7m. However, with a relatively steep gradient sloping towards the Kellock crossing, groundwater flooding is unlikely to be an issue.

Ch2500 – Ch3850; The Brown route option is again in cut through this section, to a maximum depth over 7m. This section slopes down toward the Shevock crossing on a reasonably steep gradient, so groundwater flooding is unlikely to be an issue.

Ch6350 – Ch6550; There is a short section of cut to a depth of over 5m as the alignment passes over a small hill, but with a relatively steep longitudinal gradient, groundwater flooding is unlikely.

Ch8100 – Ch8750; Beyond the crossing of the Urie at Ch7800, the Brown route option passes through a section of deep cut as it crosses an area of steeper hillside. With a depth of more than 20m and a relatively flat longitudinal gradient, the risk of groundwater flooding is greater through this section and a more detailed assessment should be made at DMRB Stage 3.

Ch9500 – Ch9950; This short section of cut has a maximum depth of around 8m. With a steep longitudinal fall toward the Burn of Durno, groundwater flooding is unlikely to be an issue.

Ch10859 – Ch10985; Over its final length, the Brown route option goes into approximately 13m of cut as it joins into either the Violet or Orange route option. This section slopes back towards the Burn of Durno therefore groundwater is unlikely to be an issue.

Summary

Subject to site investigation, groundwater flooding is considered unlikely to be an issue for the Brown route option. Greater care should be taken through the area to the east of the River Urie crossing to ensure gradients are such that the whole route option can be suitably drained.

10 Violet Route Option

10.1 Location

The Violet route option is 17.7km long and links the end of either the Pink or Brown route option, at a point to the north of Pitcaple, to the existing A96 to the west of Kintore. The Violet route option is a northern offline by-pass of Inverurie and is considered as a direct alternative to the Orange route option covered in Chapter 11.

The Violet route option is illustrated in the following drawings:

Drawing 9 A96PEA–AMAR–EWE–SWI–MP–YH–00151

Drawing 10 A96PEA–AMAR–EWE–SWI–MP–YH–00152

Drawing 11 A96PEA–AMAR–EWE–SWI–MP–YH–00153

10.2 Catchment Characteristics

Although far enough removed from the urban centres to be considered a largely rural catchment, the Violet route option passes several large settlements. Inverurie is the largest, with a population of over 13,600 people, whilst Port Elphinstone with approaching 2,000 and Kintore 4,500 are also adjacent to the route option. The Violet route option also provides an access from Oldmeldrum to the north.

The route option falls entirely within the Urie/Don catchment, though there are several notable tributaries along its length:

- Ch000 – 800 falls within the catchment of the Burn of Durno;
- Ch800 – 1200 falls within the catchment area of an un-named tributary to the Urie (referenced as Tributary of River Urie 21);
- Ch1200 – 5300 falls within the catchment of the Ides Burn;
- Ch5300 – 7800 falls within the catchment of the Lochter Burn/Kings Burn;
- Ch7800 – 10750 falls within the catchment of the River Urie – Lochter Burn to Don;
- Ch10750 – 13200 falls within the catchment of the Newmill Burn;
- Ch13200 – 16000 falls within the catchment of the River Don – Inverurie to Dyce;
- Ch16000 – 16700 falls within the catchment of the Bridgealehouse Burn; and
- Ch16700 – 17737 (end) falls within the catchment of the Rollomire Burn.

The watercourses are referenced on the associated drawings.

Burn of Durno

The Burn of Durno has a catchment area of over 20km² and discharges to the River Urie to the northeast of Pitcaple Castle. The proposed crossing of the Burn is in

the lower reaches of this catchment, within either the Pink or Brown route options, with the runoff from around 18.8km² of mostly farmland draining to this point.

Tributary to the River Urie 21

With a catchment area of approximately 1.1km², this small tributary drains the runoff from the area around Pitscurry Moss to the River Urie. The Violet route option passes through the very upper reaches of this catchment, with the area crossing the route option minimal.

Ides Burn

The Ides Burn is a tributary to the Lochter Burn, which in turn feeds the River Urie. The Ides Burn has a catchment area of approximately 6.7ha, collecting runoff from the areas either side of the B9001, south of Daviot.

The Violet route option crosses the Ides Burn twice and generally follows its alignment for around 3km. At the first crossing, the catchment is approximately 2.4km², increasing to around 6.5km² by the second crossing, near the confluence with the Lochter Burn.

Lochter Burn/Kings Burn

The Lochter Burn is a large tributary to the River Urie. With a catchment area of over 60km², it drains an area to the north of Inverurie. The proposed crossing of the Lochter Burn is near the bottom of the catchment, near the confluence with the Urie, where the area drained is around 57km².

River Urie – Lochter Burn to Don

The River Urie is a significant watercourse with a catchment area of over 300km² by the time it reaches its confluence with the River Don, to the south-east of Inverurie. There is no proposed crossing of the Urie as part of the Violet route option.

Newmill Burn

The Newmill Burn is a tributary to the River Don, with a catchment area of over 25km², it drains an area to the east of Inverurie and Port Elphinstone. Again, there are no proposed crossings of the Newmill Burn as part of the Violet route option.

River Don – Inverurie to Dyce

The River Don is a very large watercourse. Rising in the Cairngorm Mountains, 75km to the west of Aberdeen, it drains an area of over 1,300km². The Violet route option crosses the River Don and its associated floodplain to the north of Kintore, where its catchment is in the region of 1,100km².

Bridgealehouse Burn

The Bridgealehouse Burn is a tributary of the River Don, draining an area of approximately 6km² between Kemnay and Kintore. The crossing of the Bridgealehouse Burn already exists as a 1.8m x 1.8m box culvert, though this would need to be extended to accommodate the Violet route option.

Rollomire Burn

The Rollomire Burn is a small tributary to the Torry Burn, which in turn feeds the Tuach Burn which discharges to the Don to the east of Kintore. The Burn has a catchment area of approximately 1.2km² and the crossing already exists, though no information is available on the structures inventory, suggesting it is of small diameter. The proposed crossing of the burn is at the very end of the Violet route option and any impact may be limited to a slight change in cover.

10.3 Route Option Alignment

The Violet route option links to the two route options through the middle part of the scheme (Pink or Brown route options) into the existing A96 dual carriageway at Kintore. This is the area with the lowest elevation and, from a flood risk perspective, the largest watercourses with significant areas of associated floodplain.

The Violet route option starts at a level of approximately 100mAOD to the east of the Burn of Durno and gently rises and falls for the first 6km before gradually rising to a highpoint of around 104mAOD at Hill of Selbie, west of Keith Hall, at Ch9200. The route option gently rises and falls again with the natural contours for the next 3km, before falling to a low point of around 58mAOD at Ch14800, prior to the proposed crossing of the Don. East of the crossing, the route option closely follows the levels of the existing A96, tying in at a level of approximately 56mAOD.

Based on the structures inventory for the equivalent section of the A96, there are 15 known watercourse crossings for this route option of existing road.

10.4 Fluvial Flood Risk

Based on the SEPA Flood Maps, and as shown on the associated drawings, there are some significant areas of floodplain within the study area associated with the Violet route option.

The floodplain associated with the River Urie, east of Pitcaple, is significant, but the Violet route is well removed from this corridor.

Any flooding associated with the Ides Burn is largely confined the channel of the watercourse, but with the route closely following the watercourse for a significant distance, there are several interfaces which will need assessed.

As noted above, the floodplain associated with the Don crossing at Kintore is around 600m wide, which the Violet route option cannot avoid.

A sequential approach was undertaken during the DMRB Stage 2 sifting process to avoid the floodplain wherever possible, and to limit the impact where it was not possible to avoid. Therefore, most of the points picked up on the Violet route option are associated with new watercourse crossings. The floodplain associated with the Don Crossing at Kintore is around 600m wide and has been highlighted as a key area of interest in early discussions with SEPA, Aberdeenshire Council and in public feedback.

Analysis

The following tables take each point in turn and assess the fluvial flood risk associated with each interaction of the route option and watercourse should this route option be taken forward. Each interaction point is individually marked on the associated drawings.

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 550	373051, 827356	Tributary to the Urie 21	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (110m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 800	373256, 827228	Tributary to the Urie 21	< 0.5	1200mm
Main Route/Side Road: Main Route **Type of Interaction:** Proposed new culvert (110m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 2150 - 3325	N/A	Ides Burn	2.4 – 4.9	N/A
Main Route/Side Road: Main Route and side road **Type of Interaction:** Watercourse realignment **Built Receptors Adjacent or Upstream:** There are existing buildings within 50m of the start of the proposed realignment which could potentially be at existing flood risk and are therefore considered as potential receptors. **Potential Floodplain Encroachment:** Yes. The watercourse is to be realigned in this location and there appears to be space available for the provision of compensatory storage. To be assessed in detail at DMRB Stage 3. **Comment:** A length of approximately 1.2km of the Ides Burn will need to be realigned to accommodate the proposed route option. This section of the Ides Burn currently takes the form of a low value, roadside ditch, with the adjacent road shown to be at risk of flooding. The proposed realignment of the Ides Burn through offers the opportunity to improve the existing scenario, through improving the existing burn corridor, providing compensatory storage and reducing the risk of flooding to the local road network.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 2375	374758, 826675	Ides Burn	2.4	2 x 3m box
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (110m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 300m from this point, which could potentially be at existing flood risk and are therefore considered as potential receptors. **Potential Floodplain Encroachment:** Yes. A culvert is proposed in this location, with road embankments in the floodplain. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** Assuming the proposed culvert is sized appropriately, and compensatory storage is incorporated, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 2800	375065, 826324	Ides Burn	3.3	2 x 3m box
Main Route/Side Road: Main route and side road **Type of Interaction:** Proposed new culvert (130m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** Yes. A culvert is proposed in this location, with road embankments in the floodplain. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** Assuming the proposed culvert is sized appropriately, and compensatory storage is incorporated, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 3150	375317, 826139	Tributary to the Ides Burn	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (40m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** Yes. A culvert is proposed in this location, with road embankments in the floodplain. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** Assuming the proposed culvert is sized appropriately and compensatory storage provided, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 3500 - 3600	N/A	Ides Burn	4.7	N/A
Main Route/Side Road: Main route **Type of Interaction:** Loss of floodplain **Built Receptors Adjacent or Upstream:** There are no built receptors at risk within 500m based on SEPA's flood map. **Potential Floodplain Encroachment:** Yes. The proposed route option passes through the active floodplain. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** Assuming that compensatory storage is provided, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 5050	376444, 824613	Ides Burn	6.5	2 x 3m box
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (140m) **Built Receptors Adjacent or Upstream:** None within 500m. SEPA's flood mapping suggests that the B9001 is at existing flood risk upstream of this crossing. **Potential Floodplain Encroachment:** Yes. A culvert is proposed in this location, with road embankments in the floodplain. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** Assuming the proposed culvert is sized appropriately, and compensatory storage provided, the risk of flooding associated with this crossing is low. Provision of compensatory storage at this location may provide an opportunity to reduce flood risk to the existing local road network. **Further Information:** SEPA hold records of flooding at Lethenty, at the confluence of the Ides Burn and Lochter Burn, from January 2016. This information should be considered further at Stage 3.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 5150	376493, 824525	Tributary to the Ides Burn	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (90m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** Yes. A culvert is proposed in this location, with road embankments in the floodplain. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** This field drain will be removed. Any overland flow to be picked up by exterior catchment drainage.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 5675	376836, 824128	Lochter Burn/Kings Burn	57.2	Bridge
Main Route/Side Road: Main route **Type of Interaction:** Bridge **Built Receptors Adjacent or Upstream:** There are residential and commercial properties within Lethenty Mill shown as being at existing flood risk based on SEPAs flood maps, which are considered as potential receptors due to the gradient of this watercourse. **Potential Floodplain Encroachment:** Yes. An underbridge is proposed in this location, with abutments located outwith the floodplain. Compensatory storage not required. **Comment:** An underbridge is proposed at this location, incorporating the watercourse crossing. A comparison between the proposed road level and existing ground levels (>15m) suggests that a bridge structure can be designed to ensure no increase in flood risk to the upstream receptors (to be confirmed through detailed assessment at DMRB Stage 3).				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 6350	377442, 823842	Tributary to the Lochter Burn 1	1.2	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (110m) **Built Receptors Adjacent or Upstream:** There are existing buildings (commercial) adjacent to the proposed new culvert which could potentially be at existing flood risk and are therefore considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 6400 - 7050	N/A	Tributary to the Lochter Burn 1	0.8 – 1.2	N/A
Main Route/Side Road: Main route and side road **Type of Interaction:** Watercourse realignment **Built Receptors Adjacent or Upstream:** There are existing buildings (commercial) next to the downstream end of the proposed realignment which could potentially be at risk under the proposed scenario. **Potential Floodplain Encroachment:** No **Comment:** A length of approximately 650m of this tributary will need to be realigned to accommodate the proposed route option. The proposed realignment will be designed to ensure that there is no increase in flood risk to receptors (detailed assessment will be carried out at DMRB Stage 3).				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 6575	377681, 823943	Tributary to the Lochter Burn 1	1.1	1200mm
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (70m) on the realigned watercourse **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 170m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 7725	378717, 823424	Tributary of River Urie 23	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (70m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 8050	378999, 823254	Tributary to the Lochter Burn 1	< 0.5	Existing
Main Route/Side Road: Side road **Type of Interaction:** Change in cover to existing culvert **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 420m from this point, but they are considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** No information is available on the existing culvert. This will be further assessed at DMRB Stage 3.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 8250 - 8350	379063, 823153	Tributary to Lochter Burn 1	< 0.5	N/A
Main Route/Side Road: Main route **Type of Interaction:** Watercourse realignment **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 280m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** A length of approximately 100m of this tributary will need to be realigned to accommodate the proposed route option.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 8400	379192, 822938	Tributary of River Urie 23	< 0.5	N/A
Main Route/Side Road: Main route **Type of Interaction:** Existing drainage to be removed **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 250m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** This field drain will be removed. Any overland flow to be picked up by exterior catchment drainage.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 13500	380427, 818809	Densy Burn	< 0.5	1200mm
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (20m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 260m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 13550	380402, 818788	Densy Burn	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (120m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 290m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 13950	380195, 818431	Tributary to the Densy Burn	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (60m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 370m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 14350 - 15000	N/A	Densy Burn	0.9 – 1.3	N/A
Main Route/Side Road: Main route **Type of Interaction:** Watercourse realignment **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** A length of approximately 650m the Densy Burn will need to be realigned to accommodate the proposed route option. The proposed realignment will be designed to ensure that there is no increase in flood risk to receptors (detailed assessment will be carried out at DMRB Stage 3).				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 15025	379303, 817877	Densy Burn	1.4	Bridge
Main Route/Side Road: Main route **Type of Interaction:** Bridge **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** Yes. This will be considered as part of the Don crossing (see chainage 15250). **Comment:** An underbridge is proposed at this location, incorporating the watercourse crossing. This will be considered as part of the Don crossing.				
			Sensitivity:	N/A

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 15250	379100, 817747	River Don – Inverurie to Dyce	1,109	Bridge
Main Route/Side Road: Main route **Type of Interaction:** Bridge **Built Receptors Adjacent or Upstream:** Over 100 residential and commercial properties are at existing flood risk from the River Don based on SEPA's flood map within 4.5km upstream of the proposed crossing (an extended upstream length has been used due to the very low gradient of the valley). **Potential Floodplain Encroachment:** Yes. An underbridge is proposed in this location, with abutments located outwith the floodplain. The impact of intermediate piers on flow conveyance and water levels should be considered. **Comment:** The high number of upstream and downstream receptors at existing flood risk warrants more detailed assessment at DMRB Stage 2 using hydraulic modelling to assess whether the proposed crossing will impact upon flood levels and extents.				
			Sensitivity:	Grade II

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 15350	379026, 817681	Tributary to the River Don 3	1.0	Bridge
Main Route/Side Road: Main route **Type of Interaction:** Bridge **Built Receptors Adjacent or Upstream:** Kintore Business park is around 250m away from this point and is currently shown to be at risk based on SEPA flood maps. **Potential Floodplain Encroachment:** Yes. This will be considered as part of the Don crossing (see chainage 15250). **Comment:** An underbridge is proposed at this location, incorporating the watercourse crossing. This will be considered as part of the Don crossing.				
			Sensitivity:	N/A

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 15650	378367, 817630	Tributary to the River Don 3	< 0.5	1200mm
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (40m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 420m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 16050 - 16200	N/A	Bridgealehouse Burn	5.2	N/A
Main Route/Side Road: Side road **Type of Interaction:** Loss of floodplain **Built Receptors Adjacent or Upstream:** There are no built receptors at existing flood risk within 500m upstream based on SEPA flood maps. **Potential Floodplain Encroachment:** Yes. The proposed route option passes through the active floodplain. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** Based on a review of the local topography, this loss of floodplain should be mitigatable. The existing A96 may be acting as a barrier to downstream flow during flood events and increasing floodplain storage upstream of Kintore.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 16325	378720, 816779	Bridgealehouse Burn	5.2	Existing
Main Route/Side Road: Main route **Type of Interaction:** Extend existing culvert (20m) + minor realignment **Built Receptors Adjacent or Upstream:** There are no built receptors at existing flood risk within 500m upstream based on SEPA flood maps. **Potential Floodplain Encroachment:** Yes. A culvert is proposed in this location, with road embankments in the floodplain. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** There is an existing 1.8m diameter, 88m long culvert in this location associated with the existing A96. This would need extended by approximately 20m to accommodate the proposed route option and a short realignment may be required. **Further Information:** SEPA hold information that suggests that the existing culvert may be impacting on flood risk downstream. Opportunities for betterment should be investigated at Stage 3.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 16900	378556, 816247	Tributary to the Tuach Burn 1	< 0.5	Existing
Main Route/Side Road: Main Route **Type of Interaction:** Change in cover to existing culvert **Built Receptors Adjacent or Upstream:** There are existing buildings upstream of the existing A96 potentially at existing flood risk due to the low topography at this location. **Potential Floodplain Encroachment:** No **Comment:** The impact on the crossing is likely limited to a minor amendment to existing cover levels which will have no impact on flood risk. This will be confirmed during DMRB Stage 3.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 17375	378382, 815819	Tributary to the Rollomire Burn	< 0.5	Existing
Main Route/Side Road: Main Route **Type of Interaction:** Change in cover to existing culvert **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** The impact on the crossing is likely limited to a minor amendment to existing cover levels which will have no impact on flood risk. This will be confirmed during DMRB Stage 3.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
V 17600	378374, 815573	Rollomire Burn	1.3	Existing
Main Route/Side Road: Main route **Type of Interaction:** Change in cover to existing culvert **Built Receptors Adjacent or Upstream:** There are buildings within 500m upstream in close proximity to the watercourse which could be at existing flood risk. **Potential Floodplain Encroachment:** No **Comment:** The impact on the crossing is likely limited to a minor amendment to existing cover levels which will have no impact on flood risk. This will be confirmed during DMRB Stage 3.				
			Sensitivity:	Grade IV

Summary

30 individual points on the Violet route option have been assessed with regards to fluvial flood risk:

- 14 new culverts are proposed;
- One existing culvert needs to be extended, with a further four noted as having a change in cover level;
- Five watercourse realignments are necessary;
- Four crossings are incorporated into bridging structures;
- In one instance, existing drainage is to be removed; and
- In two locations, a potential loss of floodplain is noted;

In terms of sensitivity:

- One of the 30 points have been assessed as Grade II, moderately sensitive. Hydraulic modelling will therefore be carried out at DMRB Stage 2 to better understand the implications of locating a crossing in this position;
- 12 of the 30 points have been assessed as Grade III, not particularly sensitive. This means that, although there are a small number of built receptors upstream of the point under consideration, any risk has been adjudged to be mitigatable;
- 15 of the 30 points have been assessed as Grade IV, meaning there are no receptors deemed to be at risk of flooding; and
- Two of the 30 points have not been given an individual sensitivity value due to being incorporated into the River Don crossing at chainage 15250.

10.5 Pluvial Flood Risk

Based on the topography of the catchment in which the Violet route option is located, there are few areas where specific consideration will have to be given to the overland flow from the exterior catchment. Another key consideration is to maintain the existing catchment areas and runoff regimes wherever possible. This will be considered in detail during the detailed design, at DMRB Stage 3.

At DMRB Stage 2, the areas likely to require the most attention have been identified. The Violet route option has therefore been split into sections. The section boundaries have been chosen as they cover areas where the runoff regime is similar, and the overland flow will therefore be dealt with in a similar manner.

Analysis

Ch000 – Ch400; The route option initially runs perpendicular to the natural topography. The runoff will therefore continue to shed towards the Burn of Durno and little is expected by way of exterior catchment runoff.

Ch400 – Ch1000; The Violet route option passes through the upper reaches of the catchment of a small tributary through this section, little runoff is expected from outwith the road corridor.

Ch1000 – Ch5500; Through this section, the Violet route option closely follows the alignment of the Ides Burn. The burn will naturally protect the route option from runoff from the west, but an area of approximately 100ha sheds towards the route from the east. Cut off drains will be required to collect this runoff, with regular outlets to allow the water to continue to drain to the Ides Burn.

Ch5500 – Ch8500; Runoff will continue to shed towards the Lochter Burn through this section, via a number of smaller drains and tributaries. The requirement for cut off drains will be minimal.

Ch8500 – Ch15000; Through this section, the Violet route option passes along a line between two catchments. To the east, several small tributaries convey runoff towards the Newmill Burn, whilst to the west, the runoff sheds towards the Don. Any requirement for cut off drains through this section will be minimal.

Ch15000 – Ch16000; The route option is raised through this section, with a structure to cross the River Don, its floodplain and the existing railway.

Ch16000 – Ch17740; The route option follows the existing A96 through this section and the existing means by which over land flow is dealt with are expected to be maintained.

Summary

With little in the way of steep hillsides adjacent to the Violet route option, there are no large areas of exterior catchment expected to shed large volumes of runoff towards the route option. A small area to the east of the Ides Burn would need to be collected and existing catchments maintained. Standard cut off ditches would be expected to pick up runoff where necessary.

10.6 Groundwater Flooding

As discussed in Chapter 5, no specific information on groundwater flooding is available and at this stage no specific ground investigation works have been carried out. Any discussion regarding groundwater flooding is therefore limited to sections of the route option which are in cut, with potentially challenging outfalls.

Analysis

Ch000 – Ch250; The Violet route option is initially in cut east of the tie in with either the Pink or Brown route options, to the north of Pitcaple. This initial section has a maximum depth of cut of approximately 15m, but slopes steeply back towards the Burn of Durno, suggesting groundwater flooding is unlikely to be an issue.

Ch3700 – Ch4300; The route option moves into cut to a maximum depth of around 7m as it crosses the hillside to the south of Hillhead of Lethenty. With a relatively flat longitudinal gradient over this length, the risk associated with groundwater flooding should be considered in more detail at DMRB Stage 3.

Ch8350 – Ch8750; The Violet route option is in cut through this section as it rises to pass the Hill of Selbie. The maximum depth is around 7m, but with a relatively steep longitudinal gradient, back towards the Lochter Burn, groundwater flooding is unlikely to pose a significant risk. There are, however, several issues in this area, noted on OS maps, suggesting water makes its way to the surface here. These will need to be maintained.

Ch11900 – Ch12500; The Violet route option is cut to a depth of approximately 17m through this section to allow the route option to pass beneath the existing B977. The alignment has a relatively steep longitudinal gradient, sloping down towards the Don, which should alleviate any groundwater issues.

Ch14050 – Ch14900; East of the Don crossing, the route option goes into cut over this section to allow the alignment to transition between a steep gradient and the crossing itself. With a maximum depth of around 8m and a relatively steep longitudinal gradient, any groundwater will be conveyed away from the area of cutting towards the River Don.

It is worth noting that, immediately adjacent to this section of cut, it is proposed to realign the Densy Burn. This will require further attention once more information is available to make sure the road is not at risk of flooding from the burn.

Ch16350 – Ch16850; The Violet route option includes an online section, adjacent to Kintore, where the existing road must be lowered to provide the required headroom at the new bridge which replaces the existing structure at Forest Road. Care must be taken to ensure that this section of road can be drained.

Summary

Subject to site investigation, several sections of the Violet route option have been highlighted as requiring further investigation with regards to groundwater. Sections where the longitudinal gradient is flatter than ideal should be looked at more closely, whilst areas with natural springs will need careful consideration.

The length of cut adjacent to the Densy Burn needs to be considered jointly with the realignment of the burn and the potential new low point at Forest Road must be checked to confirm it can be drained.

11 Orange Route Option

11.1 Location

The Orange route option is 12.8km long and links the end of either the Pink or Brown route option, at a point to the north of Pitcaple, to the existing A96 to the west of Kintore. The route option is a southern offline by-pass of Inverurie and is considered as a direct alternative to the Violet route option covered in Chapter 10.

The Orange route option is illustrated in the following drawings:

Drawing 12 A96PEA–AMAR–EWE–SWI–MP–YH–00161

Drawing 13 A96PEA–AMAR–EWE–SWI–MP–YH–00162

11.2 Catchment Characteristics

Taking a route largely to the west of the existing A96 through open farmland, the Orange route option has a largely rural catchment. The main settlements on the route option are Inverurie, with a population of over 13,600 people, and Port Elphinstone with almost 2000. The route option re-joins the existing A96 to the north of Kintore which has a population of 4,500.

The route option falls entirely within the Urie/Don catchment, though there are several notable tributaries within each of these greater areas:

- Ch000 – 800 falls within the catchment of the Burn of Durno;
- Ch800 – 2100 falls within the catchment area of an un-named tributary to the Urie (referenced as Tributary of River Urie 21);
- Ch2100 – 4200 falls within the catchment of the River Urie (Pitcaple to Lochter Burn water body), passing beneath the existing A96 and adjacent railway;
- Ch4200 – 4800 falls within the catchment of the Strathnaterick Burn;
- Ch4800 – 6000 falls within the catchment of the Urie, again, across the existing A96;
- Ch6000 – 10000 falls within the catchment of the Don (Alford to Inverurie water body); and
- Ch10000 – 12823 (end) also falls within the catchment of the Don, though it is collected by a series of small tributaries and taken beneath the existing A96 to get there.

The watercourses are referenced on the associated drawings.

Burn of Durno

The Burn of Durno has a catchment area of over 20km² and discharges to the River Urie to the north-east of Pitcaple Castle. The proposed crossing of the Burn is in the lower reaches of this catchment, within either the Pink or Brown route options, with around 18.8km² of mostly farmland draining to this point.

Tributary to the River Urie 21

With a catchment area of approximately 1.1km², this small tributary drains the runoff from the area around Pitscurry Moss to the River Urie. The Orange route option closely follows the alignment of this watercourse, with several interactions noted over its short length.

River Urie – Pitcaple to Lochter Burn

The River Urie is a significant watercourse with a catchment area of over 300km² by the time it reaches its confluence with the River Don, to the south-east of Inverurie. The Orange route option crosses the Urie on a skew to the east of Pitcaple at a point with a significant associated floodplain indicated to be over 300m wide based on SEPA flood maps. At this point, the Urie has a catchment in the region of 220km².

Strathnaterick Burn

The Strathnaterick Burn is a small tributary to the Urie with a catchment area of around 5.5km² draining an area of farmland to the north-west of Inverurie. At the point of the proposed crossing, the catchment is approximately 5.1km².

River Don – Alford to Inverurie

The River Don is a very large watercourse. Rising in the Cairngorm Mountains, 75km to the west of Aberdeen, it drains an area of over 1,300km². The Orange route option crosses the River Don at a point around 2km west of Port Elphinstone, where the river is contained within a steep sided valley and its floodplain is minimal. The catchment area at the proposed crossing point is around 790km².

11.3 Route Option Alignment

The Orange route option links to the two route options through the middle part of the scheme (Pink or Brown route options) into the existing A96 dual carriageway north of Kintore. This is the area with the lowest elevation and, from a flood risk perspective, the largest watercourses, with significant areas of associated floodplain.

The Orange route option avoids the most significant areas of floodplain by taking a southern route past Inverurie, with the largest areas of floodplain located to the east, associated with the confluences of the Lochter Burn and River Urie and the River Urie and The Don.

The route option is characteristically flat for much of its length, with localised low points at the major watercourse crossings.

The Orange route option starts at a level of approximately 100mAOD to the east of Durno, falling gradually to a low point of around 73mAOD, prior to the Urie crossing. The alignment gradually climbs again to a high point of around 117mAOD at Ch6900, before falling to a level of approximately 97mAOD at the crossing of the Don, with the river itself at a level of around 60mAOD in the valley below. The alignment then rises to a final high point of around 112mAOD as it passes Shaw Hill before falling steeply to tie back into the existing A96 alignment at Thainstone.

Based on the structures inventory for the equivalent section of the A96, there are 11 known watercourse crossings for this route option of existing road.

11.4 Fluvial Flood Risk

Based on the SEPA Flood Maps, and as shown on the associated drawings, there are some significant areas of floodplain within the study area associated with the Orange route option, though the most significant of these are to the east of the existing A96, which this route option largely avoids.

The floodplain associated with the River Urie, east of Pitcaple, is significant at around 300m wide. The Orange route option must cross this to pass south of Inverurie.

Any other flooding associated with watercourses on the Orange route option is largely confined to the channel of the associated watercourse.

A sequential approach was undertaken during the DMRB Stage 2 sifting process to avoid the floodplain wherever possible, and to limit the impact where it was not possible to avoid. Therefore, most of the points picked up on the Orange route option are associated with proposed new watercourse crossings.

Analysis

The following tables take each point in turn and assess the fluvial flood risk associated with the interaction of the route option and watercourse should this route option be taken forward. Each interaction point is individually marked on the associated drawings.

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 550	373051, 827357	Field Drain	< 0.5	N/A
Main Route/Side Road: Main route and side road **Type of Interaction:** Existing drainage to be removed **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** This field drain will be removed. Any overland flow to be picked up by exterior catchment drainage.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 800	373264, 827209	Field Drain	< 0.5	N/A
Main Route/Side Road: Main route and side road **Type of Interaction:** Existing drainage to be removed **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** This field drain will be removed. Any overland flow to be picked up by exterior catchment drainage.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 1225	373504, 826881	Field Drain	< 0.5	1200m
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (50m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 180m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 1350 - 2150	N/A	Tributary of River Urie 21	0.5 – 1.0	N/A
Main Route/Side Road: Main route and side road **Type of Interaction:** Watercourse realignment **Built Receptors Adjacent or Upstream:** There are existing buildings within 360m of the start of the proposed realignment, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** A length of approximately 800m this tributary will need to be realigned to accommodate the proposed route option. The proposed realignment will be designed to ensure that there is no increase in flood risk to receptors (detailed assessment will be carried out at DMRB Stage 3).				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 1525	373593, 826583	Tributary of River Urie 21	0.6	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (70m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 170m from this point, but they are not considered to be existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 2075	373706, 826060	Tributary of River Urie 21	0.9	1200mm
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (60m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 2250 - 2650	N/A	Tributary of River Urie 21	1.0 - 1.1	N/A
Main Route/Side Road: Main route **Type of Interaction:** Watercourse realignment **Built Receptors Adjacent or Upstream:** There are existing buildings in close proximity to the upstream end of the proposed realignment. They are not currently at risk based on SEPA flood maps but are considered as potential receptors due to the change in location of the watercourse. **Potential Floodplain Encroachment:** Yes. The watercourse is to be realigned in this location. To be assessed in detail at DMRB Stage 3. **Comment:** A length of approximately 400m this tributary may need to be realigned to accommodate the piers of the proposed viaduct, including through the River Urie floodplain. The adjacent buildings are located at a higher elevation than existing ground levels within the corridor which will be used for realignment and are unlikely to be impacted. The proposed realignment will be designed to ensure that there is no increase in flood risk to receptors (detailed assessment will be carried out at DMRB Stage 3).				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 2675	373785, 825456	River Urie – Pitcaple to Lochter Burn	218	Bridge
Main Route/Side Road: Main route **Type of Interaction:** Bridge **Built Receptors Adjacent or Upstream:** An extended upstream reach has been assessed at this location due to the low valley gradient. There are several properties and a wastewater treatment works shown to be at existing flood risk based on the SEPA flood maps, with more properties at Whiteford located just outside of the flood extents. **Potential Floodplain Encroachment:** Yes. An underbridge is proposed in this location, with abutments located outwith the floodplain. The impact of intermediate piers on flow conveyance and water levels should be considered. **Comment:** The size of the floodplain and the presence of properties and critical infrastructure at existing flood risk warrants more detailed assessment at DMRB Stage 2 using hydraulic modelling to assess whether the proposed crossing will impact upon flood levels and extents.				
			Sensitivity:	Grade II

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 4250 - 4500	N/A	Strathnaterick Burn	5.1 – 5.3	N/A
Main Route/Side Road: Main route and side road **Type of Interaction:** Watercourse realignment **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** Yes. The watercourse is to be realigned in this location and there are adjacent areas identified as potentially suitable for compensatory storage. To be assessed in detail at DMRB Stage 3. **Comment:** A length of approximately 450m the Strathnaterick Burn will need to be realigned to accommodate the proposed route option. The proposed realignment will be designed to ensure that there is no increase in flood risk to receptors and will incorporate compensatory storage as required (detailed assessment will be carried out at DMRB Stage 3).				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 4275	373757, 823754	Strathnaterick Burn	5.2	2 x 3m box
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (130m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** Yes. A culvert is proposed in this location, with road embankments in the floodplain. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** Assuming the proposed culvert is sized appropriately, and compensatory storage provided, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 4425	373942, 823754	Strathnatterick Burn	5.3	2 x 3m box
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (60m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** Yes. A culvert is proposed in this location, with road embankments in the floodplain. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** Assuming the proposed culvert is sized appropriately, and compensatory storage provided, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 6650	374685, 821803	Tributary to the River Don 1	1.0	1200mm
Main Route/Side Road: Main route and side road **Type of Interaction:** Proposed new culvert (120m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 260m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 6500 - 7350	N/A	Tributary to the River Don 1	1.0 – 3.1	N/A
Main Route/Side Road: Main route and side road **Type of Interaction:** Watercourse realignment **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 180m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** Yes. The watercourse is to be realigned in this location and there are adjacent areas identified as potentially suitable for compensatory storage. To be assessed in detail at DMRB Stage 3. **Comment:** A length of approximately 850m this tributary will need to be realigned to accommodate the proposed route option. The proposed realignment will be designed to ensure that there is no increase in flood risk to receptors and will include any required compensatory storage (detailed assessment will be carried out at DMRB Stage 3).				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 6850	374834, 821430	Tributary to the River Don 1	1.3	2 x 3m box
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (30m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 220m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. Existing roads downstream of the proposed crossing are indicated at being at risk in SEPA's surface water flood map, which can be used as a proxy for fluvial flood risk in this location. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low. Risk to existing roads downstream of the crossing will be investigated further at Stage 3.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 7250	374693, 821189	Tributary to the River Don 1	1.5	2 x 3m box
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (170m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** Yes. A culvert is proposed in this location, with road embankments in the floodplain. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** Assuming the proposed culvert is sized appropriately, and compensatory storage provided, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 7450	374727, 821003	Field Drain	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (50m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 7575	374764, 820892	Field Drain	< 0.5	1200mm
Main Route/Side Road: Main route **Type of Interaction:** Proposed new culvert (60m) **Built Receptors Adjacent or Upstream:** None within 500m **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 7650	374883, 820878	Tributary to the River Don 1	3.2	2 x 3m box
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (40m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 230m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** Yes. A culvert is proposed in this location, with road embankments in the floodplain. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** Assuming the proposed culvert is sized appropriately, and compensatory storage provided, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 8075	375089, 820507	Tributary to the River Don 1	3.6	2 x 3m box
Main Route/Side Road: Side road **Type of Interaction:** Proposed new culvert (80m) **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 130m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** Yes. A culvert is proposed in this location, with road embankments in the floodplain. There are adjacent areas identified as potentially suitable for compensatory storage. **Comment:** Assuming the proposed culvert is sized appropriately, and compensatory storage provided, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 8400	375150, 820167	River Don – Alford to Inverurie	788	Bridge
Main Route/Side Road: Main route **Type of Interaction:** Bridge **Built Receptors Adjacent or Upstream:** Several properties are at existing flood risk at Burnhervie based on SEPAs flood maps (an extended upstream length has been used due to the low gradient of the valley). **Potential Floodplain Encroachment:** Yes. An underbridge is proposed in this location, with abutments located outwith the floodplain. Compensatory storage not required. **Comment:** An underbridge is proposed at this location, incorporating the watercourse crossing. No abutments or piers are proposed within the extents of the floodplain and the proposed road level is >20m above the floodplain level. The risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 9600	376170, 819569	Woodend Burn	< 0.5	1200mm
Main Route/Side Road: Main route and side road **Type of Interaction:** Proposed new culvert (150m) **Built Receptors Adjacent or Upstream:** There are several commercial properties upstream of the proposed crossing. There is uncertainty as to whether these could be at existing flood risk and they have therefore been included as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** Assuming the proposed culvert is sized appropriately, the risk of flooding associated with this crossing is low.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 11000	377668, 819531	Tributary of River Don 2	0.5	Existing
Main Route/Side Road: Side road **Type of Interaction:** Extend existing culvert (40m) **Built Receptors Adjacent or Upstream:** None within upstream open channel reach. **Potential Floodplain Encroachment:** No **Comment:** There is an existing culvert in this location and based on the structure inventory, it is assumed to be 750mm diameter. This would need extended by approximately 40m to accommodate the proposed route option.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 11200	377577, 818890	Field Drain	< 0.5	N/A
Main Route/Side Road: Main route and side road **Type of Interaction:** Existing drainage to be removed **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 170m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** This field drain will be removed. Any overland flow to be picked up by exterior catchment drainage.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 11475	377778, 818839	Field Drain	< 0.5	1200mm
Main Route/Side Road: Main route and side road **Type of Interaction:** Existing drainage to be removed **Built Receptors Adjacent or Upstream:** There are existing buildings approximately 80m from this point, but they are not considered to be at existing flood risk and are not considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** This field drain will be removed. Any overland flow to be picked up by exterior catchment drainage.				
			Sensitivity:	Grade IV

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 11950	377974, 818294	Tributary of River Don 3	< 0.5	Existing
Main Route/Side Road: Main route and side road **Type of Interaction:** Extend existing culvert (30m) **Built Receptors Adjacent or Upstream:** The agricultural centre is immediately adjacent to the existing culvert but appears to be at a higher elevation than the channel and is not considered to be at existing flood risk. **Potential Floodplain Encroachment:** No **Comment:** There is an existing culvert in this location, though it is not clear from the structures inventory how long this is or what diameter. This would need extended by approximately 30m to accommodate the proposed route option. Confirmation of flood risk to the adjacent agricultural centre will be carried out at DMRB Stage 3.				
			Sensitivity:	Grade III

Chainage	X/Y Coordinates	Watercourse	Catchment Area (km²)	Culvert Size
O 12675	378474, 817716	Tributary to the River Don 3	< 0.5	Existing
Main Route/Side Road: Main route **Type of Interaction:** Change in cover to existing culvert **Built Receptors Adjacent or Upstream:** There are existing buildings immediately adjacent to this existing culvert which could potentially be at existing flood risk and are considered as potential receptors. **Potential Floodplain Encroachment:** No **Comment:** The impact on the crossing is likely limited to a minor amendment to existing cover levels which will have no impact on flood risk. This will be confirmed during DMRB Stage 3.				
			Sensitivity:	Grade IV

Summary

26 individual points on the Orange route option have been assessed with regards to fluvial flood risk:

- 13 new culverts are proposed;
- Two existing culverts need to be extended, with a further one noted as having a change in cover level;
- Four watercourse realignments are necessary;
- Two crossings are incorporated into bridging structures;

- In four instances, existing drainage is to be removed; and
- There are no locations where a potential loss of floodplain is noted.

In terms of sensitivity:

- One of the 26 points has been assessed as Grade II, moderately sensitive. Hydraulic modelling will therefore be carried out at DMRB Stage 2 to better understand the implications of locating a crossing in this position;
- 12 of the 26 points have been assessed as Grade III, not particularly sensitive. This means that, although there are a small number of built receptors upstream of the point under consideration, any risk has been adjudged to be mitigatable; and
- 13 of the 26 points have been assessed as Grade IV, meaning there are no receptors deemed to be at risk of flooding.

11.5 Pluvial Flood Risk

Based on the topography of the catchment in which the Orange route option is located, there are few areas where specific consideration will have to be given to the overland flow from the exterior catchment. Another key consideration is to maintain the existing catchment areas and runoff regimes wherever possible. This will be considered in detail during DMRB Stage 3.

At DMRB Stage 2, the areas likely to require the most attention have been identified. The Orange route option has therefore been split into sections. The section boundaries have been chosen as they cover areas where the runoff regime is similar, and the overland flow will therefore be dealt with in a similar manner.

Analysis

Ch000 – Ch2000; The Orange route option initially follows the route of a tributary to the Urie and cut off drains will be necessary to collect runoff from the adjacent slopes when the watercourse is on the other side of the route option. The areas involved are small and standard cut off drains will be sufficient.

Ch2000 – Ch3100; The route option is raised through this section, with a structure proposed to carry the route option over the existing A96, the railway and the River Urie and associated floodplain.

Ch3100 - Ch4250; Between the Urie crossing and the crossing of the Strathnaterick Burn, the Orange route option runs along the foot of Gallows Hill. An area of around 60ha is expected to shed from this hill side towards the route option and cut off drains will be required to intercept it.

Ch4250 – Ch8400; Between the crossing of the Strathnaterick Burn and the River Don, the Orange route option lies between the catchment and the receiving watercourse for much of its length. Runoff from an area of around 150ha will need to be intercepted and conveyed beyond the route option.

Ch8400 – Ch12000; Beyond the River Don crossing, to the Thainstone Junction, a smaller exterior catchment to the south will shed water towards the Orange route

option. The runoff from an area in the region of 70ha will have to be intercepted over this length.

Ch12000 – Ch12823; Over this length, the Orange route option follows the alignment of the existing A96. Existing cut off drains should be reviewed and amended to suit. The areas involved are small and standard cut off ditches are expected.

Summary

The Orange route option passes several hills on route and the runoff from their slopes will have to be intercepted and redirected back into the appropriate watercourses. The area between the Strathnaterick Burn and the River Don is of note, with a larger area from this steep hill side to be collected over this length. Standard cut off ditches would be expected elsewhere to pick up runoff where necessary.

11.6 Groundwater Flooding

As discussed in Chapter 5, no specific information on groundwater flooding is available and at this stage no specific ground investigation works have been carried out. Any discussion regarding groundwater flooding is therefore limited to sections of the route option which are in cut, with potentially challenging outfalls.

Analysis

Ch000 – Ch250; The Orange route option is initially in cut east of the tie in with either the Pink or Brown route options, to the north of Pitcaple. This initial section has a maximum depth of cut of approximately 14m, but slopes steeply back towards the Burn of Durno, suggesting groundwater flooding is unlikely to be an issue.

Ch1850 – Ch2150; The route option moves into cut over this section to allow it to pass beneath the existing C76C side road. The cut is to a maximum depth of around 5m and, with a steep gradient sloping towards the River Urie, groundwater is unlikely to cause an issue. It is however worth noting, that the realigned burn is located above the road over some of this length and care must to taken to ensure it does not pose a risk to the road.

Ch4950 – Ch5800; The Orange route option goes into cut over this section as the alignment skirts the hillside. The cut is over 13m deep and, with a relatively flat longitudinal gradient, this section requires careful consideration to ensure groundwater flooding does not become an issue. The fact that this section coincides with a section that is also subject to overland flow from the exterior catchment may further exacerbate any issues.

Ch7500 – Ch7950; To transition between gradients and limit the elevation of the Don crossing, the Orange route option has a short section of cut north-west of the structure. The cut is around 6m deep and coincides with a low point on the vertical alignment. A robust drainage system will be required to ensure this section is not at risk of flooding. The area is raised significantly from the adjacent River Don, so although a deep drainage system will be required, it would be possible to drain this section.

Ch9750 – Ch10750; To pass beneath the existing B993 and tie into the existing A96 beyond Thainstone, the Orange route option must pass through a section of cut over this length. The cut has a maximum depth of over 16m and is over 10m deep for around 700m. This section of cut coincides with a high point on the vertical alignment, with the geometry falling away in both directions, making groundwater flooding less likely to be an issue.

Summary

Subject to site investigation, several sections of the Orange route option have been highlighted as requiring further investigation with regards to groundwater. Sections where the longitudinal gradient is flatter than ideal should be looked at more closely, whilst low points in sections of cut are not best practice and should be revisited.

The sections of cut between the Strathnaterick Burn and the River Don need to be considered jointly with the overland flow from the exterior catchment.

12 Hydraulic Modelling Approach

12.1 Scope

The qualitative assessment of flood risk presented in Chapters 6 - 11 identified two moderately sensitive (Grade II) locations which will be modelled as part of the Flood Risk Simple Assessment to better understand the flood risk implications of the proposed crossings:

- Violet route option chainage V 15250 – proposed crossing of the River Don at Kintore; and
- Orange route option chainage O 2675 – proposed crossing of the River Urie at Pitcaple.

The following sections outline the hydraulic modelling approach at DMRB Stage 2.

12.2 Aberdeenshire Council Models

Information Received

Two Aberdeenshire Council models, prepared by JBA Consulting, were issued to AmeyArup on 22 March 2019; one for Inverurie and one for Insch. Only the Inverurie model has been used for this Flood Risk Simple Assessment and the Insch model is therefore not discussed further in this report. Both models are described as interim models. The models have been issued to AmeyArup for the sole purpose of investigating flood risk at the proposed crossings associated with the scheme.

The Inverurie flood model is a hydrodynamic model and has been prepared as a baseline model for a potential Inverurie Flood Prevention Scheme (FPS). The model extends from the confluence of the Shevock and the River Urie in the north, to Parkhill, to the north of Dyce. The hydraulic model is a 1D-2D model developed using the Flood Modeller Pro and Tuflow software packages.

Model Review

The Inverurie FPS model has been reviewed by AmeyArup to determine its suitability for assessing change in flood risk associated with the proposed crossings at Pitcaple and Kintore. The review of the model files consisted of an inspection of the files, their structure, content and representativeness of the site and hydraulic characteristics.

In general, the model follows common industry practice and it appears to be based on adequate ground elevation information. No major issues were detected with the boundaries of the model construction.

The review highlighted three aspects of the model of relevance to its suitability for use in the DMRB Stage 2 assessment:

- Model inflows for a climate change scenario are not available;
- The model run times are significant, due to the large size of the model and the use of multiple sources of topographical data (NextMap, 1m LiDAR and 0.25m LiDAR); and

- The 2D domain within the model is limited to the section between the railway crossing of the Urie to the north of Inverurie (375170, 823348) and the downstream extent of the model at Parkhill. The floodplain within the upper reach of the River Urie (approx. 14km) is represented in 1D using extended cross-sections, which are assumed to be derived from LiDAR data. The Orange route option crossing of the River Urie at Pitcaple falls within this 1D reach of the model. The Violet route option crossing of the River Don at Kintore is located within the 2D domain.

12.3 Baseline Modelling Approach

Following the model review, several changes to the Inverurie FPS model were proposed and SEPA confirmed that it was appropriate for AmeyArup to update the baseline model to improve its suitability for use in the Flood Risk Simple Assessment. The changes made to the Inverurie FPS model, as provided by Aberdeenshire Council, are described below.

The baseline models were run for two scenarios: the 1 in 200-year return period event and the 1 in 200-year return period including a climate change allowance.

Climate Change Scenario

The peak flows for the 1 in 200-year return period event, provided within the original Inverurie FPS model, were increased by 20% for the climate change scenario runs and the model inflows were scaled to these revised peak flows.

Topographic Data

The updated baseline model uses the 1m LiDAR dataset only.

The NextMap data was not being used in the original Inverurie FPS model, and reference to this dataset was removed from the model files. The model has a 4m cell size therefore it is unnecessary to use 0.25m LiDAR for a model of this cell size given the high memory demands of this dataset, and the updated model excludes the 0.25m LiDAR.

Model Extents

To simplify handling of the model, the Inverurie FPS model was split just upstream of Inverurie where the Aberdeen to Inverness railway crosses the River Urie (the upstream extent of the 2D domain in the original model). The two resulting models are referred to in this report as the upper reach model and lower reach model respectively.

The downstream boundary of 1D domain of the upper reach model is located at the downstream face of the Aberdeen to Inverness railway crossing. The stage-flow curve for the downstream boundary was obtained from the results of the original Inverurie FPS model.

The River Urie inflow at the upstream extent of the lower reach model was extracted from the model results for the corresponding cross-section of the Inverurie FPS model prior to it being split. The lower reach model was also shortened to further improve run times, moving the downstream boundary to Cothal where ground levels constrain the floodplain. The stage-flow curve for the

downstream boundary was obtained from the results of the original Inverurie FPS model. The revised downstream boundary is 13km downstream of Kintore and does not influence the model results at the proposed crossing.

Floodplain Representation

Given the size and character of the proposed crossings, it is considered more appropriate to model the floodplain in 2D to allow overland flow paths to be represented. The River Urie floodplain was changed from 1D to 2D representation in the upper reach model for a length of approximately 6.5km. The upstream and downstream extents of the 2D domain correspond to floodplain constrictions. The 2D domain uses 1D LiDAR data and a 4m cell size for consistency with the lower reach model.

No changes were made to the floodplain representation in the lower reach model for the baseline runs as the 2D domain already incorporates the River Don floodplain at the proposed Violet crossing.

Model Suitability

The revised models are suitable for use in the Flood Risk Simple Assessment for comparison of peak water levels and flood extents between the baseline and proposed conditions.

The model amendments have been based on LiDAR data, including bank levels, with no topographic survey commissioned at DMRB Stage 2. Further refinements to the models may be necessary at DMRB Stage 3, for example if predictions of absolute water levels are required (rather than the difference in levels between scenarios) or to provide more accurate definition of bank elevations and overtopping patterns, where complex flow patterns and exchanges of flow between the channel and floodplain occur.

12.4 Modelling of the Proposed Crossings

The preliminary conceptual designs assume both proposed crossings as curved viaduct structures and it is assumed that the abutments are placed outwith the 1 in 200-year flood extents. There would be a number of intermediate piers located within the floodplain, which are assumed at this stage of the project to be 2m in diameter.

The results of the modelling are summarised in Table 4, showing the 1 in 200-year plus climate change peak water levels taken from the revised baseline models.

Table 4 Baseline Water Levels

	Location of Crossing	
	Violet: River Don at Kintore	**Orange: River Urie at Pitcaple**
1 in 200yr +CC peak water level (mAOD)	49.5	63.8
Lowest deck level (mAOD)	58.7	73.0

Given that conceptual design deck levels are significantly above the river levels, there is a significant freeboard between the deck levels of both structures and the 1 in 200-year return period peak flood levels, including a 20% allowance for climate change. The deck has therefore not been included in the hydraulic models.

The intermediate piers have been represented within the 2D domain using a constriction layer. A 50% blockage was applied to each cell where a pier was located (2m diameter piers and 4m cell size). It is assumed there will be no piers proposed within the river channel for either of the proposed crossings.

13 Hydraulic Modelling Results

13.1 Violet Route Option Crossing of the River Don at Kintore

Peak water levels, flows and velocities have been compared for the baseline and proposed scenarios. Changes in peak water levels for the 1 in 200-year return period event, including climate change, are presented in Table 5 for the nearest channel cross-sections to the proposed conceptual crossing design. The results are presented for both the 1D domain (channel cross-section results) and 2D domain (extracted using PO lines).

The results show the proposed crossing has a negligible impact on flood risk, with peak water levels at the nearest channel cross-sections varying by a maximum of ±4mm. Changes to peak flows within the channel and flood extents are also negligible. Minor localised variations in floodplain velocities are predicted around piers which will be taken into consideration during detailed design of the viaduct structure and any required scour protection.

Table 5 Model Results (1 in 200-year + CC) – River Don at Kintore

	Cross-section ID	**RD_19256**	**RD_18390**
	Location	**430m upstream of proposed crossing**	**470m downstream of proposed crossing**
Water Level (mAOD)	**Channel (1D) Baseline**	49.688	49.103
	Channel (1D) Proposed	49.692	49.103
	Difference	4mm	0
	Floodplain (2D) Baseline	49.862	41.211
	Floodplain (2D) Proposed	49.862	41.211
	Difference	0	0

13.2 Orange Route Option Crossing of the River Urie at Pitcaple

Peak water levels, flows and velocities have been compared for the baseline and proposed scenarios. Changes in peak water levels for the 1 in 200-year return

period event, including climate change, are presented in Table 6 for several locations upstream and downstream of the proposed conceptual crossing design. The results are presented for both the 1D domain (channel cross-section results) and 2D domain (extracted using PO lines).

The results show the proposed crossing has a negligible impact on flood risk, with peak water levels at the nearest channel cross-sections and on the floodplain varying by ±1mm. Changes to peak flows within the channel and flood extents are also negligible. Minor localised variations in floodplain velocities are predicted around piers which will be taken into consideration during detailed design of the viaduct structure and any required scour protection.

Table 6 Model Results (1 in 200-year + CC) – River Urie at Pitcaple

	Cross-section ID	**RU_12802**	**RU_12517**	**RU_12179**	**RU_11746**	**RU_11282**
	Location	**Pitcaple Cottage**	**325m NW of crossing**	**At Proposed Viaduct**	**280m SE of crossing**	**700m SE of crossing**
Water Level (mAOD)	**Channel (1D) Baseline**	64.954	64.186	63.774	63.325	63.112
	Channel (1D) Proposed	64.954	64.186	63.775	63.325	63.112
	Difference	0	0	1mm	0	0
	Floodplain (2D) Baseline	64.950	64.492	63.890	63.377	63.163
	Floodplain (2D) Proposed	64.950	64.493	63.890	63.378	63.163
	Difference	0	1mm	0	1mm	0

14 Off-Site Impacts and Residual Risk

14.1 Off Site Flood Risk

Current Scottish legislation prevents development that increases flood risk elsewhere. This study has largely focussed on the potential impacts upstream of proposed crossings and consideration of where compensatory storage might be required. At DMRB Stage 3, flood studies will be extended to ensure that pass forward flows do not rise, increasing the risk to properties downstream.

Surface water management measures associated with the drainage system for the new road will be installed. As discussed in Chapter 4, discharge rates will be strictly limited in accordance with rates agreed with Aberdeenshire Council. This should have the effect of reducing peak discharge rates in the longer return period events, with subsequent reductions in associated flood risk.

Care will be taken during the detailed design to maintain existing catchments as closely as possible. Changes to catchments can increase flows in sensitive watercourses with knock on effects for associated flood risk.

14.2 Residual Risk

Of the 126 interfaces considered as part of this assessment, 124 were noted as either Grade III or Grade IV in terms of sensitivity. This suggests that they are either not particularly sensitive and any risk is adjudged to be mitigatable, or that there are no receptors deemed to be at risk at that location.

Based on the DRMB Stage 2 outline design, compensatory storage may be required to offset loss of functional floodplain at three interfaces on the Cyan route option (River Urie), one interface on the Red route option (River Urie), two interfaces on the Brown route option (tributary of The Kellock, Tributary of River Urie 16), nine interfaces on the Violet route option (Ides Burn, Bridgealehouse Burn) and seven interfaces on the Orange route option (Strathnaterick Burn, Tributary of River Don 1).

Two of the 126 interfaces were assessed as Grade II, moderately sensitive and hydraulic modelling has been undertaken at DMRB Stage 2 to better understand the flood risk implications of these two conceptual crossing structure designs. These two interfaces are associated with the River Don crossing on the Violet route option and the River Urie crossing on the Orange route option. The modelling results show the proposed crossings have a negligible impact on flood risk.

A summary of the six route options can be seen in Table 7 and Table 8.

Table 7 Summary of Route Option Interfaces

	Cyan	Red	Pink	Brown	Violet	Orange
New Culvert	13	20	5	6	14	13
Extend Existing Culvert	1	0	0	0	1 (+4)**	2 (+1)**
Watercourse Realignment	3	2	2	0	5	4
Bridge***	2	1	5	4	4	2
Drainage Removed	3	4	1	0	1	4
Earthworks Encroachment of Floodplain*	2	0	0	0	2	0

*This relates to locations where earthworks encroach into the floodplain which are not associated with watercourse crossing structures. Compensatory storage will be required at these locations but may also be associated with new or extended crossings.

**Where an additional number is noted under “Extend Existing Culvert”, this notes an interface with an existing culvert that is unlikely to require an extension and is more likely a change in cover.

***A single bridge structure may have an interface with more than one watercourse. The number against “Bridge” in the table notes the number of interfaces, not the number of bridges.

Table 8 Summary of Route Option Sensitivity Grades

	Cyan	Red	Pink	Brown	Violet	Orange
Grade I	0	0	0	0	0	0
Grade II	0	0	0	0	1	1
Grade III	4	4	4	5	12	12
Grade IV	19	22	8	5	15	13

14.3 Climate Change

A consideration for climate change must be made when considering flood risk. As a result of climate change, there may be increased rainfall, which is likely to increase the risk of flooding. As a result, any design of management measures should have an allowance for climate change included.

After the release of UKCP18 in November 2018, climate change allowances are currently under review by both SEPA and Aberdeenshire Council. It has been agreed that for DMRB Stage 2, an allowance of 20% should be included. This figure will be subject to review prior to the commencement of any modelling work associated with DMRB Stage 3.

15 Conclusion

An FRA is required to support Transport Scotland's proposals for dualling the A96 from East of Huntly to Aberdeen. The scheme is currently at DMRB Stage 2 "Scheme Assessment".

The Flood Risk Simple Assessment has been carried out in accordance with the requirements of the DMRB (HD45/09), as well as SPP and SEPA's technical guidance for flood risk assessments, considering any specific requirements agreed with either SEPA or Aberdeenshire Council as part of the consultation exercise.

The assessment has focussed on fluvial flood risk, looking at perceived risk posed to receptors with a focus on whether any risk can be mitigated.

The potential route options remaining at this stage have been through an extensive sifting process. Through a sequential approach, options with the greatest impact on watercourses and floodplain have been deselected where possible, when taking into consideration other environmental and engineering constraints. Those remaining have had that impact reduced where possible, leaving six route options, which combine to give eight possible end-to-end options.

Most of the interfaces between potential routes and the water environment assessed as part of this exercise were adjudged to pose no risk to a potential receptor or pose a risk that is deemed to be mitigatable. Two distinct areas were deemed to need further, more detailed assessment at DMRB Stage 2. These areas are:

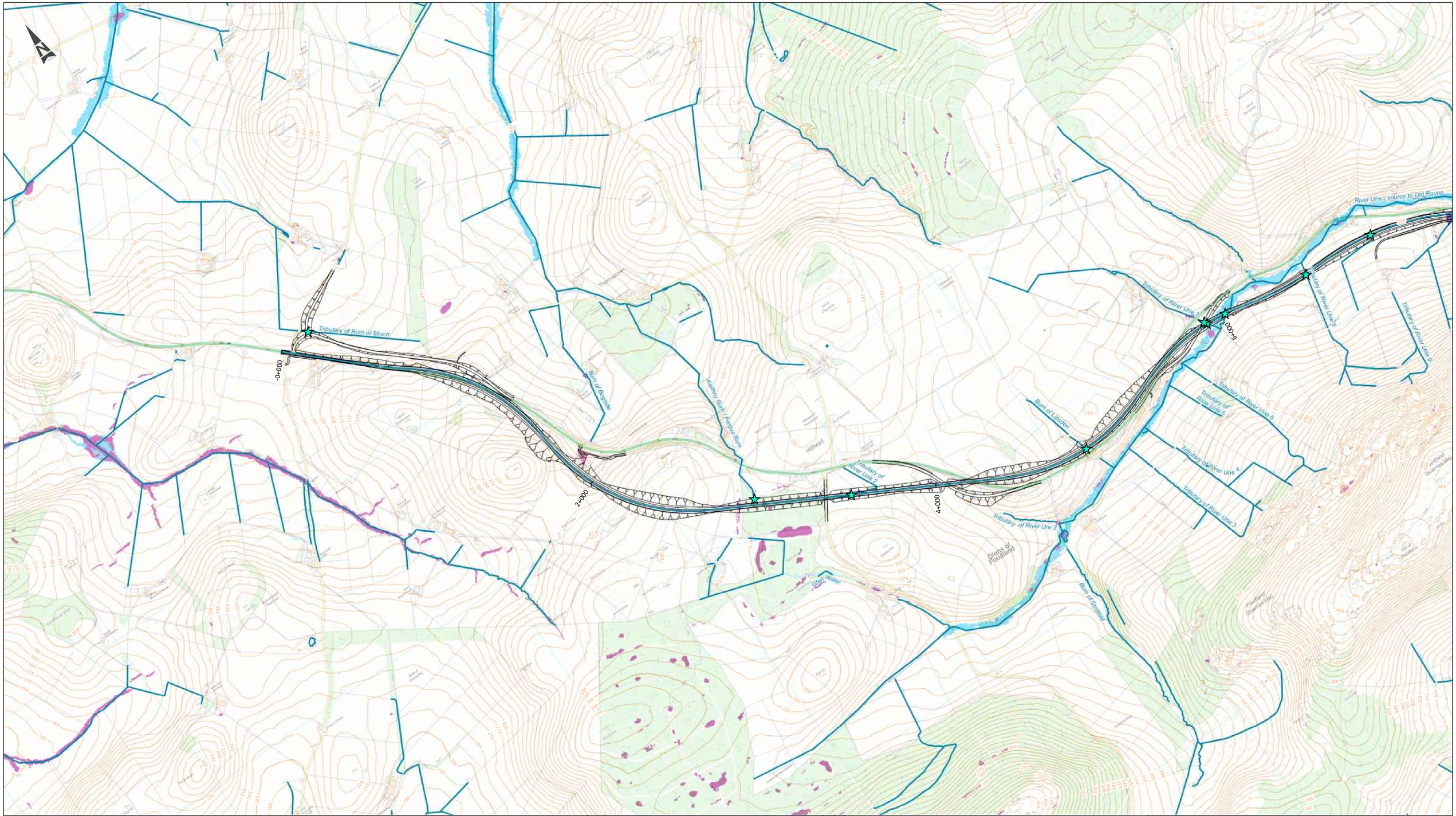
- The potential crossing of the River Don, on the Violet route option, north of Kintore; and
- The potential crossing of the River Urie, on the Orange route option.

Hydraulic modelling work has been undertaken to better understand the flood risk implications of locating a crossing in these locations as part of the Flood Risk Simple Assessment and results show the proposed crossings to have a negligible impact on flood risk.

Other sources of flooding have been considered at high level at this stage, with a focus on identifying areas in need of further work at DMRB Stage 3.

Based on the findings of this Flood Risk Simple Assessment and the modelling work undertaken on the two areas identified above, it is considered that the eight end-to-end options identified to be taken forward for full DMRB Stage 2 assessment can be delivered in terms of flood risk. Any risk identified is considered mitigatable through consideration at DMRB Stage 3 and all remaining watercourse interactions will be assessed further at that stage.

Drawings

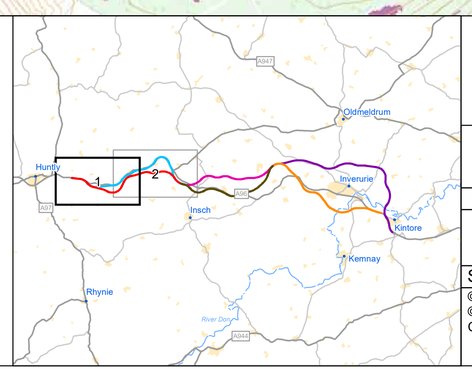


Route Option
- Cyan
- Adjoining

- Proposed watercourse interaction
- Model cross-section location
- Surface watercourse
- Watercourse Diversion
- Areas at risk of flooding from rivers [1]
- Areas at risk of flooding from surface water [2]
- Model 2D domain boundary

NOTES:
1. Shows areas with a medium likelihood of river flooding (0.5% annual exceedance probability) under existing conditions for catchments >3km2. Data provided by SEPA February 2019.

2. Shows areas with a medium likelihood of surface water flooding (0.5% annual exceedance probability) under exisiting conditions. Data provided by SEPA, february 2019.



A96 DUALLING EAST OF HUNTLY TO ABERDEEN
TRANSPORT SCOTLAND
Amey Arup

	First Issue				
C01	LPAG	LHAN	CRAM	FMAX	NHAC
	08/12/20	08/12/20	08/12/20	08/12/20	08/12/20
Revision	Created	Checked	Reviewed	Approved	Authorised

Metres
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Scale @ A1: 1:10,000 | Project Ref. No. A96PEA | Stage: Stage2

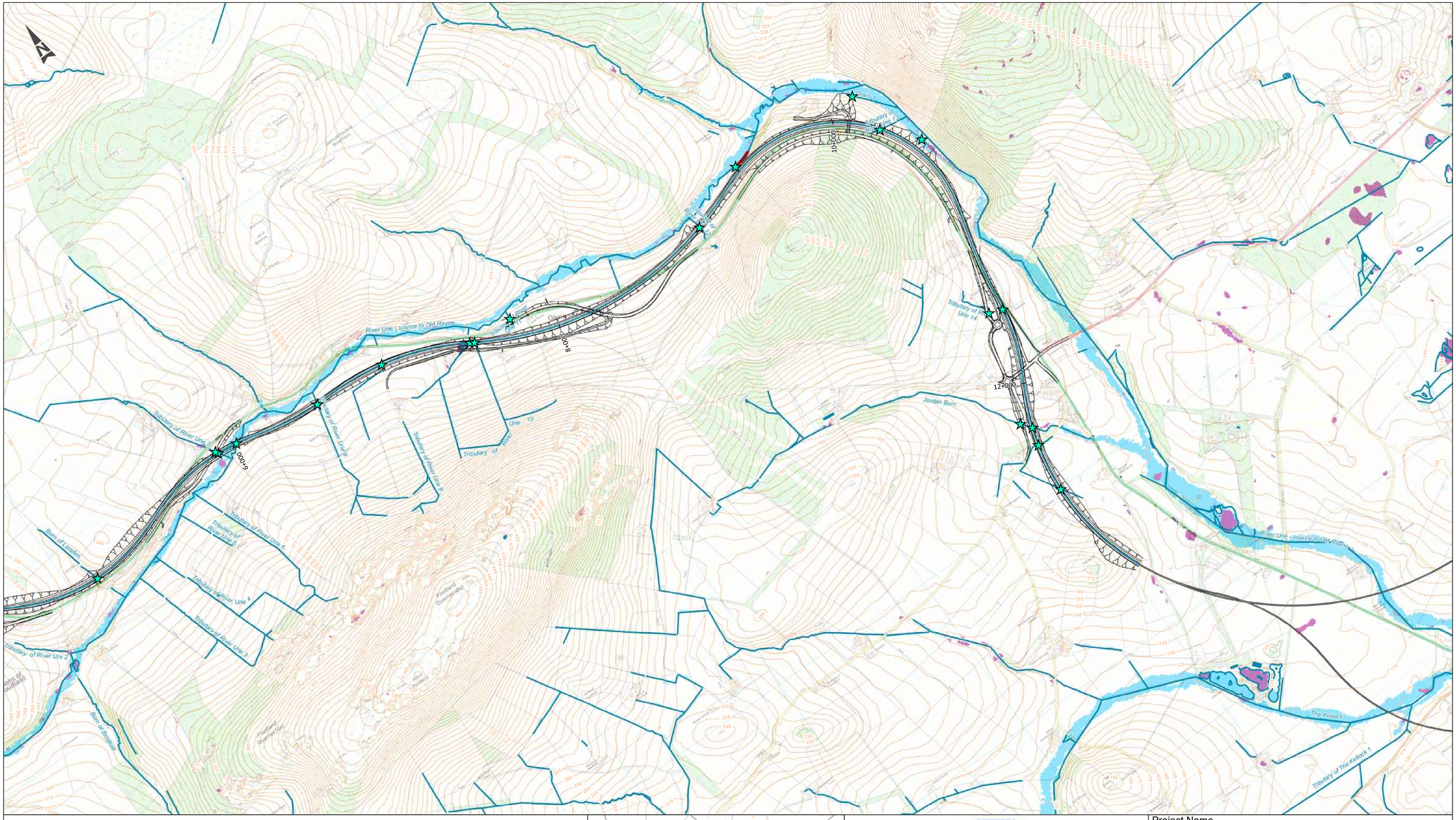
Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Flood Risk Simple Assessment
Cyan Flood Risk Summary
Sheet 1 of 2

Map Number

Project	Originator	Volume	Location	Type	Role	Number
A96PEA	AMAR	EWE	SWI	MP	YH	000111

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01



Route Option
- Cyan
- Adjoining

- Proposed watercourse interaction
- Model cross-section location
- Surface watercourse
- Watercourse Diversion
- Areas at risk of flooding from rivers [1]
- Areas at risk of flooding from surface water [2]
- Model 2D domain boundary

NOTES:
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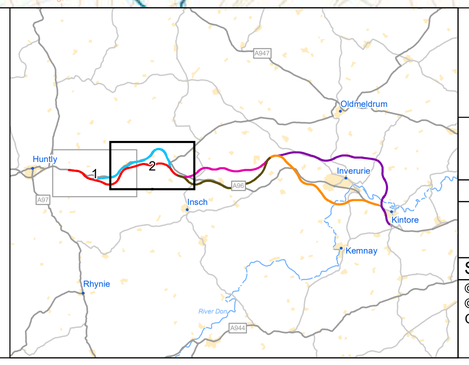
2. Shows areas with a medium likelihood of surface water flooding (0.5% annual exceedance probability) under exisiting conditions. Data provided by SEPA, february 2019.



C01	First Issue					
	LPAG	LHAN	CRAM	FMAX	NHAC	
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Revision	Created	Checked	Reviewed	Approved	Authorised	

Metres
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Scale @ A1: 1:10,000 | Project Ref. No. A96PEA | Stage: Stage2

Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Flood Risk Simple Assessment
Cyan Flood Risk Summary
Sheet 2 of 2

Map Number

Project	Originator	Volume				
A96PEA	- AMAR	- EWE	-			
Location			Type	Role	Number	
SWI	- MP	- YH	- 000112			

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01

Route Option

- Red
- Adjoining

- Proposed watercourse interaction
- Model cross-section location
- Surface watercourse
- Watercourse Diversion
- Areas at risk of flooding from rivers 1
- Areas at risk of flooding from surface water 2
- Model 2D domain boundary

NOTES:
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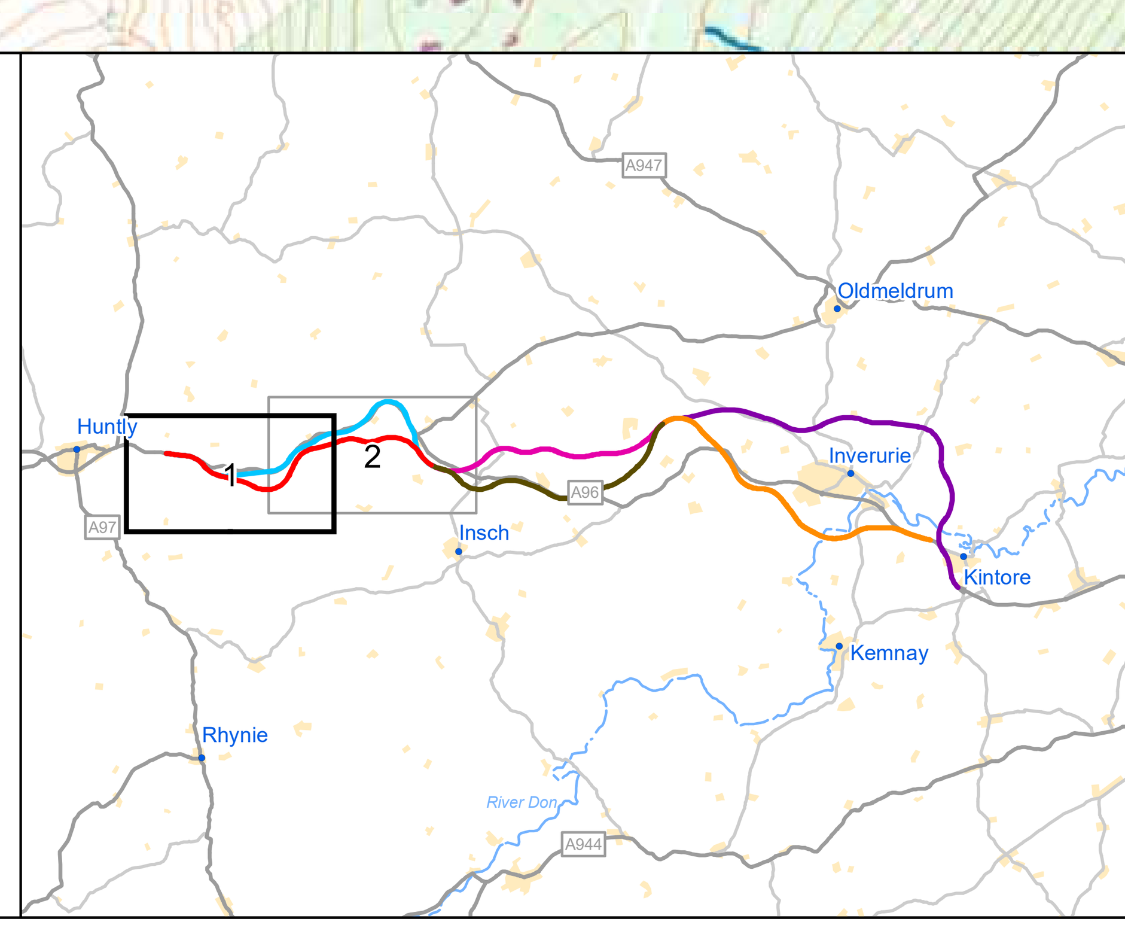
Data provided by SEPA February 2019.

2. Shows areas with a medium likelihood of surface water flooding (0.5% annual exceedance probability) under exisiting conditions.
Data provided by SEPA, february 2019.



A96 DUALLING EAST OF HUNTLY TO ABERDEEN

TRANSPORT SCOTLAND

Amey Arup

Revision	First Issue				
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Revision	Created	Checked	Reviewed	Approved	Authorised

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Scale @ A1: 1:10,000 | Project Ref. No. A96PEA | Stage: Stage2

Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Flood Risk Simple Assessment
Red Flood Risk Summary
Sheet 1 of 2

Map Number

Project	Originator	Volume	Location	Type	Role	Number
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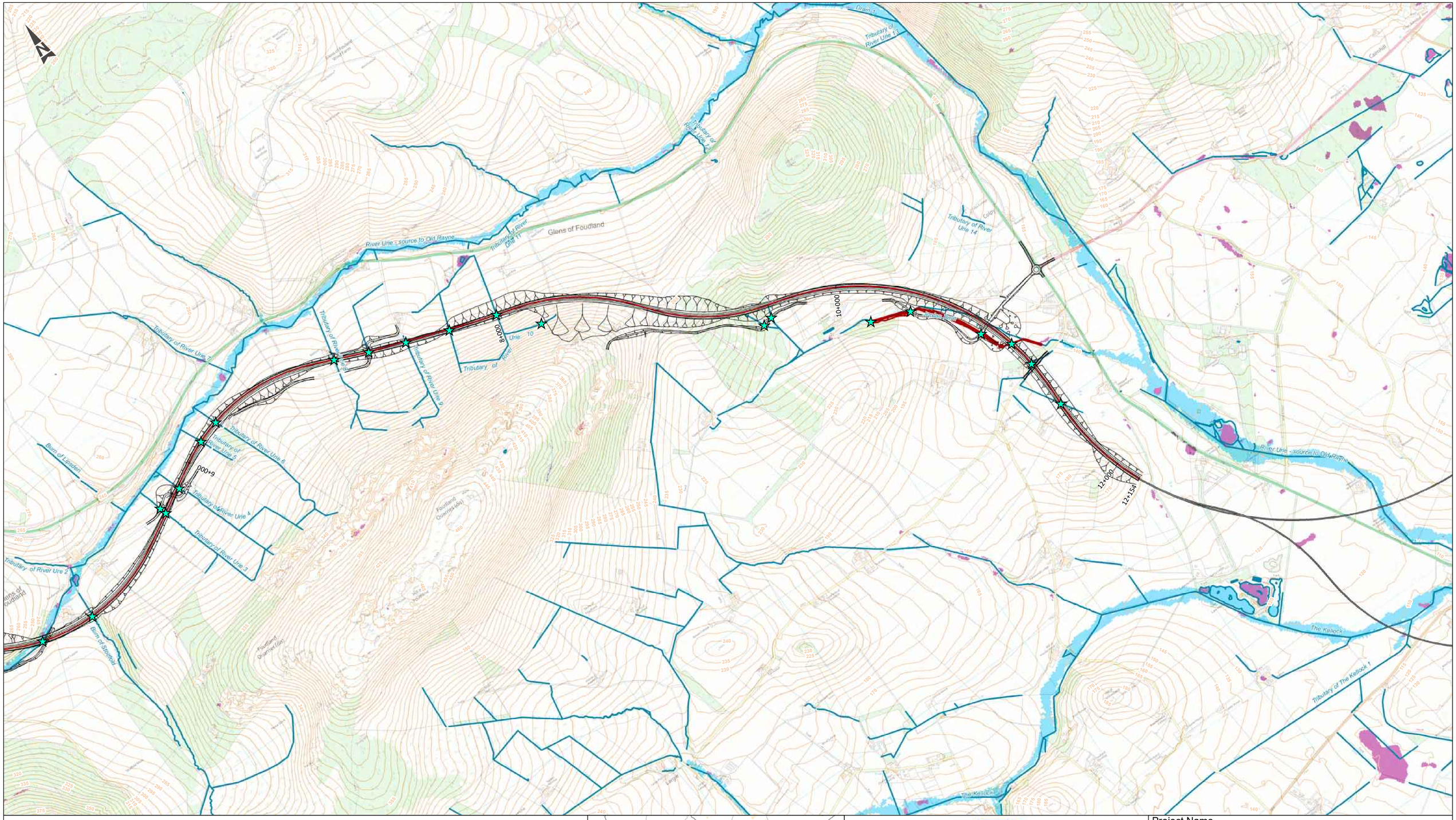
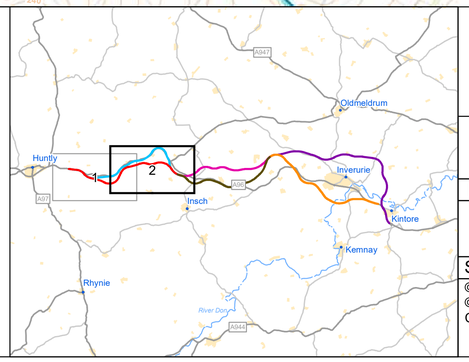
Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01



Route Option
- Red
- Adjoining

- Proposed watercourse interaction
- Model cross-section location
- Surface watercourse
- Watercourse Diversion
- Areas at risk of flooding from rivers [1]
- Areas at risk of flooding from surface water [2]
- Model 2D domain boundary



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Revision	LPAG	LHAN	CRAM	FMAX	NHAC
C01	First Issue				
	08/12/20	08/12/20	08/12/20	08/12/20	08/12/20
Revision	Created	Checked	Reviewed	Approved	Authorised

Metres
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Scale @ A1: 1:10,000 | Project Ref. No. A96PEA | Stage: Stage2

Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Flood Risk Simple Assessment
Red Flood Risk Summary
Sheet 2 of 2

Map Number

Project	Originator	Volume	Location	Type	Role	Number
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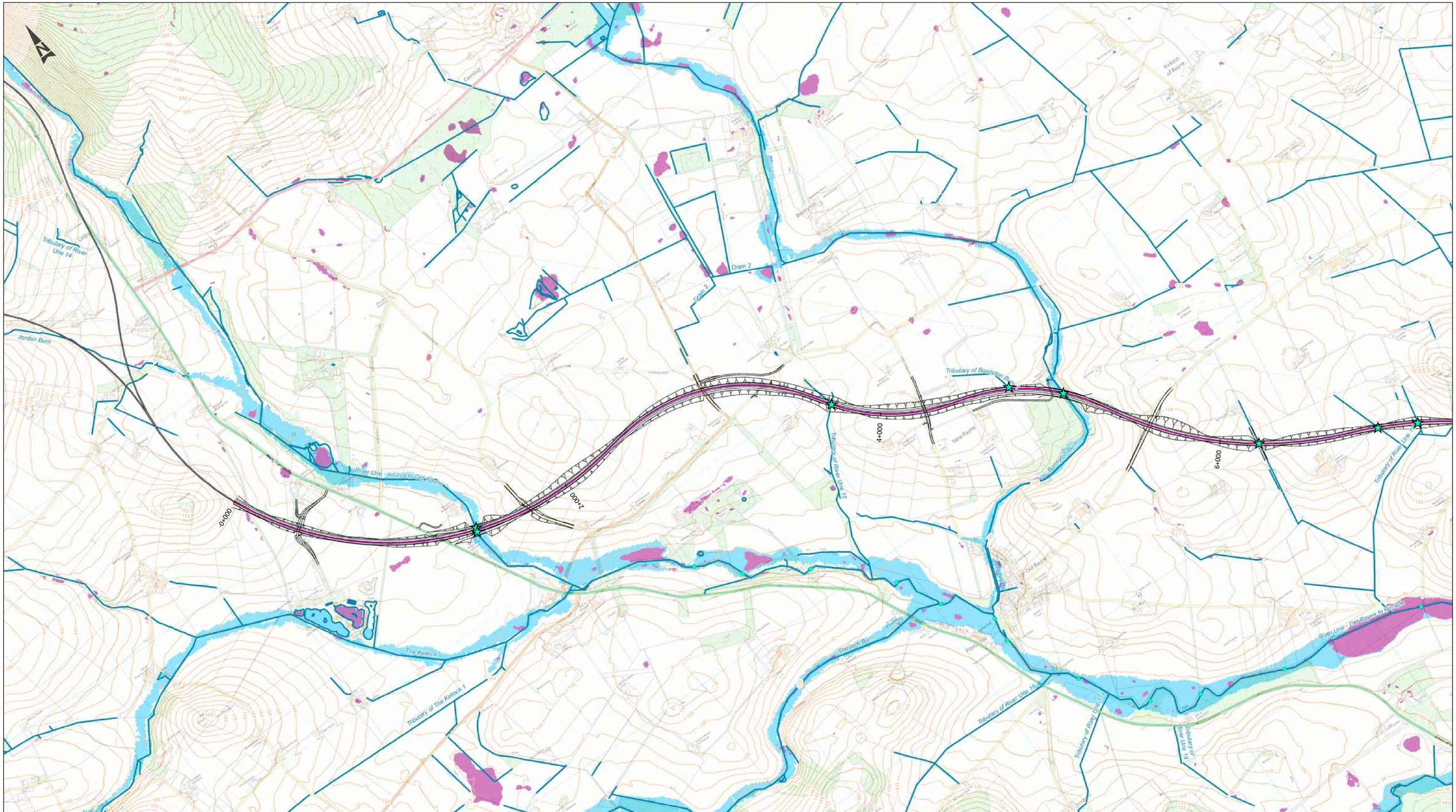
Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01



Route Option
- Pink
- Adjoining

- Proposed watercourse interaction
- Model cross-section location
- Surface watercourse
- Watercourse Diversion
- Areas at risk of flooding from rivers [1]
- Areas at risk of flooding from surface water [2]
- Model 2D domain boundary

NOTES:
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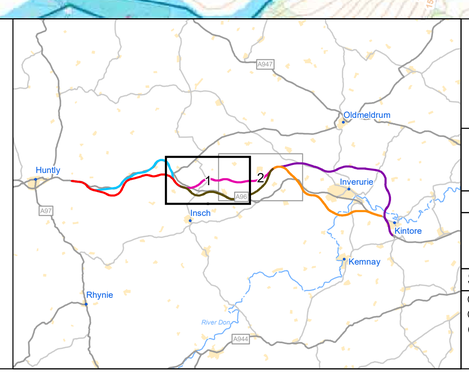

A96 DUALLING EAST OF HUNTLY TO ABERDEEN
TRANSPORT SCOTLAND
Amey Arup

	First Issue				
C01	LPAG	LHAN	CRAM	FMAX	NHAC
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Revision	Created	Checked	Reviewed	Approved	Authorised

Metres
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Scale @ A1: 1:10,000 | Project Ref. No. A96PEA | Stage: Stage2

Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Flood Risk Simple Assessment
Pink Flood Risk Summary
Sheet 1 of 2

Map Number

Project	Originator	Volume	Location	Type	Role	Number
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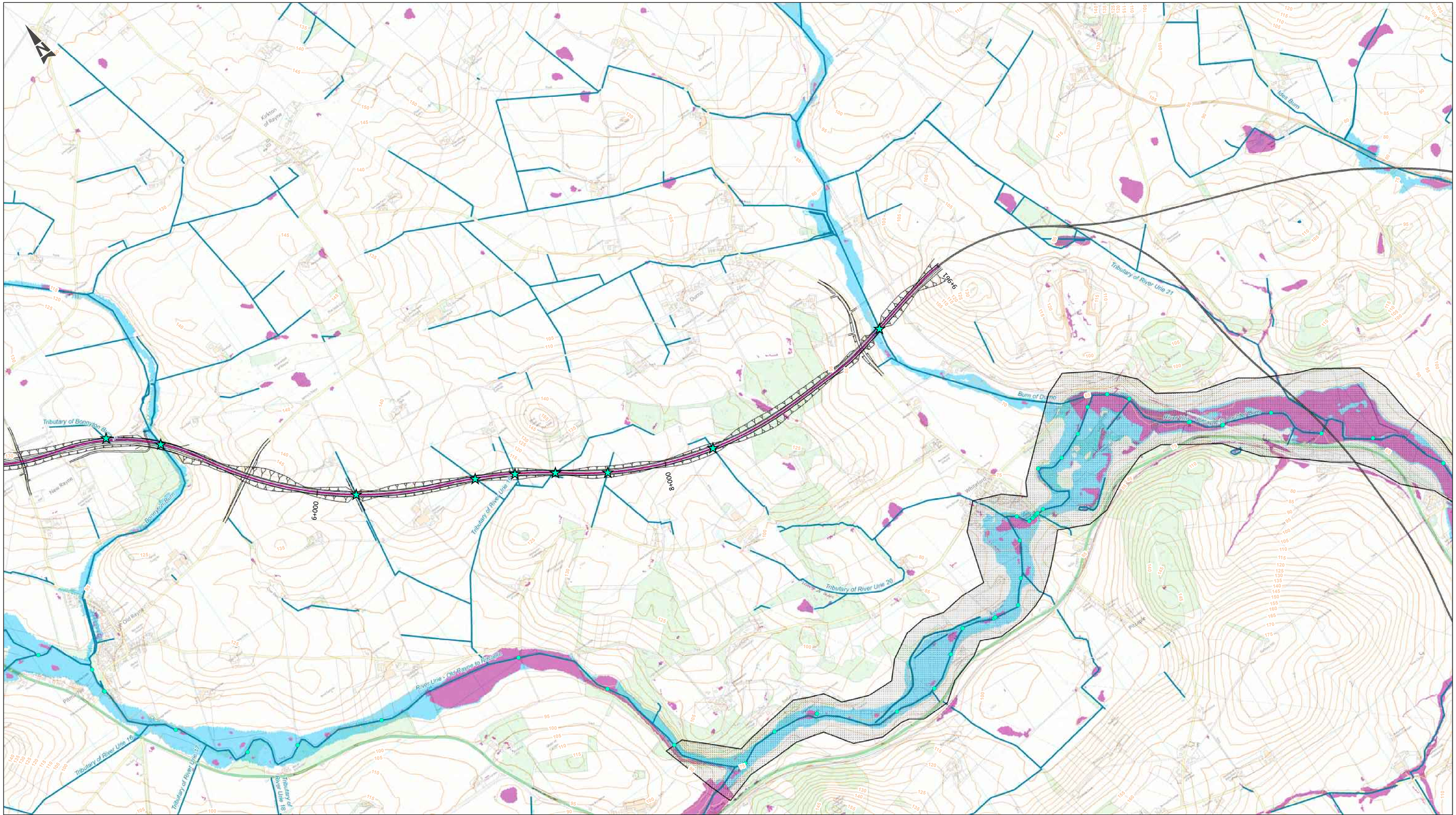
Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01

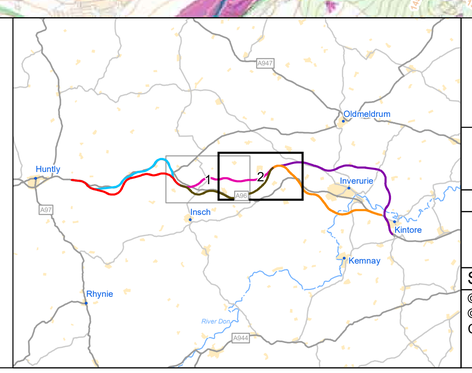


Route Option
- Pink
- Adjoining

- Proposed watercourse interaction
- Model cross-section location
- Surface watercourse
- Watercourse Diversion
- Areas at risk of flooding from rivers [1]
- Areas at risk of flooding from surface water [2]
- Model 2D domain boundary

NOTES:
1. Shows areas with a medium likelihood of river flooding (0.5% annual exceedance probability) under existing conditions for catchments >3km2. Data provided by SEPA February 2019.

2. Shows areas with a medium likelihood of surface water flooding (0.5% annual exceedance probability) under exisiting conditions. Data provided by SEPA, february 2019.



A96 DUALLING EAST OF HUNTLY TO ABERDEEN
TRANSPORT SCOTLAND
Amey Arup

	First Issue				
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Revision	Created	Checked	Reviewed	Approved	Authorised

Metres
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Scale @ A1: 1:10,000 | Project Ref. No. A96PEA | Stage: Stage2

Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Flood Risk Simple Assessment
Pink Flood Risk Summary
Sheet 2 of 2

Map Number

Project	Originator	Volume	Location	Type	Role	Number
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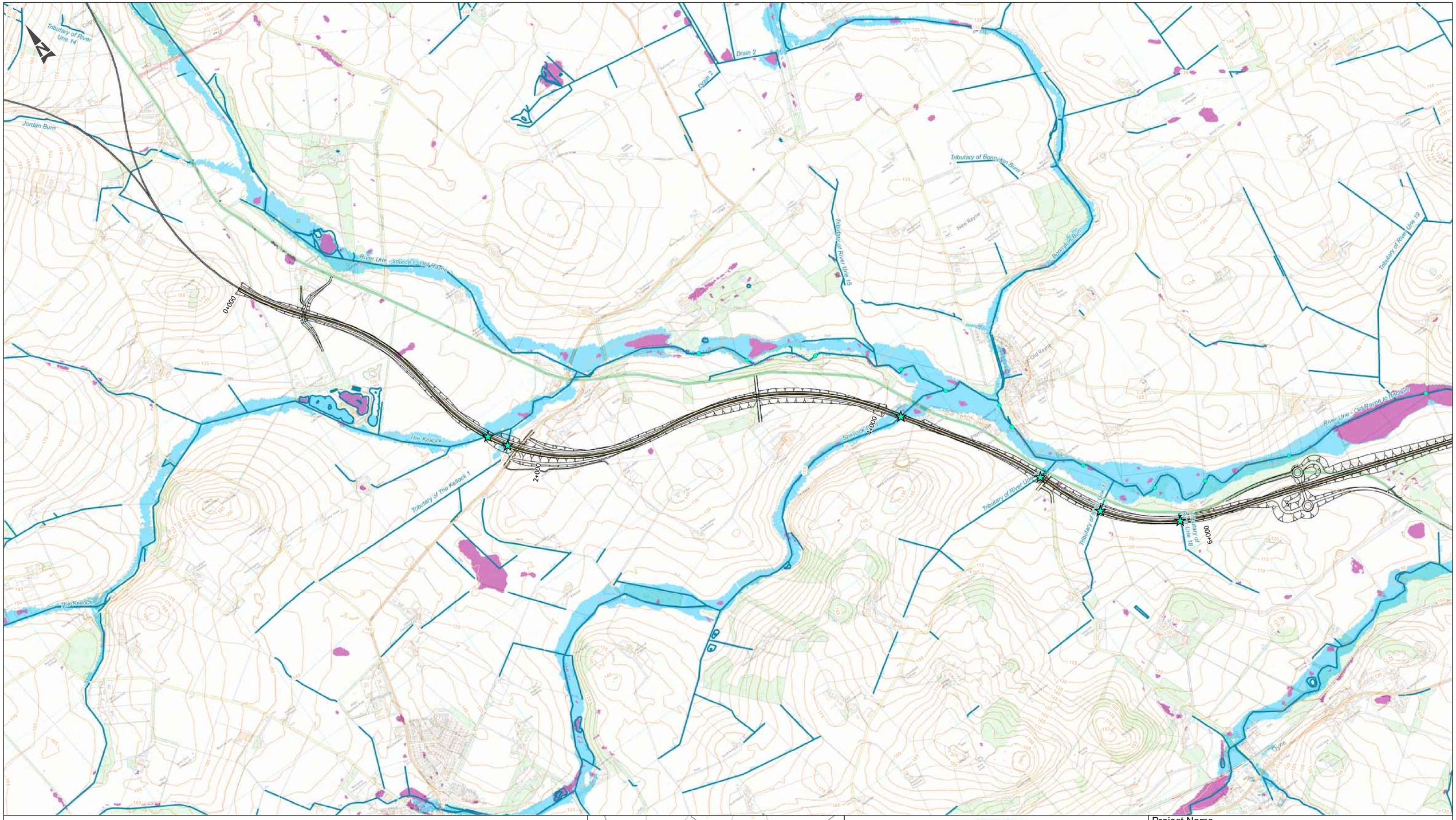
Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01



Route Option
- Brown
- Adjoining

- Proposed watercourse interaction
- Model cross-section location
- Surface watercourse
- Watercourse Diversion
- Areas at risk of flooding from rivers [1]
- Areas at risk of flooding from surface water [2]
- Model 2D domain boundary

NOTES:
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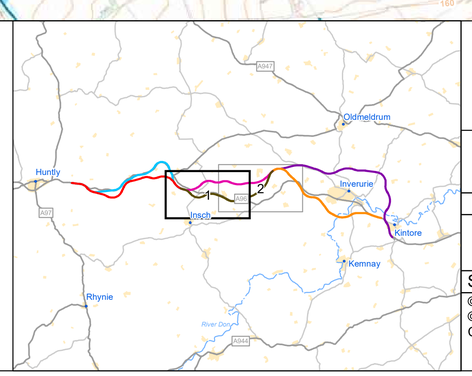
2. Shows areas with a medium likelihood of surface water flooding (0.5% annual exceedance probability) under exisiting conditions. Data provided by SEPA, february 2019.



	First Issue				
C01	LPAG	LHAN	CRAM	FMAX	NHAC
	08/12/20	08/12/20	08/12/20	08/12/20	08/12/20
Revision	Created	Checked	Reviewed	Approved	Authorised

Metres
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Scale @ A1: 1:10,000 | Project Ref. No. A96PEA | Stage: Stage2

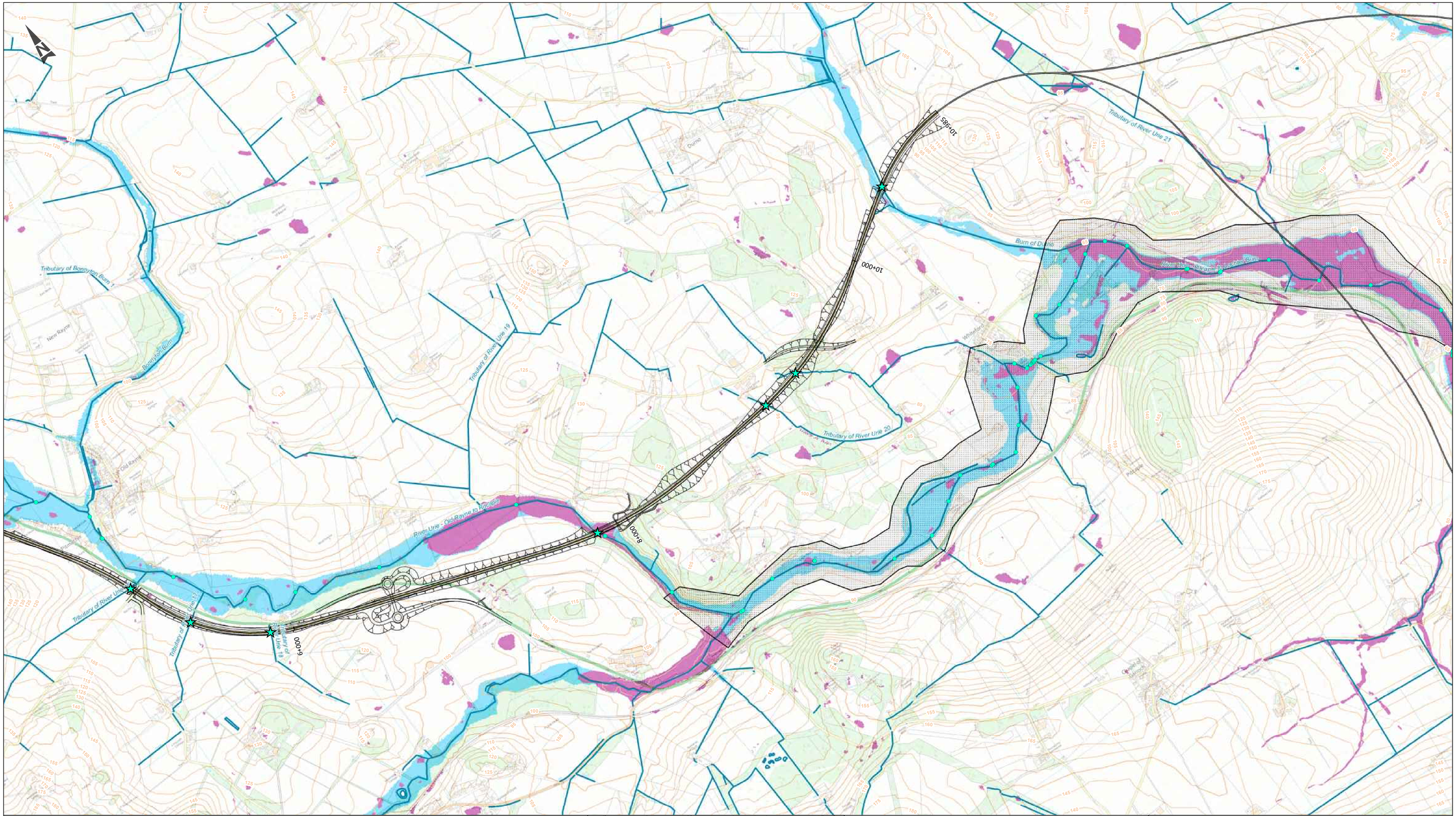
Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Flood Risk Simple Assessment
Brown Flood Risk Summary
Sheet 1 of 2

Map Number

Project	Originator	Volume	Location	Type	Role	Number
A96PEA	AMAR	EWE	SWI	MP	YH	000141

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01



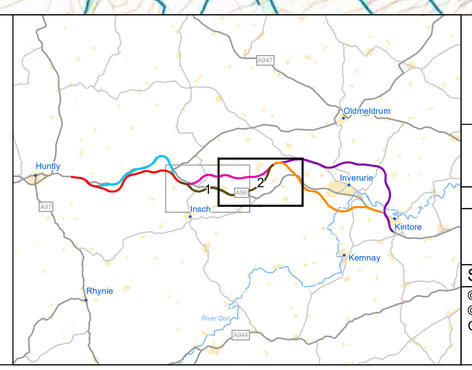
Route Option

- Brown
- Adjoining

- Proposed watercourse interaction
- Model cross-section location
- Surface watercourse
- Watercourse Diversion
- Areas at risk of flooding from rivers [1]
- Areas at risk of flooding from surface water [2]
- Model 2D domain boundary

NOTES:
1. Shows areas with a medium likelihood of river flooding (0.5% annual exceedance probability) under existing conditions for catchments >3km2. Data provided by SEPA February 2019.

2. Shows areas with a medium likelihood of surface water flooding (0.5% annual exceedance probability) under exisiting conditions. Data provided by SEPA, february 2019.



A96 DUALLING EAST OF HUNTLY TO ABERDEEN

TRANSPORT SCOTLAND

Amey Arup

	First Issue				
C01	LPAG	LHAN	CRAM	FMAX	NHAC
	08/12/20	08/12/20	08/12/20	08/12/20	08/12/20
Revision	Created	Checked	Reviewed	Approved	Authorised

Metres

0 500 1,000 1,500

Scale @ A1: 1:10,000 | Project Ref. No. A96PEA | Stage: Stage2

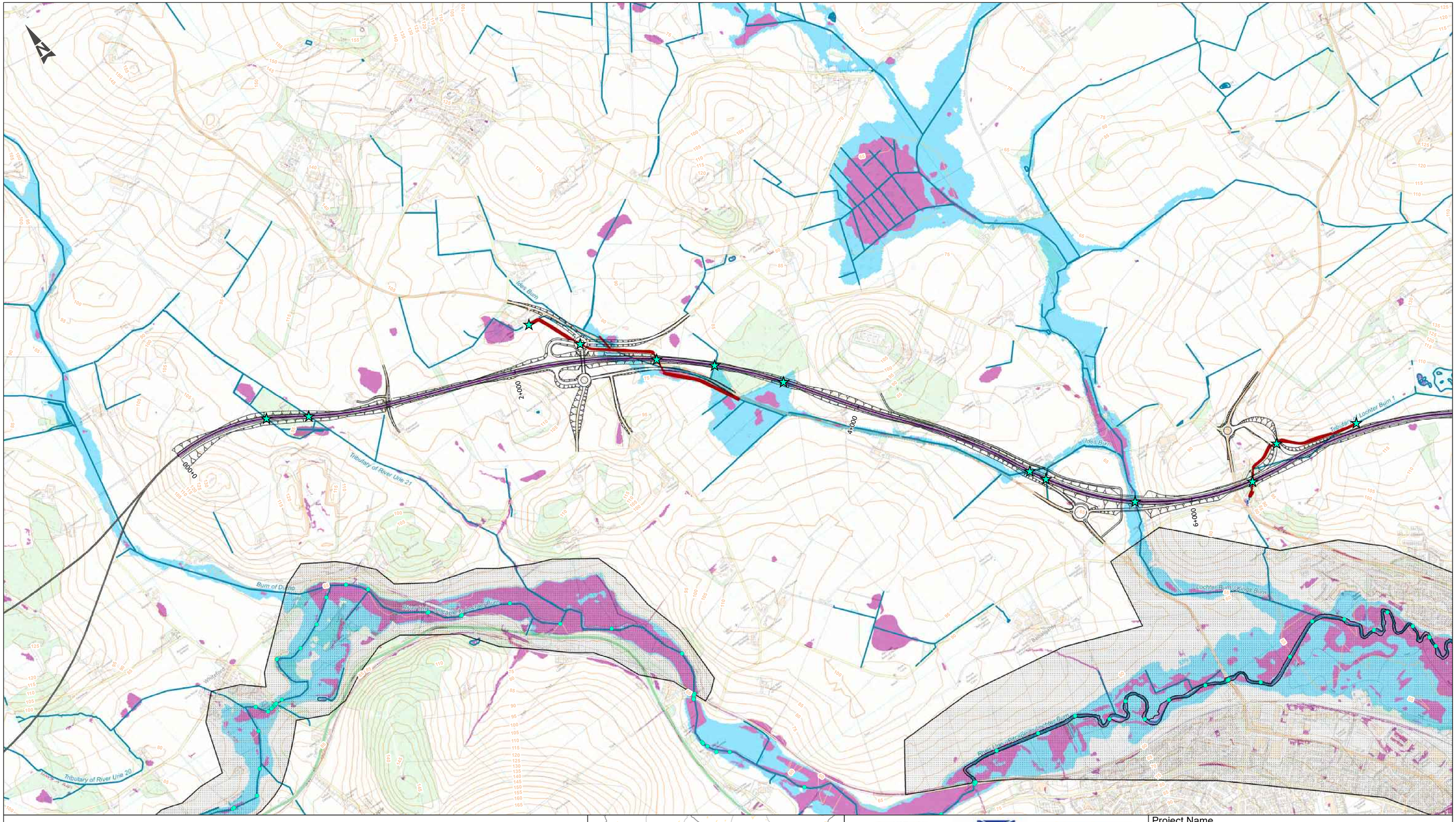
Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Flood Risk Simple Assessment
Brown Flood Risk Summary
Sheet 2 of 2

Map Number

Project	Originator	Volume	Location	Type	Role	Number
A96PEA	AMAR	EWE	SWI	MP	YH	000142

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01

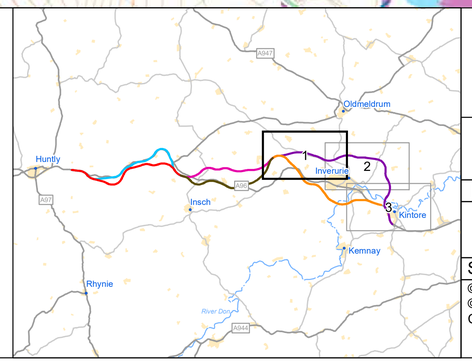


Route Option
- Violet
- Adjoining

- Proposed watercourse interaction
- Model cross-section location
- Surface watercourse
- Watercourse Diversion
- Areas at risk of flooding from rivers [1]
- Areas at risk of flooding from surface water [2]
- Model 2D domain boundary

NOTES:
1. Shows areas with a medium likelihood of river flooding (0.5% annual exceedance probability) under existing conditions for catchments >3km2. Data provided by SEPA February 2019.

2. Shows areas with a medium likelihood of surface water flooding (0.5% annual exceedance probability) under exisiting conditions. Data provided by SEPA, february 2019.



A96 DUALLING EAST OF HUNTLY TO ABERDEEN
TRANSPORT SCOTLAND
Arup

C01	First Issue					
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	08/12/20	08/12/20	08/12/20	08/12/20	08/12/20	
Revision	Created	Checked	Reviewed	Approved	Authorised	

Metres
0 500 1,000 1,500

Scale @ A1: 1:10,000 | Project Ref. No. A96PEA | Stage: Stage2

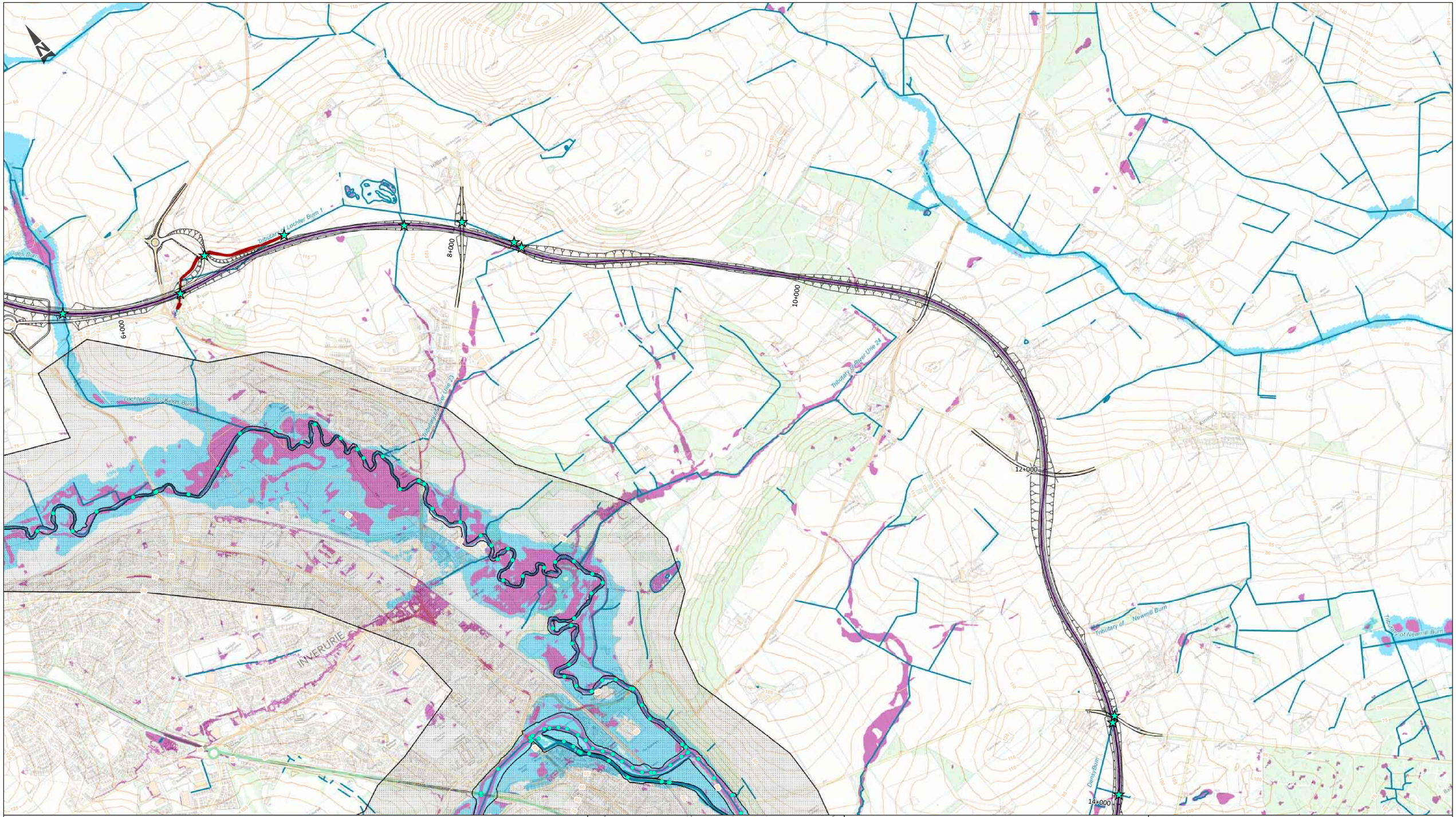
Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Flood Risk Simple Assessment
Violet Flood Risk Summary
Sheet 1 of 3

Map Number

Project	Originator	Volume			
A96PEA	AMAR	EWE			
Location		Type	Role	Number	
SWI	- MP	- YH	- 000151		

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01



Route Option

- Violet
- Adjoining

- Proposed watercourse interaction
- Model cross-section location
- Surface watercourse
- Watercourse Diversion
- Areas at risk of flooding from rivers [1]
- Areas at risk of flooding from surface water [2]
- Model 2D domain boundary

NOTES:
1. Shows areas with a medium likelihood of river flooding (0.5% annual exceedance probability) under existing conditions for catchments >3km2. Data provided by SEPA February 2019.

2. Shows areas with a medium likelihood of surface water flooding (0.5% annual exceedance probability) under exisiting conditions. Data provided by SEPA, february 2019.

A96 DUALLING EAST OF HUNTLY TO ABERDEEN | TRANSPORT SCOTLAND | Amey Arup

	First Issue				
C01	LPAG	LHAN	CRAM	FMAX	NHAC
	08/12/20	08/12/20	08/12/20	08/12/20	08/12/20
Revision	Created	Checked	Reviewed	Approved	Authorised

Metres
0 500 1,000 1,500

Scale @ A1: 1:10,000 | Project Ref. No. A96PEA | Stage: Stage2

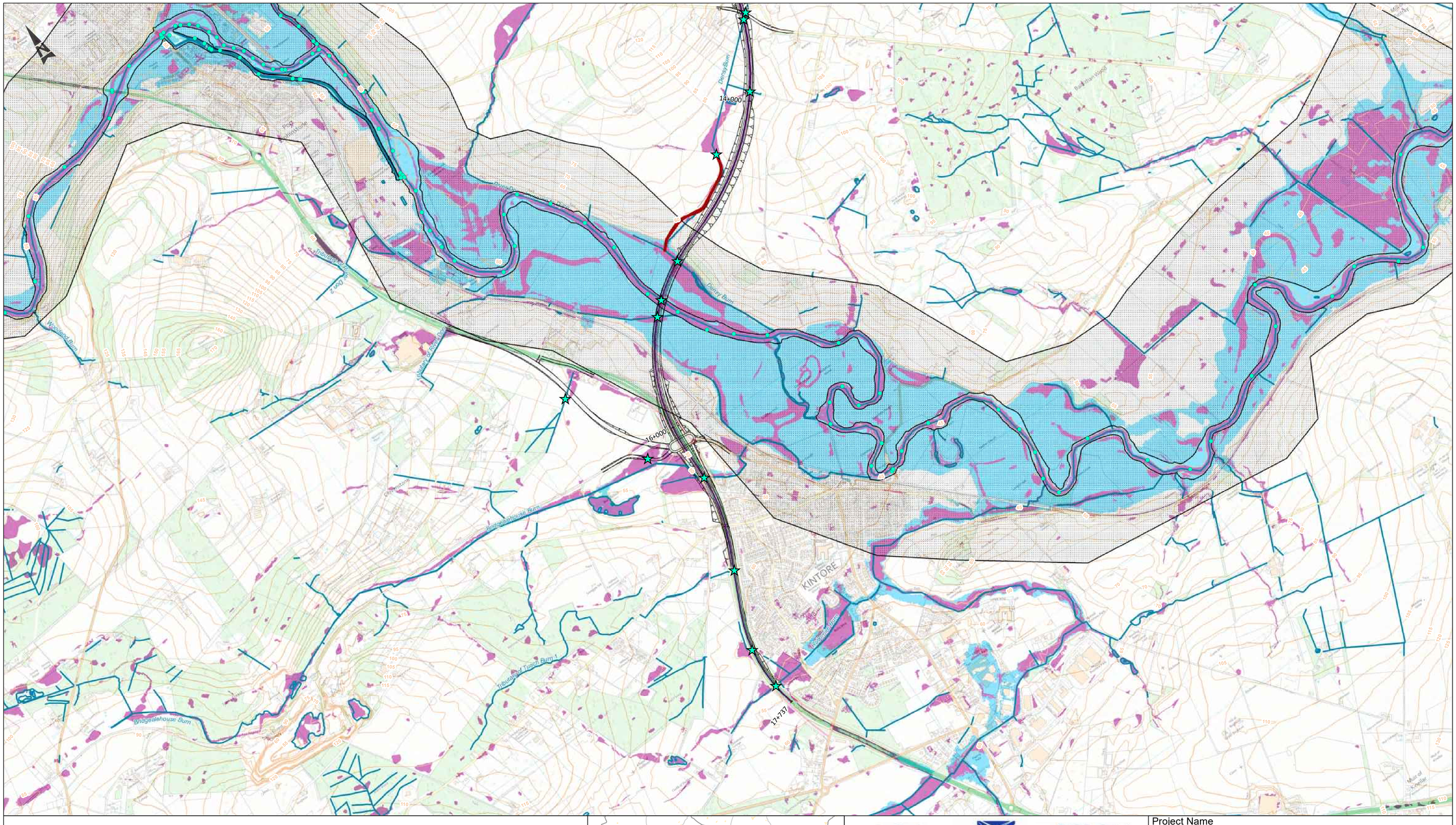
Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Flood Risk Simple Assessment
Violet Flood Risk Summary
Sheet 2 of 3

Map Number

Project	Originator	Volume	Location	Type	Role	Number
A96PEA -	AMAR -	EWE -	SWI	- MP	- YH	- 000152

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01



Route Option
- Violet
- Adjoining

- Proposed watercourse interaction
- Model cross-section location
- Surface watercourse
- Watercourse Diversion
- Areas at risk of flooding from rivers [1]
- Areas at risk of flooding from surface water [2]
- Model 2D domain boundary

NOTES:
1. Shows areas with a medium likelihood of river flooding (0.5% annual exceedance probability) under existing conditions for catchments >3km2. Data provided by SEPA February 2019.

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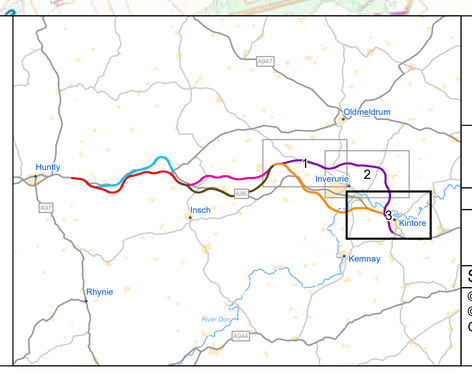

A96 DUALLING EAST OF HUNTLY TO ABERDEEN
TRANSPORT SCOTLAND
Amey Arup

	First Issue				
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	08/12/20	08/12/20	08/12/20	08/12/20	08/12/20
Revision	Created	Checked	Reviewed	Approved	Authorised

Metres
0 500 1,000 1,500

Scale @ A1: 1:10,000 | Project Ref. No. A96PEA | Stage: Stage2

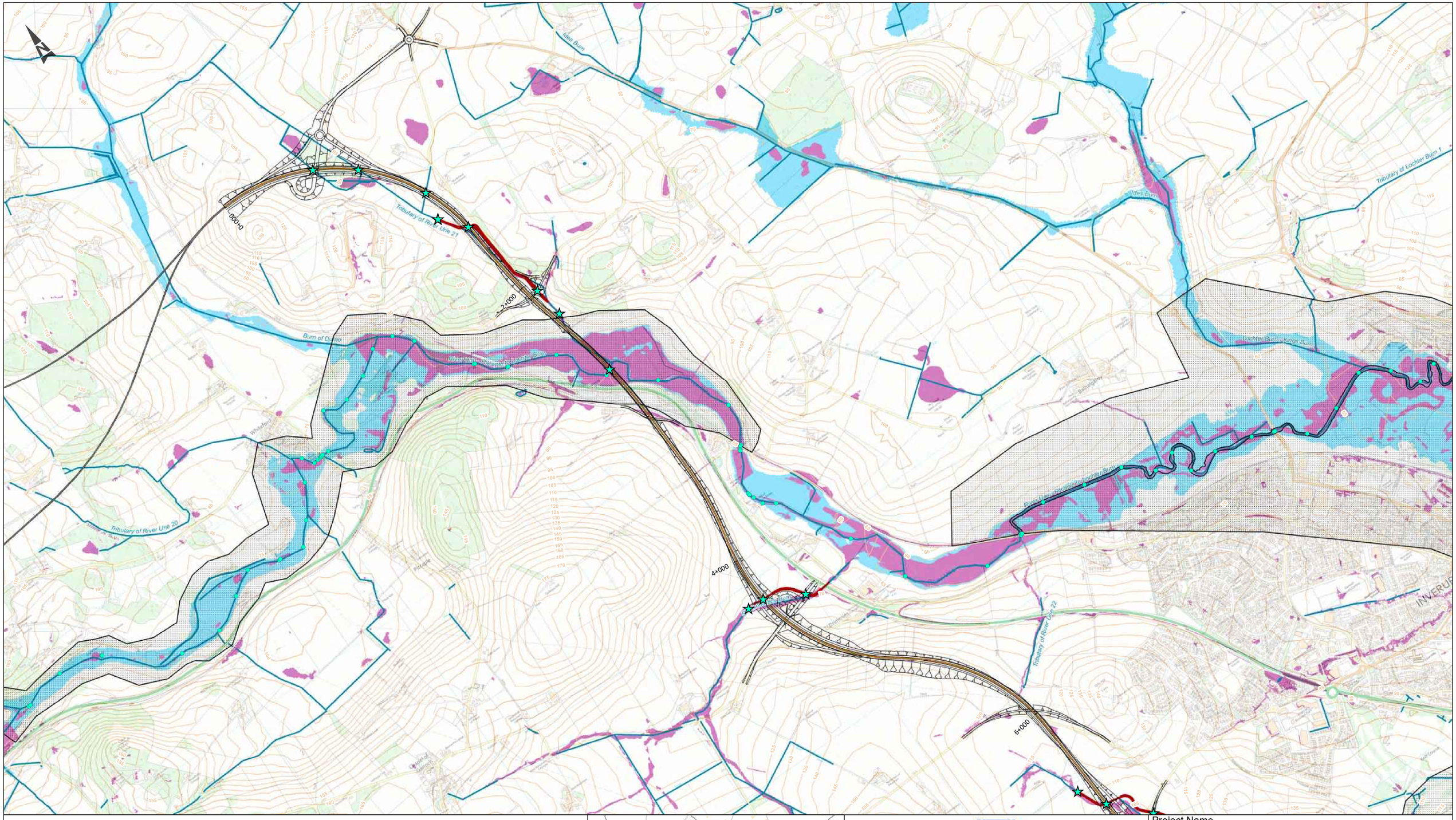
Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Flood Risk Simple Assessment
Violet Flood Risk Summary
Sheet 3 of 3

Map Number

Project	Originator	Volume	Location	Type	Role	Number
A96PEA	AMAR	EWE	SWI	MP	YH	000153

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01



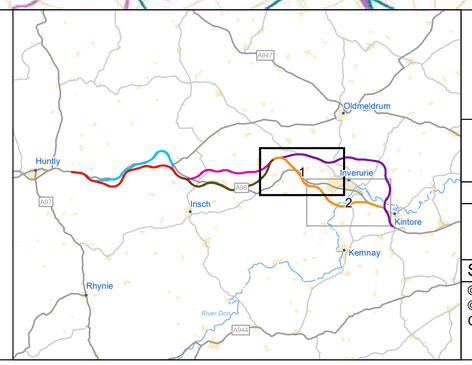
Route Option

- Orange
- Adjoining

- Proposed watercourse interaction
- Model cross-section location
- Surface watercourse
- Watercourse Diversion
- Areas at risk of flooding from rivers [1]
- Areas at risk of flooding from surface water [2]
- Model 2D domain boundary

NOTES:
1. Shows areas with a medium likelihood of river flooding (0.5% annual exceedance probability) under existing conditions for catchments >3km2. Data provided by SEPA February 2019.

2. Shows areas with a medium likelihood of surface water flooding (0.5% annual exceedance probability) under exisiting conditions. Data provided by SEPA, february 2019.



	First Issue				
C01	LPAG	LHAN	CRAM	FMAX	NHAC
	08/12/20	08/12/20	08/12/20	08/12/20	08/12/20
Revision	Created	Checked	Reviewed	Approved	Authorised

Metres
0 500 1,000 1,500

Scale @ A1: 1:10,000 | Project Ref. No. A96PEA | Stage: Stage2

Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Flood Risk Simple Assessment
Orange Flood Risk Summary
Sheet 1 of 2

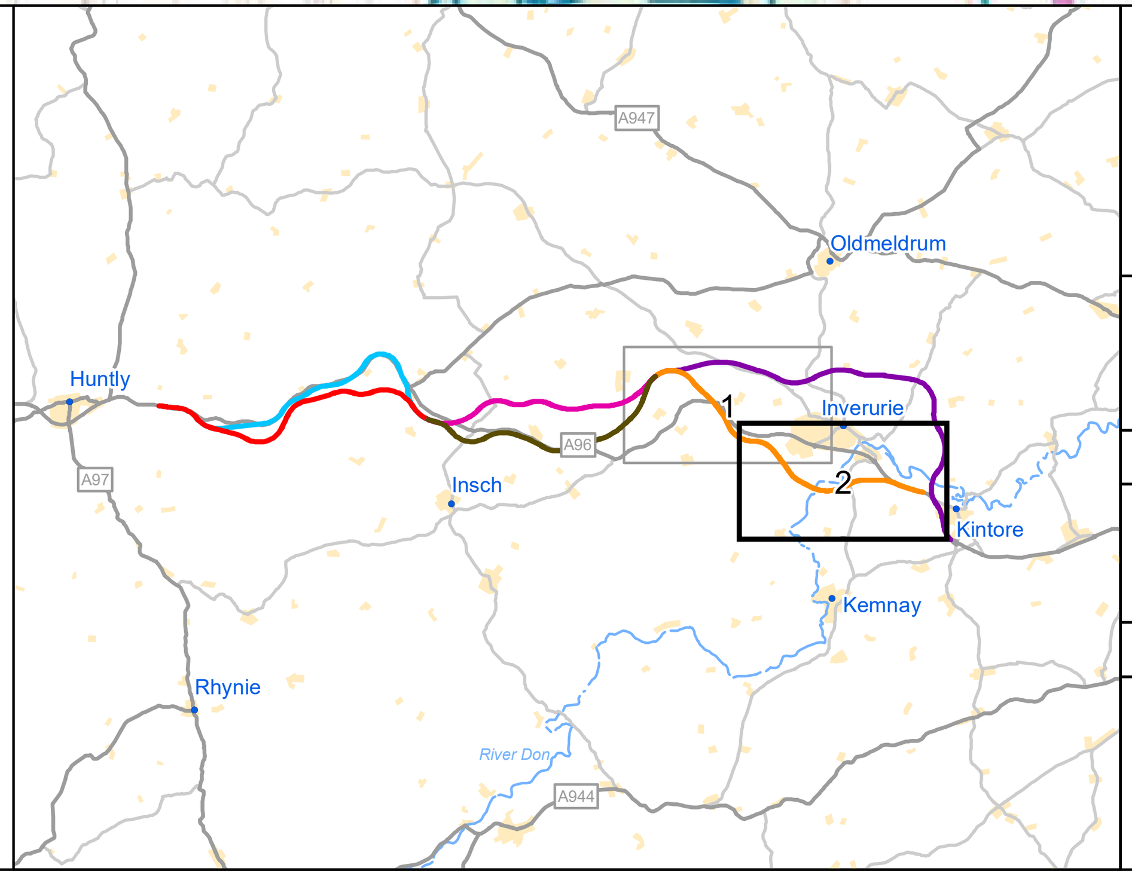
Map Number

Project	Originator	Volume	Location	Type	Role	Number
A96PEA	AMAR	EWE	SWI	MP	YH	000161

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01

Route Option
- Orange
- Adjoining

- Proposed watercourse interaction
- Model cross-section location
- Surface watercourse
- Watercourse Diversion
- Areas at risk of flooding from rivers [1]
- Areas at risk of flooding from surface water [2]
- Model 2D domain boundary



NOTES:
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2. Shows areas with a medium likelihood of surface water flooding (0.5% annual exceedance probability) under exisiting conditions. Data provided by SEPA, february 2019.

A96 DUALLING EAST OF HUNTLY TO ABERDEEN | TRANSPORT SCOTLAND | Amey Arup

Project Name
A96 Dualling East of Huntly to Aberdeen

Map Title
Flood Risk Simple Assessment
Orange Flood Risk Summary
Sheet 2 of 2

	First Issue				
C01	LPAG	LHAN	CRAM	FMAX	NHAC
	08/12/20	08/12/20	08/12/20	08/12/20	08/12/20
Revision	Created	Checked	Reviewed	Approved	Authorised

Metres
0 500 1,000 1,500

Scale @ A1: 1:10,000 | Project Ref. No. A96PEA | Stage: Stage2

Map Number

Project	Originator	Volume	Location	Type	Role	Number
A96PEA	AMAR	EWE	SWI	MP	YH	000162

Suitability	Suitability Description	Revision
A	Approved for Stage Complete	C01

Appendix A21.1 Route Option Design Parameters Informing the Climate Construction Assessment

Appendix A21.1 Route Option Design Parameters Informing the Climate Construction Assessment

Main design parameters to inform the climate construction assessment were derived from the preliminary design and are shown in Table 1.1.

Table 1.1 Design Parameters for Route Options

Design parameter	Unit	Cyan	Red	Pink	Brown	Violet	Orange
Route Option Length	m	13,272	12,154	9,961	10,985	17,737	12,823
Side Road Length	m	11,266	9,290	3,709	4,794	10,231	11,232
Slip Road Length	m	761	1,046	1,169	1,925	7,684	10,421
Roundabout Length	m	300	126	-	378	1,178	1,026
Suitable excavated material	m^3	3,170,000	4,120,000	1,560,000	1,740,000	1,740,000	2,640,000
Bulk Fill	m^3	1,660,000	2,040,000	1,310,000	2,020,000	3,390,000	3,670,
Area of Pavement	m^2	342,822	289,969	225,321	260,826	481,555	427,768
Area of Central Reservation	m^2	90,888	77,928	58,132	65,302	103,475	70,606
Area of Verge	m^2	182,922	151,506	109,315	151,108	252,470	203,500
Area of Earthworks	m^2	592,327	725,760	333,123	394,245	597,150	773,067
Corridor Area	m^2	1,208,959	1,245,163	725,891	871,482	1,434,650	1,474,941
Corridor Area plus 10m buffer	m^2	1,889,340	1,885,018	1,178,528	1,330,234	2,213,536	2,891,946
Length of Watercourse Diversion	m	250	1,000	100	-	2,500	2,300

Design parameter	Unit	Cyan	Red	Pink	Brown	Violet	Orange
Length of Culvert 1200mm dia pipe	m	850	1,160	470	530	1,980	1,950
Length of Culvert 2m by 3m concrete box	m	160	370	-	110	380	510
Length of Overbridge Structures	m	224	142	206	49	151	219
Length of Underbridge Structures	m	348	269	537	644	1,008	1,376
Area of Structures	m	17,512	14,857	21,894	26,178	46,057	45,482
Length of Existing A96 to be Detrunked	m	13,040	13,040	11,450	11,450	13,220	10,900
Length of Vehicle Restraint System in Verge	m	8,862	7,687	6,441	7,996	11,967	6,084
No. of VRS Terminals	no.	44	40	52	60	60	38

Adjusted quantities for cut and fill, based on assumed proportions of suitable excavated material being available for reuse, are taken from Chapter 14, Materials, Table 14.4.

Appendix A21.2 Material Replacement Assumptions Informing the Climate Assessment

Appendix A21.2 Material Replacement Assumptions Informing the Climate Assessment

Replacement periods for key materials categories have been assumed to inform the climate assessment as shown in Table 1.1.

Table 1.1 Assumed Replacement Periods for Key Materials

Material type / application	Assumed replacement period (years)
Surface courses	20 years
Sub-base / base course	40 years
Fencing / sound barriers	30 years
Safety barriers / VRS	30 years
Power cables	30 years
Concrete elements and structures	Not replaced in study period
Drainage materials	Not replaced in study period

Material transportation distance and modes have been assumed to inform the climate assessment as shown in Table 1.2. An improved understanding of material transportation distances will be developed for the DMRB Stage 3 assessment.

Table 1.2 Assumed Construction Material Transport Distance and Mode

Material type / application	Assumed transport distance (km)	Assumed transport mode
Pre-cast concrete	10	Artic HGV
Drainage materials	10	Artic HGV
Imported aggregates	10	Artic HGV
Fencing and noise barriers	10	Artic HGV
Asphalt	10	Artic HGV
Concrete and Steel barriers	10	Artic HGV
Signs, signals and comms materials	10	Artic HGV

Appendix A21.3 Land Use Data for Each Route Option to Inform the Construction and Operational Climate Assessments

Appendix A21.3 Land Use Data for Each Route Option to Inform the Construction and Operational Climate Assessments

Table 1.1 provides the land areas by type for the construction and operational climate assessments.

Table 1.1 Land Area by Type

Mastermap Topographic Layer Group and Term concatenation	Construction land categories	Operation land categories
Building	Urban	Urban
Building - Tank	Urban	Urban
General Surface	Neutral Grassland	Maintained grassland - grazed
General Surface - Agricultural Land	Arable & Horticulture	Wheat
General Surface - Gas Governor	Urban	Urban
General Surface - Multi Surface	Neutral Grassland	Maintained grassland - grazed
General Surface - Spoil Heap (Inactive)	Urban	Urban
General Surface; Roadside; Structure - Bridge	Urban	Urban
General Surface; Structure - Bridge	Urban	Urban
Inland Water - Drain	Urban	Urban
Inland Water - Static Water	Urban	Urban
Inland Water - Watercourse	Urban	Urban
Landform - Cliff	Urban	Urban
Landform; Road or Track - Cliff	Urban	Urban
Landform; Road or Track - Slope	Neutral Grassland	Maintained grassland - grazed
Natural Environment - Boulders (Scattered); Scrub	Neutral Grassland	Maintained grassland - grazed
Natural Environment - Coniferous Trees	Coniferous Woodland	UK woodlands, average
Natural Environment - Coniferous Trees (Scattered); Scrub	Coniferous Woodland	UK woodlands, average
Natural Environment - Coniferous Trees; Non-coniferous Trees	Coniferous Woodland	UK woodlands, average
Natural Environment - Coniferous Trees; Non-coniferous Trees; Scrub	Coniferous Woodland	UK woodlands, average
Natural Environment - Coniferous Trees; Scrub	Coniferous Woodland	UK woodlands, average
Natural Environment - Heath	Neutral Grassland	Maintained grassland - grazed

Mastermap Topographic Layer Group and Term concatenation	Construction land categories	Operation land categories
Natural Environment - Heath; Rough Grassland; Scrub	Neutral Grassland	Maintained grassland - grazed
Natural Environment - Marsh	Fen, Marsh and Swamp	Terrestrial - Wetland, reed, shrub
Natural Environment - Mineral Workings (Inactive); Rough Grassland; Scrub	Neutral Grassland	Maintained grassland - grazed
Natural Environment - Mineral Workings (Inactive); Scrub	Neutral Grassland	Maintained grassland - grazed
Natural Environment – Non-coniferous Trees	Broad Leaf, Mixed & Yew Woodland	UK woodlands, average
Natural Environment – Non-coniferous Trees (Scattered)	Broad Leaf, Mixed & Yew Woodland	UK woodlands, average
Natural Environment – Non-coniferous Trees (Scattered); Rough Grassland	Broad Leaf, Mixed & Yew Woodland	UK woodlands, average
Natural Environment – Non-coniferous Trees (Scattered); Scrub	Broad Leaf, Mixed & Yew Woodland	UK woodlands, average
Natural Environment – Non-coniferous Trees; Scrub	Broad Leaf, Mixed & Yew Woodland	UK woodlands, average
Natural Environment - Rough Grassland	Neutral Grassland	Maintained grassland - grazed
Natural Environment - Rough Grassland; Scrub	Neutral Grassland	Maintained grassland - grazed
Natural Environment - Scrub	Neutral Grassland	Maintained grassland - grazed
Natural Environment; Roadside - Coniferous Trees (Scattered); Scrub	Coniferous Woodland	UK woodlands, average
Natural Environment; Roadside - Coniferous Trees; Non-coniferous Trees	Coniferous Woodland	UK woodlands, average
Natural Environment; Roadside - Coniferous Trees; Scrub	Coniferous Woodland	UK woodlands, average
Natural Environment; Roadside – Non-coniferous Trees	Broad Leaf, Mixed & Yew Woodland	UK woodlands, average
Natural Environment; Roadside – Non-coniferous Trees	Broad Leaf, Mixed & Yew Woodland	UK woodlands, average
Natural Environment; Roadside – Non-coniferous Trees; Scrub	Broad Leaf, Mixed & Yew Woodland	UK woodlands, average
Natural Environment; Roadside - Rough Grassland	Neutral Grassland	Maintained grassland - grazed
Natural Environment; Roadside - Scrub	Neutral Grassland	Maintained grassland - grazed
Natural Environment; Roadside; Structure - Bridge; Non-coniferous Trees; Scrub	Urban	Urban
Path	Urban	Urban

Mastermap Topographic Layer Group and Term concatenation	Construction land categories	Operation land categories
Path; Structure - Footbridge	Urban	Urban
Rail	Urban	Urban
Road or Track	Urban	Urban
Road or Track - Track	Urban	Urban
Road or Track; Structure - Bridge	Urban	Urban
Roadside	Urban	Urban
Roadside; Structure - Bridge	Urban	Urban
Structure - Pylon	Urban	Urban
Structure - Tank	Urban	Urban
Unclassified	Urban	Urban

Table 1.2 and Table 1.3 provides the land areas by type for the construction and operational climate assessments.

Table 1.2 Land Areas by type for Construction Assessment

Route Option	Arable & Horticulture (ha)	Broad Leaf, Mixed & Yew Woodland (ha)	Coniferous Woodland (ha)	Fen, Marsh and Swamp (ha)	Neutral Grassland (ha)	Urban (ha)	Total (ha)
Cyan	112.3	1.1	5.9	0.0	9.4	19.4	148.1
Red	114.2	1.8	8.6	0.1	15.1	10.2	150.0
Pink	76.1	0.3	5.2	0.0	2.9	2.6	87.0
Brown	84.1	1.3	10.5	0.0	3.2	3.6	102.6
Violet	141.0	6.0	5.4	0.1	6.4	17.5	176.4
Orange	130.7	8.3	8.8	0.0	7.5	13.1	168.5

Table 1.3 Land Areas by Type for Operational Assessment

Route Option	Maintained grassland – grazed (ha)	Terrestrial - Wetland, reed, shrub (ha)	UK woodlands, average (ha)	Urban (ha)	Wheat (ha)	Total (ha)
Cyan	9.4	0.0	7.0	19.4	112.3	148.1
Red	15.1	0.1	10.4	10.2	114.2	150.0
Pink	2.9	0.0	5.5	2.6	76.1	87.0
Brown	3.2	0.0	11.8	3.6	84.1	102.6
Violet	6.4	0.1	11.4	17.5	141.0	176.4
Orange	7.5	0.0	17.1	13.1	130.7	168.5

Appendix A21.4 GHG Factors for Land Use Types

Appendix A21.4 GHG Factors for Land Use Types

Table 1.1 and Table 1.2 provide the carbon factors used to inform the assessment for construction and operation respectively.

Table 1.1 Carbon Factors for Construction

Construction – land category	Greenhouse Gas Factors (tCO2e/hectare)	Source
Arable & Horticulture	161	Natural England Research Report (2012)[1]
Broad Leaf, Mixed & Yew Woodland	502	Natural England Research Report (2012)
Coniferous Woodland	513	Natural England Research Report (2012)
Fen, Marsh and Swamp	279	Natural England Research Report (2012)
Neutral Grassland	224	Natural England Research Report (2012)

Table 1.2 Carbon Factors for Operation

Operation – land category	Greenhouse Gas Factors (tCO2e/hectare/yr)	Source
Maintained grassland - grazed	2.2	De Deyn et al. (2011) [2]
Terrestrial - Wetland, reed, shrub	25	Boerema, Van der Biest & Meier (2016)
UK woodlands, average	5.4	Forestry Commission (2012)[3]
Wheat	1.8	Forestry Commission (2012)

[1] Natural England (2012) Carbon storage by habitat: Review of the evidence of the impacts of management decisions and condition of carbon stores and sources. Available at: http://publications.naturalengland.org.uk/publication/1412347

[2] [4] De Deyne, G. B., Shiel, R. S., Ostle, N. J., McNamara, N. P., Oakley, S., Young, I., Freeman, C., Fenner, N., Quirk, H., Bardgett, R. D. (2011) Additional carbon sequestration benefits of grassland diversity restoration. Journal of Applied Ecology, 48.

[3] Forestry Commission (2012) Understanding the carbon and greenhouse gas balance of forests in Britain: Research Report. Available at: https://www.forestresearch.gov.uk/research/understanding-the-carbon-and-greenhouse-gas-balance-of-forests-in-britain-2/

Appendix A21.5 Vehicle Exhaust Emissions for Each End-to-End Option

Appendix A21.5 Vehicle Exhaust Emissions for Each End-to-end Option

Table 1.1 provides the vehicle exhaust emissions (Chapter 10, Air Quality) used to inform the assessment for each end-to-end option.

Table 1.1 Vehicle Emissions for Each End-to-End Option (without Allowance for Efficiency Improvements and Increased Use of Electric Vehicles)

End-to-end options	2030 CO_2 emissions (tCO2e)	2045 CO_2 emissions (tCO2e)
C-P-V	86,325	103,361
C-P-O	87,184	104,910
C-Br-V	84,101	101,214
C-Br-O	88,410	103,535
R-P-V	85,594	102,139
R-P-O	86,287	104,966
R-Br-V	85,648	102,888
R-Br-O	87,723	104,522

Table 1.2 provides the vehicle exhaust emissions for Do-Minimum and Do-Something for each end-to-end Route Option, incorporating an allowance for efficiency improvements and increased use of electric vehicles beyond 2030.

Table 1.2 Vehicle Emissions for Each End-to-End Option (with Allowance for Efficiency Improvements and Increased Use of Electric Vehicles) for Do-Minimum and Do-Something

End-to-end options	DM2030 CO_2 emissions (tCO2e)	DS2030 CO_2 emissions (tCO2e)	DM2045 CO_2 emissions (tCO2e)	DS2045 CO_2 emissions (tCO2e)
C-P-V	40,832	86,325	31,468	66,528
C-P-O	44,032	87,184	34,104	67,525
C-Br-V	38,260	84,101	29,637	65,146
C-Br-O	44,688	88,410	33,684	66,640
R-P-V	40,892	85,594	31,407	65,741
R-P-O	44,124	86,287	34,548	67,561
R-Br-V	40,359	85,648	31,205	66,223
R-Br-O	44,777	87,723	34,339	67,275

Appendix A21.6 CCRA Assessment - Potential Climate Impacts, Hazards and Assessment

Appendix A21.6 CCRA Assessment - Potential Climate Impacts, Hazards and Assessment

Table 1.1 and Table 1.2 provides the construction and operation risk assessments for all route options, the embedded mitigation specific to the risk and the corresponding significance assessment. The hazard scoring has been undertaken in accordance with the likelihood and consequence ratings detailed within DMRB LA 114 Climate.

Table 1.1 Climate Change Resilience & Adaptation Assessment – Construction

Risk ID	Climate hazard	Potential Climate Change Impact	Potential Climate Change Risk to Scheme	Existing or embedded mitigation measure	Hazard Impact		Significance
					Likelihood	Consequence	
1	Low temperatures	Impact of extreme cold weather on staff health.	Possible negative health implications for staff, such as an increase in slips trips and falls and construction /maintenance worker injury.	H&S procedures will be outlined within the Construction Environmental Management Plan (CEMP).	Low	Minor adverse	NS
2	High precipitation	Increased risk of flooding from river/streams, surface and groundwater sources.	Increased pore water pressure in embankments/cuttings.	To be mitigated through drainage design.	Very Low	Moderate adverse	NS
3	High precipitation	Increased risk of flooding from river/streams, surface and groundwater sources.	Water ingress to critical construction equipment.	On-site drainage will be specified within the CEMP.	Low	Minor adverse	NS
4	High precipitation	Increased risk of flooding from river/streams, surface and groundwater sources.	Construction site flooding during construction phase, excavations flooded and site roads impassable. Safety risk of slips, trips and falls to construction workers.	On-site drainage will be specified within the CEMP. H&S procedures to be further specified within the CEMP.	Low	Negligible	NS

Risk ID	Climate hazard	Potential Climate Change Impact	Potential Climate Change Risk to Scheme	Existing or embedded mitigation measure	Hazard Impact		Significance
					Likelihood	Consequence	
5	High precipitation	Increased soil moisture levels.	Increased risk of earthworks failure and landslides. Exacerbated by variance between high and low precipitation events and soil moisture levels.	To be mitigated through geotechnical and drainage design.	Low	Moderate adverse	NS
6	Low precipitation	Dry weather for extended periods of time could lead to increased desiccation of soils.	Reduced slope stability and potential earthworks failure during or immediately after summer storm events falling on desiccated soils.	Risk to be absorbed by conservative assumptions made during design.	Low	Moderate adverse	NS
7	Extreme winds	Increase wind impacting construction activity.	Increase risk of wind interference with construction equipment and workers, particularly with temporary equipment.	H&S procedures will be outlined within the CEMP.	Low	Moderate adverse	NS
8	Lightning	Increased risk of lightning strikes.	Safety risk to construction equipment and workers.	H&S procedures will be outlined within the CEMP.	Low	Moderate adverse	NS

**NS – Not Significant*

Table 1.2 Climate Change Resilience & Adaptation Assessment - Operation

Risk ID	Climate hazard	Potential Climate Change Impact	Potential Climate Change Risk to Scheme	Existing or embedded mitigation measure	Hazard Impact		Significance
					Likelihood	Consequence	
1	High temperatures	Increased number of hot days over the asset lifespan may lead to shrinkage of soil and drying out of vegetation.	Extended periods of hot, dry weather over asset lifespan may lead to a risk of spontaneous grassland fires in vicinity of the route, affecting safety on the road.	Risk to be sufficiently mitigated through standard emergency procedures	Medium	Minor adverse	NS
2	Low temperatures	Impact of extreme cold weather on staff health.	Possible negative health implications for staff, such as an increase in slips trips and falls and construction /maintenance worker injury.	To be incorporated within proposed maintenance regimes. These can be reviewed regularly to ensure H&S requirements are met.	Low	Minor adverse	NS
3	Low temperatures	Impact of extreme cold weather on equipment and infrastructure.	Risk of freezing of electrical equipment.	This risk will be mitigated through the choice of appropriate electrical equipment. The projected temperature range is within the operating parameters of the equipment.	Very Low	Minor adverse	NS
4	Low temperatures	Increase in ice on road surfaces.	Increased risk of skidding for road users due to ice/snow on road - safety concerns + damage to road infrastructure.	Risk will be mitigated via application of operational maintenance plan, as outlined within the Scheme Resilience Strategy. Road alignment will be designed to consider and complement the road drainage design and	Medium	Minor adverse	NS

Risk ID	Climate hazard	Potential Climate Change Impact	Potential Climate Change Risk to Scheme	Existing or embedded mitigation measure	Hazard Impact		Significance
					Likelihood	Consequence	
				facilitate surface water drainage, to reduce the likelihood of standing water on the road.			
5	High precipitation	Increased risk of flooding from fluvial sources over the asset lifespan	Flooding of road surface.	The Flood Risk Assessment (FRA) for the scheme will include an appropriate allowance for climate change, agreed with SEPA and Aberdeenshire Council (AC). An appropriate freeboard will be allowed for, over and above the water level, when setting any road level.	Low	Moderate adverse	NS
6	High precipitation	Increased risk of flooding from surface water sources over the asset lifespan.	Flooding of road surface.	Any FRA carried out, will include an appropriate allowance for climate change, agreed with SEPA and AC. An appropriate freeboard will be allowed for, over and above the water level, in setting any road level.	Low	Moderate adverse	NS
7	High precipitation	Increased risk of flooding from groundwater sources over the asset lifespan.	Flooding of road surface.	Any FRA carried out, will include an appropriate allowance for climate change, agreed with SEPA and AC. An appropriate freeboard will be allowed for, over and	Low	Moderate Adverse	NS

Risk ID	Climate hazard	Potential Climate Change Impact	Potential Climate Change Risk to Scheme	Existing or embedded mitigation measure	Hazard Impact		Significance
					Likelihood	Consequence	
				above the water level, in setting any road level.			
8	High precipitation	Increased risk of flooding from surface water sources over the asset lifespan.	Flooding of existing access roads and/or road infrastructure.	The principles of FRA state that new infrastructure should not increase flood risk to existing assets, achieved via the application of good design and mitigation measures. Any FRA carried out, will include an appropriate allowance for climate change, agreed with SEPA and AC, to identify risks of flooding and allow the implementation of specific design mitigation.	Low	Moderate adverse	NS
9	High precipitation	Increased risk of flooding from groundwater sources over the asset lifespan.	Flooding of existing access roads and/or road infrastructure.	The principles of FRA state that new infrastructure should not increase flood risk to existing assets, achieved via the application of good design and mitigation measures. Any FRA carried out, will include an appropriate allowance for climate change, agreed with	Low	Moderate adverse	NS

Risk ID	Climate hazard	Potential Climate Change Impact	Potential Climate Change Risk to Scheme	Existing or embedded mitigation measure	Hazard Impact		Significance
					Likelihood	Consequence	
				SEPA and AC, to identify risks of flooding and allow the implementation of specific design mitigation.			
10	High precipitation	Increased risk of flooding from groundwater sources over the asset lifespan.	Flooding of existing access roads and/or road infrastructure.	The principles of FRA state that new infrastructure should not increase flood risk to existing assets, achieved via the application of good design and mitigation measures. Any FRA carried out, will include an appropriate allowance for climate change, agreed with SEPA and AC, to identify risks of flooding and allow the implementation of specific design mitigation.	Low	Moderate adverse	NS
11	High precipitation	Increased risk of flooding from river/streams, surface and groundwater sources over the asset lifespan.	Increased risk of scouring of culverts.	The potential impact of increased rainfall on assets, including culverts, will be mitigated via the application of design parameters which account for climate change.	Low	Moderate adverse	NS

Risk ID	Climate hazard	Potential Climate Change Impact	Potential Climate Change Risk to Scheme	Existing or embedded mitigation measure	Hazard Impact		Significance
					Likelihood	Consequence	
12	High precipitation	Increased risk of flooding from river/streams, surface and groundwater sources over the asset lifespan	Flooding causing damage to fibre optic cables running near to site.	This risk will be mitigated through the use of high-quality materials and best practice construction methods. Ducts are sealed and cabling will include performance parameters which account for water ingress.	Very Low	Minor adverse	NS
13	High precipitation	Increased risk of flooding from river/streams, surface and groundwater sources over the asset lifespan.	Water ingress to signalling, lighting and other operational electrical equipment.	This risk will be mitigated through the use of high-quality materials and best practice construction methods. Ducts are sealed and cabling will include performance parameters which account for water ingress.	Very Low	Minor adverse	NS
14	High precipitation	Increased risk of flooding from river/streams, surface and groundwater sources over the asset lifespan.	Increased erosion at toe of embankment.	The design life for the route options is 120 years and will be designed to consider scour modelling to reduce the potential impacts of embankment erosion over this duration.	Low	Moderate adverse	NS

Risk ID	Climate hazard	Potential Climate Change Impact	Potential Climate Change Risk to Scheme	Existing or embedded mitigation measure	Hazard Impact		Significance
					Likelihood	Consequence	
15	High precipitation	Increased risk of flooding from river/streams, surface and groundwater sources over the asset lifespan.	Change in ground water level affecting earth pressures and foundation settlement causing possible large ground movement.	To be mitigated through structural and drainage design. Risk will be absorbed by conservative assumptions made during design.	Very Low	Large Adverse	NS
16	High precipitation	Increase likelihood of debris and sediment run-off over the asset lifespan.	Reduced capacity of attenuation basin due to sediment build-up.	Risk to be mitigated through the monitoring and maintenance procedures specified for the SuDS basins and associated drainage channels feeding them.	Low	Minor adverse	NS
17	High precipitation	Increased flow of groundwater over the asset lifespan.	Increased flow of groundwater causing accelerated weathering effects, weakening the embankment.	Risk will be mitigated during detailed design by applying conservative assumptions.	Low	Moderate adverse	NS
18	Low precipitation	Increased risk of soil shrinkage around foundations of structures over the asset lifespan.	Potential risk of soil shrinkage impacting foundations, including signal gantries, lighting pylons, bridges, and other structures. Possible ground movement (check on differential settlement due to different types of foundations).	Risk will be mitigated during detailed design by applying conservative assumptions.	Low	Moderate adverse	NS

Risk ID	Climate hazard	Potential Climate Change Impact	Potential Climate Change Risk to Scheme	Existing or embedded mitigation measure	Hazard Impact		Significance
					Likelihood	Consequence	
19	Low precipitation	Reduced inflow into SuDS basin over the asset lifespan.	Anaerobic conditions may occur, risking die back of sediment collecting species, reducing SuDS basins functional capacity.	Risk to be mitigated through the selection of appropriate species and monitoring and maintenance procedures.	Low	Minor adverse	NS
20	Extreme winds	Risk of windborne debris due to extreme winds over the asset lifespan.	Possible blockage of drainage systems due to obstructions and debris from domestic or third-party objects.	The route options do not pass through large areas of exposed sediment, therefore, there is a low likelihood for blown material to enter the drainage system. For proposed offline sections which are deemed to be susceptible to high winds, the mitigation steps outlined in the High Wind Strategy and National Wind Management Guidelines (2009) will be followed to determine the required mitigation and organisational arrangements. To be mitigated through appropriate design of barriers (incl. noise	Low	Minor adverse	NS

Risk ID	Climate hazard	Potential Climate Change Impact	Potential Climate Change Risk to Scheme	Existing or embedded mitigation measure	Hazard Impact		Significance
					Likelihood	Consequence	
				barriers), lighting columns and landscape.			
21	Extreme winds	Risk of windborne debris due to extreme winds over the asset lifespan.	Increased risk of wind-blown debris on the road, affecting road safety.	The route options do not pass through large areas of exposed sediment, therefore, there is a low likelihood for blown material to enter the drainage system. For proposed offline sections which are deemed to be susceptible to high winds, the mitigation steps outlined in the High Wind Strategy and National Wind Management Guidelines (2009) will be followed to determine the required mitigation and organisational arrangements. To be mitigated through appropriate design of barriers (incl. noise barriers), lighting columns and landscape.	Low	Moderate adverse	NS

Risk ID	Climate hazard	Potential Climate Change Impact	Potential Climate Change Risk to Scheme	Existing or embedded mitigation measure	Hazard Impact		Significance
					Likelihood	Consequence	
22	Lightning	Increased risk of lightning strikes over the asset lifespan.	Indirect/ direct damage to roadside equipment lightning strikes damaging trees and vehicles.	Surge protection will be addressed through the design process.	Low	Moderate adverse	NS

**NS – Not Significant*

Appendix A22.1 **Scottish Index of Multiple Deprivation Data Zones and Route Options**

Appendix A22.1 Scottish Index of Multiple Deprivation Data Zones and Route Options

Table 1.1 identifies the relevant data zones for each route option.

Table 1.1 Relevant Data Zones per Route Option.

Relevant Data Zones	Cyan	Red	Pink	Brown	Violet	Orange
Barrahill 01					X	
Barrahill 02					X	
Barrahill 03					X	
Barrahill 04					X	
Barrahill 05					X	
Clashindarroch 02	X	X				
Durno-Chapel of Garioch 01					X	X
Durno-Chapel of Garioch 03					X	X
Durno-Chapel of Garioch 04					X	X
Durno-Chapel of Garioch 05					X	X
Durno-Chapel of Garioch 06					X	X
Durno-Chapel of Garioch 07					X	X
Huntly 01	X	X				
Huntly 02	X	X				
Huntly 03	X	X				
Huntly 04	X	X				
Huntly 05	X	X				
Insch, Oyne and Ythanwells 01			X	X		
Insch, Oyne and Ythanwells 02	X	X	X	X		
Insch, Oyne and Ythanwells 03	X	X				
Inverurie North 01					X	X
Inverurie North 02					X	X
Inverurie North 03					X	X
Inverurie North 04					X	X
Inverurie North 05					X	X
Inverurie North 06					X	X
Inverurie North 07					X	X
Inverurie North 08					X	X
Inverurie South 01					X	X
Inverurie South 02					X	X
Inverurie South 03					X	X

Relevant Data Zones	Cyan	Red	Pink	Brown	Violet	Orange
Inverurie South 04					X	X
Inverurie South 05					X	X
Inverurie South 06					X	X
Inverurie South 07					X	X
Kintore 01					X	X
Kintore 02					X	X
Kintore 03					X	X
Kintore 04					X	X
Kintore 05					X	X
Kintore 06					X	X
Kintore 07					X	X
Kintore 08					X	X
Kintore 09					X	X

Appendix A22.2 Scottish Public Health Observatory (2020) Data

Appendix A22.2 Scottish Public Health Observatory (2020) Data

People Living in 15% Most 'Access Deprived' Areas

Table 1.1 provides an overview of the relevant intermediate zones for the study area. This data identifies the numerator and percentage of each zone considered to be within the '15% most access deprived areas.' The Aberdeenshire average for this data is 1078 (numerator) and 42.47% (percentage of intermediate zone). Data is based upon 2018 calendar year.

Table 1.1 People Living in 15% Most 'Access Deprived' Areas

Intermediate Zones	Numerator	Percentage of Intermediate Zone (%)
Barrahill (Violet and orange route options)	1078	21.54
Clashindarroch (Cyan and Red route options)	4658	100
Durno-Chapel of Garioch (Violet and Orange route options)	5943	88.08
Huntly (Cyan and Red route options)	0	0
Insch, Oyne and Ythanwells (Cyan and Red/ Pink and Brown route options)	3028	59.52
Inverurie North (Violet and Orange route options)	0	0
Inverurie South (Violet and Orange route options)	0	0
Kintore (Violet and Orange route options)	1252	21.02

Asthma Hospitalisations

Table 1.2 provides an overview of the relevant intermediate zones for the study area in relation to asthma hospitalisations. This data identifies the numerator and age-sex standardised rate per 100,000. The Aberdeenshire average for this data is 123 (numerator) and 46.23 (age-sex standardised rate per 100,000). Data is based upon 2016/17 to 2018/19 financial years: 3-year aggregates.

Table 1.2- Asthma Hospitalisations

Intermediate Zones	Numerator	Age-sex standardised rate per 100,000
Barrahill (Violet and Orange route options)	0.33	9.47
Clashindarroch (Cyan and Red route options)	2	50.31
Durno-Chapel of Garioch (Violet and Orange route options)	1.67	25.56
Huntly (Cyan and Red route options)	1.33	32.44

Intermediate Zones	Numerator	Age-sex standardised rate per 100,000
Insch, Oyne and Ythanwells (Cyan and Red/ Pink and Brown route options)	2.33	53.78
Inverurie North (Violet and Orange route options)	3	49.74
Inverurie South (Violet and Orange route options)	5	91.65
Kintore (Violet and Orange route options)	2	37.39

Child Healthy Weight in Primary 1

Table 1.3 provides an overview of the relevant intermediate zones for the study area in relation to child healthy weight in Primary 1. This data identifies the numerator and age-sex standardised rate per 100,000. The Aberdeenshire average for this data is 1936 (numerator) and 77.47 (percentage of intermediate zone). Data is based upon 2018/19 financial year.

Table 1.3 Child Healthy Weight in Primary 1

Intermediate Zones	Numerator	Percentage of Intermediate Zone (%)
Barrahill (Violet and orange route options)	31	83.78
Clashindarroch (Cyan and Red route options)	24	80
Durno-Chapel of Garioch (Violet and Orange route options)	81	84.38
Huntly (Cyan and Red route options)	27	79.41
Insch, Oyne and Ythanwells (Cyan and Red/ Pink and Brown route options)	47	71.21
Inverurie North (Violet and Orange route options)	31	86.11
Inverurie South (Violet and Orange route options)	38	74.51
Kintore (Violet and Orange route options)	67	76.14

Working Age Population Employment Deprived

Table 1.4 provides an overview of the relevant intermediate zones for the study area. This data identifies the numerator and percentage of intermediate zone. The Aberdeenshire average for this data is 7915 (numerator) and 4.87% (percentage of intermediate zone). Data is based upon 2018 calendar year.

Table 1.4 Working Age Population Employment Deprived

Intermediate Zones	Numerator	Percentage of Intermediate Zone (%)
Barrahill (Violet and orange route options)	85	2.72
Clashindarroch (Cyan and Red route options)	120	4.15
Durno-Chapel of Garioch (Violet and Orange route options)	50	1.14
Huntly (Cyan and Red route options)	220	9.08
Insch, Oyne and Ythanwells (Cyan and Red/ Pink and Brown route options)	105	3.39
Inverurie North (Violet and Orange route options)	150	4.43
Inverurie South (Violet and Orange route options)	245	7.54
Kintore (Violet and Orange route options)	85	2.31

Population Income Deprived

Table 1.5 provides an overview of the relevant intermediate zones for the study area in relation to the population income deprived. This data identifies the numerator and percentage of intermediate zone. The Aberdeenshire average for this data is 14920 (numerator) and 5.71 (percentage of intermediate zone). Data is based upon 2018 calendar year.

Table 1.5 Population Income Deprived

Intermediate Zones	Numerator	Percentage of Intermediate Zone (%)
Barrahill (Violet and orange route options)	175	3.5
Clashindarroch (Cyan and Red route options)	210	4.51
Durno-Chapel of Garioch (Violet and Orange route options)	532	19.94
Huntly (Cyan and Red route options)	480	11.39
Insch, Oyne and Ythanwells (Pink and Brown route options)	195	3.83
Inverurie North (Violet and Orange route options)	265	4.92
Inverurie South (Violet and Orange route options)	410	7.76
Kintore (Violet and Orange route options)	170	2.85

Appendix A22.3 **Scottish Index of Multiple Deprivation (2020) Lowest Ranking Data Zones in the Study Area**

Appendix A22.3 Scottish Index of Multiple Deprivation (2020) Lowest Ranking Data Zones in the Study Area

The following tables provide an overview of the relevant data zones across Scotland. The 6,976 ranking covers the country of Scotland.

Income and Employment

Table 1.1 provides a ranking of the relevant data zones in relation to income and employment against all Scottish data zones.

Table 1.1: Lowest Ranked Relevant Data Zones in the Study Area for Income and Employment Domains

Data Zone	Income Ranking (where 1 is most deprived and 6,976 is the least deprived)	Employment Ranking (where 1 is most deprived and 6,976 is the least deprived)
Huntly 04 (Cyan and Red route options)	1749	1957
Huntly 05 (Cyan and Red route options)	1447	1864
Inverurie South 01 (Violet and Orange route options)	2686	2326
Inverurie South 02 (Violet and Orange route options)	2355	1807
Inverurie South 05 (Violet and Orange route options)	2389	1565

Health

Table 1.2 provides a ranking of the relevant data zones in relation to health against all Scottish data zones.

Table 1.2 Lowest Ranked Relevant Data Zones in the Study Area for Health Domain

Data Zone	Health Ranking (where 1 is most deprived and 6,976 is the least deprived)
Huntly 04 (Cyan and Red routes)	3128
Huntly 05 (Cyan and Red route options)	2863
Inverurie South 01 (Violet and Orange route options)	2686
Inverurie South 02 (Violet and orange route options)	2713
Inverurie South 05 (Violet and orange route options)	2572

Education

Table 1.3 provides a ranking of the relevant data zones in relation to education against all Scottish data zones.

Table 1.3 Lowest Ranked Data Zones in the Study Area for Education Domain

Data Zone	Education Ranking (where 1 is most deprived and 6,976 is the least deprived)
Huntly 01 (Cyan and Red route options)	2727
Huntly 04 (Cyan and Red route options)	1749
Huntly 05 (Cyan and Red route options)	608
Inverurie North 02 c	422
Inverurie South 05 (Orange and Violet route options)	2591

Housing

Table 1.4 provides a ranking of the relevant data zones in relation to housing against all Scottish data zones.

Table 1.4 Lowest Ranked Data Zones in the Study Area for Housing Domain

Data Zone	Housing Ranking (where 1 is most deprived and 6,976 is the least deprived)
Huntly 05 (Red and Cyan route options)	2627
Inverurie North 02 (Violet and Orange route options)	2118.5
Inverurie North 08 (Violet and Orange route options)	2310
Inverurie South 02 (Violet and Orange route options)	1717
Inverurie South 06 (Violet and Orange route options)	2565.5

Geographic Access to Services

The following data provides mean time in minutes (MTM) against multiple local services using a car (recorded in 2015). Tables 1.5-1.10 provide a ranking of relevant data zones in relation to geographic access to services against all Scottish data zones.

Table 1.5 Highest Distance Data Zones Included within the Study Area for GP Services

Data Zone	MTM GP Services
Durno-Chapel of Garioch 06 (Violet and Orange route options)	8.9
Durno-Chapel of Garioch 07 (Violet and Orange route options)	12.1
Insch, Oyne and Ythanwells 01 (Pink and Brown route options)	8.3
Insch, Oyne and Ythanwells 03 (Pink and Brown route options)	14
Kintore 09 (Violet and Orange route options)	8

Table 1.6 Highest Distance Data Zones Included within the Study Area for Petrol Stations

Data Zone	MTM Petrol Stations
Insch, Oyne and Ythanwells 01 (Pink and Brown route options)	11.1
Insch, Oyne and Ythanwells 02 (Pink and Brown route options)	13.1
Insch, Oyne and Ythanwells 03 (Pink and Brown route options)	11.8
Kintore 07 (Violet and Orange route options)	6.8
Kintore 09 (Violet and Orange route options)	9

Table 1.7 Highest Distance Data Zones Included within the Study Area for Post Offices

Data Zone	MTM Post Offices
Durno-Chapel of Garioch 06 (Violet and Orange route options)	7.9
Durno-Chapel of Garioch 07 (Violet and Orange route options)	6.3
Insch, Oyne and Ythanwells 01 (Pink and Brown route options)	7.6
Insch, Oyne and Ythanwells 03 (Pink and Brown route options)	10.1
Kintore 09 (Violet and Orange route options)	7.7

Table 1.8 Highest Distance Data Zones Included within the Study Area for Primary Schools

Data Zone	MTM Primary Schools
Clashindarroch 02 (Cyan and Red route options)	5.1
Durno-Chapel of Garioch 01 (Violet and Orange route options)	4.4
Durno-Chapel of Garioch 03 (Violet and Orange route options)	4.1

Data Zone	MTM Primary Schools
Durno-Chapel of Garioch 04 (Violet and Orange route options)	5
Kintore 07 (Violet and Orange route options)	6.8

Table 1.9 Highest Distance Data Zones Included within the Study Area for Retail Centre

Data Zone	MTM Retail Centre
Durno-Chapel of Garioch 06 (Violet and Orange route options)	9.5
Durno-Chapel of Garioch 07 (Violet and Orange route options)	13
Insch, Oyne and Ythanwells 03 (Pink and Brown route options)	14.5
Kintore 04 (Violet and Orange route options)	9.4
Kintore 09 (Violet and Orange route options)	10.9

Table 1.10 Highest Distance Data Zones Included within the Study Area for Secondary Schools

Data Zone	MTM Secondary Schools
Durno-Chapel of Garioch 06 (Violet and Orange route options)	11.3
Durno-Chapel of Garioch 07 (Violet and Orange route options)	12.7
Insch, Oyne and Ythanwells 01 (Pink and Brown route options)	17.2
Insch, Oyne and Ythanwells 02 (Pink and Brown route options)	19.3
Insch, Oyne and Ythanwells 03 (Pink and Brown route options)	16.7

Crime

Table 1.11 provides a ranking of the relevant data zones in relation to crime against all Scottish data zones.

Table 1.11 Lowest Ranked Relevant Data Zones in Aberdeenshire for Crime Domain

Data Zone	Crime Ranking (where 1 is most deprived and 6,976 is the least deprived)
Huntly 04 (Cyan and Red route options)	591
Inverurie North 03 (Violet and Orange route options)	1105
Inverurie South 05 (Violet and Orange route options)	780

Data Zone	Crime Ranking (where 1 is most deprived and 6,976 is the least deprived)
Inverurie South 06 (Violet and Orange route options)	96
Inverurie South 07 (Violet and Orange route options)	1270

Appendix A22.4 **Scottish Index of Multiple Deprivation – Rankings by Data Zones**

Appendix A22.4 Scottish Index of Multiple Deprivation – Rankings by Data Zones

Income and Employment Domain Ranking

Table 1.1 identifies relevant data zones and provides an overview of all relevant data zones for the route options in relation to income and employment.

Table 1.1- Relevant Data Zones and Route Options

Relevant Data Zones	Cyan	Red	Pink	Brown	Violet	Orange	Income Ranking (where 1 is most deprived and 6,976 is the least deprived)	Employment ranking (where 1 is most deprived and 6,976 is the least deprived)
Barrahill 01					X		5518.5	5427
Barrahill 02					X		5048.5	5633
Barrahill 03					X		5031.5	4419
Barrahill 04					X		4974	6149
Barrahill 05					X		6818	5961
Clashindarroch 02	X	X					5664	5938.5
Durno-Chapel of Garioch 01					X	X	6063.5	6776
Durno-Chapel of Garioch 03					X	X	6717	6516
Durno-Chapel of Garioch 04					X	X	6725	6714
Durno-Chapel of Garioch 05					X	X	4890	6576
Durno-Chapel of Garioch 06					X	X	6917	6808.5
Durno-Chapel of Garioch 07					X	X	6231	5716
Huntly 01	X	X					3319	2856
Huntly 02	X	X					3975	3926

Relevant Data Zones	Cyan	Red	Pink	Brown	Violet	Orange	Income Ranking (where 1 is most deprived and 6,976 is the least deprived)	Employment ranking (where 1 is most deprived and 6,976 is the least deprived)
Huntly 03	X	X					5158	5641
Huntly 04	X	X					1816	1957
Huntly 05	X	X					1699.5	1864
Insch, Oyne and Ythanwells 01			X	X			6753	6246
Insch, Oyne and Ythanwells 02	X	X	X	X			6168	5262
Insch, Oyne and Ythanwells 03	X	X					5070	5513
Inverurie North 01					X	X	4181	3550
Inverurie North 02					X	X	3322	3979
Inverurie North 03					X	X	4044	4053
Inverurie North 04					X	X	5653	3610
Inverurie North 05					X	X	4648.5	4151
Inverurie North 06					X	X	6874	6609
Inverurie North 07					X	X	6072	5829
Inverurie North 08					X	X	3347	3692
Inverurie South 01					X	X	2557	2326
Inverurie South 02					X	X	2262	1807
Inverurie South 03					X	X	3657	4166.5
Inverurie South 04					X	X	5187	4116
Inverurie South 05					X	X	2791	1565
Inverurie South 06					X	X	4249	4104

Relevant Data Zones	Cyan	Red	Pink	Brown	Violet	Orange	Income Ranking (where 1 is most deprived and 6,976 is the least deprived)	Employment ranking (where 1 is most deprived and 6,976 is the least deprived)
Inverurie South 07					X	X	3862.5	4279
Kintore 01					X	X	4650.5	4945
Kintore 02					X	X	6637	6751
Kintore 03					X	X	6249	5071
Kintore 04					X	X	5677.5	5386
Kintore 05					X	X	4762	3632
Kintore 06					X	X	6881	6424
Kintore 07					X	X	6161	6798
Kintore 08					X	X	6170	5857
Kintore 09					X	X	5605.5	5952

Education Domain Ranking

Table 1.2 identifies relevant data zones and provides an overview of all relevant data zones for the route options in relation to education.

Table 1.2 Relevant Data Zones and Route Options

Relevant Data Zones	Cyan	Red	Pink	Brown	Violet	Orange	Education Ranking (where 1 is most deprived and 6,976 is the least deprived)
Barrahill 01					X		4542
Barrahill 02					X		5447

Relevant Data Zones	Cyan	Red	Pink	Brown	Violet	Orange	Education Ranking (where 1 is most deprived and 6,976 is the least deprived)
Barrahill 03					X		3650
Barrahill 04					X		3869
Barrahill 05					X		6360
Clashindarroch 02	X	X					4604
Durno-Chapel of Garioch 01					X	X	6539
Durno-Chapel of Garioch 03					X	X	4937
Durno-Chapel of Garioch 04					X	X	5393
Durno-Chapel of Garioch 05					X	X	5352
Durno-Chapel of Garioch 06					X	X	6141
Durno-Chapel of Garioch 07					X	X	4898
Huntly 01	X	X					2727
Huntly 02	X	X					3459
Huntly 03	X	X					6148
Huntly 04	X	X					1749
Huntly 05	X	X					608
Insch, Oyne and Ythanwells 01			X	X			5999
Insch, Oyne and Ythanwells 02	X	X	X	X			5467
Insch, Oyne and Ythanwells 03	X	X					4175
Inverurie North 01					X	X	4646
Inverurie North 02					X	X	422

Relevant Data Zones	Cyan	Red	Pink	Brown	Violet	Orange	Education Ranking (where 1 is most deprived and 6,976 is the least deprived)
Inverurie North 03					X	X	4256
Inverurie North 04					X	X	5920
Inverurie North 05					X	X	4300
Inverurie North 06					X	X	6368
Inverurie North 07					X	X	5746
Inverurie North 08					X	X	2910
Inverurie South 01					X	X	4117
Inverurie South 02					X	X	3392
Inverurie South 03					X	X	4402
Inverurie South 04					X	X	5091
Inverurie South 05					X	X	2591
Inverurie South 06					X	X	3982
Inverurie South 07					X	X	3543
Kintore 01					X	X	5945
Kintore 02					X	X	6509
Kintore 03					X	X	5018
Kintore 04					X	X	5626
Kintore 05					X	X	4876
Kintore 06					X	X	6433
Kintore 07					X	X	4570

Relevant Data Zones	Cyan	Red	Pink	Brown	Violet	Orange	Education Ranking (where 1 is most deprived and 6,976 is the least deprived)
Kintore 08					X	X	6038
Kintore 09					X	X	6575

Housing Domain Ranking

Table 1.3 identifies relevant data zones and provides an overview of all relevant data zones for the route options in relation to housing.

Table 1.3 Relevant Data Zones and Route Options

Relevant Data Zones	Cyan	Red	Pink	Brown	Violet	Orange	Housing Ranking (where 1 is most deprived and 6,976 is the least deprived)
Barrahill 01					X		5622
Barrahill 02					X		5932
Barrahill 03					X		5033
Barrahill 04					X		4851
Barrahill 05					X		6237
Clashindarroch 02	X	X					3605
Durno-Chapel of Garioch 01					X	X	6935
Durno-Chapel of Garioch 03					X	X	5990
Durno-Chapel of Garioch 04					X	X	3415
Durno-Chapel of Garioch 05					X	X	6749

Relevant Data Zones	Cyan	Red	Pink	Brown	Violet	Orange	Housing Ranking (where 1 is most deprived and 6,976 is the least deprived)
Durno-Chapel of Garioch 06					X	X	4267
Durno-Chapel of Garioch 07					X	X	5305
Huntly 01	X	X					2908
Huntly 02	X	X					3902
Huntly 03	X	X					5837
Huntly 04	X	X					3491.5
Huntly 05	X	X					2627
Insch, Oyne and Ythanwells 01			X	X			6037
Insch, Oyne and Ythanwells 02	X	X	X	X			6217
Insch, Oyne and Ythanwells 03	X	X					3819
Inverurie North 01					X	X	6212
Inverurie North 02					X	X	2118.5
Inverurie North 03					X	X	4116
Inverurie North 04					X	X	5808
Inverurie North 05					X	X	3743
Inverurie North 06					X	X	6648
Inverurie North 07					X	X	5510
Inverurie North 08					X	X	2310
Inverurie South 01					X	X	2845
Inverurie South 02					X	X	1717

Relevant Data Zones	Cyan	Red	Pink	Brown	Violet	Orange	Housing Ranking (where 1 is most deprived and 6,976 is the least deprived)
Inverurie South 03					X	X	4313
Inverurie South 04					X	X	5312
Inverurie South 05					X	X	2744
Inverurie South 06					X	X	2565.5
Inverurie South 07					X	X	4015
Kintore 01					X	X	6317
Kintore 02					X	X	6561.5
Kintore 03					X	X	6500
Kintore 04					X	X	3325
Kintore 05					X	X	4858
Kintore 06					X	X	6840
Kintore 07					X	X	5883
Kintore 08					X	X	6885
Kintore 09					X	X	6166.5

Crime Domain Ranking

Table 1.4 identifies relevant data zones and provides an overview of all relevant data zones for the route options in relation to crime.

Table 1.4 Relevant Data Zones and Route Options

Relevant Data Zones	Cyan	Red	Pink	Brown	Violet	Orange	Crime Ranking (where 1 is most deprived and 6,976 is the least deprived)
Barrahill 01					X		5598
Barrahill 02					X		5960.5
Barrahill 03					X		2747
Barrahill 04					X		5242
Barrahill 05					X		5848
Clashindarroch 02	X	X					4594
Durno-Chapel of Garioch 01					X	X	5810
Durno-Chapel of Garioch 03					X	X	6157
Durno-Chapel of Garioch 04					X	X	4212
Durno-Chapel of Garioch 05					X	X	5993
Durno-Chapel of Garioch 06					X	X	4322.5
Durno-Chapel of Garioch 07					X	X	6444
Huntly 01	X	X					4207
Huntly 02	X	X					4085
Huntly 03	X	X					3849
Huntly 04	X	X					591
Huntly 05	X	X					2516
Insch, Oyne and Ythanwells 01			X	X			5228
Insch, Oyne and Ythanwells 02	X	X	X	X			5239

Relevant Data Zones	Cyan	Red	Pink	Brown	Violet	Orange	Crime Ranking (where 1 is most deprived and 6,976 is the least deprived)
Insch, Oyne and Ythanwells 03	X	X					5143
Inverurie North 01					X	X	6873
Inverurie North 02					X	X	1856
Inverurie North 03					X	X	1105
Inverurie North 04					X	X	5658
Inverurie North 05					X	X	3970
Inverurie North 06					X	X	6757
Inverurie North 07					X	X	6040
Inverurie North 08					X	X	4788
Inverurie South 01					X	X	3079
Inverurie South 02					X	X	3071
Inverurie South 03					X	X	3220
Inverurie South 04					X	X	1841
Inverurie South 05					X	X	780
Inverurie South 06					X	X	96
Inverurie South 07					X	X	1270
Kintore 01					X	X	4322.5
Kintore 02					X	X	5252
Kintore 03					X	X	4265
Kintore 04					X	X	6928

Relevant Data Zones	Cyan	Red	Pink	Brown	Violet	Orange	Crime Ranking (where 1 is most deprived and 6,976 is the least deprived)
Kintore 05					X	X	3437
Kintore 06					X	X	5120
Kintore 07					X	X	6279
Kintore 08					X	X	4867
Kintore 09					X	X	2507

Appendix A22.5 **Analysis of Scottish Index of Multiple Deprivation Data**

Appendix A22.5 Analysis of Scottish Index of Multiple Deprivation Data

The following appendix provides an overview of relevant SIMD data discussed within the baseline section of this report.

The Scottish Index of Multiple Deprivation (SIMD) (2020) is a relative measure of deprivation across 6,976 small areas (called data zones). SIMD ranks data zones from most deprived (ranked 1) to least deprived (ranked 6,976).

SIMD looks at the extent to which an area is deprived across the following multiple domains, and uses this to create an overall deprivation ranking:

- Income domain ranking;
- Employment domain ranking;
- Health domain ranking;
- Education/skills domain ranking;
- Housing domain ranking;
- Geographic access domain ranking; and
- Crime domain ranking.

It should be noted that data zones in rural areas tend to cover a large land area and reflect a more mixed picture of people experiencing different levels of deprivation. This means that SIMD is less helpful at identifying the smaller pockets of deprivation found in more rural areas, compared to the larger pockets found in urban areas.

Aberdeenshire is within the 20% least deprived areas across Scotland in terms of overall deprivation. To support this position, SIMD shows that only 3% of data zones in Aberdeenshire are within the 20% most deprived and 9% of data zones within the 21-40% most deprived[1].

The following paragraphs, provide an overview of where the relevant data zones sit within the domain rankings listed above, highlighting any key findings and considerations in relation to human health.

SIMD (2020): Income and Employment Domain Ranking

None of the relevant data zones across the study area are identified as within the 20% most deprived across Scotland, for either the income or employment domain, with the majority ranked in the 50% least deprived, suggesting lower levels of deprivation than in some areas of Scotland. This is consistent with the averages for the Aberdeenshire region, which are 4800 and 4754, for income and employment respectively.

The five lowest ranking data zones within the study area for income and employment are: Huntly 04, Huntly 05, Inverurie South 01, Inverurie South 02 and Inverurie South 05.

Although not sitting within the 20% most deprived areas in Scotland, Huntly 04 and Huntly 05 (adjacent data zones in south and west Huntly) rank in the bottom 30% for both domains, suggesting regional differences within the study area that perform poorly against the Aberdeenshire average. Both data zones relate to the Cyan and Red route options.

In Addition to Huntly 04 and Huntly 05, the Inverurie South 05 data zone (Violet and Orange route options) ranks lowest for employment, ranking at 1565 out of 6976, placing it in the bottom 25%.

Overall, the most deprived data zone in the study area for Income and Employment is Huntly 05, situated in south Huntly. In Huntly 05 both employment and income rankings dip below 2000 (where 1 is most deprived and 6,976 is the least deprived) suggesting they are in the 30% most deprived areas.

SIMD (2020): Health Domain Ranking

Similar to income and employment, none of the relevant data zones are within the 20% most deprived areas across Scotland for health, with the majority ranking above 4000 (53%). This is similar to the Aberdeenshire average, of 5254 for the average health domain ranking.

The five lowest ranking data zones for health are: Huntly 04, Huntly 05, Inverurie South 01, Inverurie South 02 and Inverurie South 05. Much like the employment and income statistics identified above, statistically the lowest ranking health domain data zones are situated in Huntly and Inverurie South, suggesting a correlation between income, employment and health of the residents within these data zones.

The lowest ranking data zone for health is Inverurie South 05, located in closest proximity to the Orange route option, and considered relevant to both Violet and Orange route options.

SIMD (2020): Education Domain Ranking

The average educational domain ranking for Aberdeenshire is 4379, with the study area domains displaying a slightly higher average educational ranking of 4666.

The five lowest ranking data zones for education in the study area are: Huntly 01, Huntly 04, Huntly 05, Inverurie North 02 and Inverurie South 05.

Within the study area, Huntly 05 and Inverurie North 02 are within the poorest performing 10% nationally. Huntly 05 is ranked 608 nationally, while Inverurie North 02 is ranked 422, both significantly below the regional average and the average for the study area. This outlines a distinct regional disparity between educational attainment within both Huntly and Inverurie, with the least deprived areas in both towns (Huntly 03: 6148 and Inverurie 6: 6368) being within the top 15% for education nationally.

The data within Appendix A22.4 suggests that three of the five data zones (Huntly 04, Huntly 05 and Inverurie South 05) which feature within the employment, income and health domains are also present in the poorest performing educational domain scores, suggesting a correlation between income, employment, health and education of residents within these data zones.

The lowest education ranking data zone is Inverurie North 02, located in closest proximity to the Violet route option, and relevant to the Violet and Orange route option.

SIMD (2020): Housing Domain Ranking

The average ranking for housing calculated from data zones selected as part of this study is 4820, which is slightly higher than the regional Aberdeenshire average of 4790. The five lowest ranking data zones within Aberdeenshire for housing are: Huntly 05, Inverurie North 02, Inverurie North 08, Inverurie South 02 and Inverurie South 06.

None of the data zones assessed as part of this study are within the 20% most deprived across Scotland, suggesting that housing is of higher quality and supply than in other parts of the country. Despite this average, multiple zones including Inverurie North 02, 08 and Inverurie South 02 consistently scored below 2500 for housing.

The lowest housing ranking data zone is Inverurie South 02, located in closest proximity to the Orange route option, and is considered relevant for the Orange and Violet options.

SIMD (2020): Geographic Access Domain Ranking

The geographic is split into multiple mean average times for distance to key services. Key services included are: GP surgeries, petrol stations, post offices, primary schools, retail centres and secondary schools. The following text provides an overview of the worst performing relevant journey times within the study area.

GP Surgeries

The longest ranking mean time in minutes (MTM) journey time for GP surgeries is 14 minutes for the Insch, Oyne and Ythanwells 03 data zone (Red and Cyan route options) east of the key community of Huntly.

The five poorest ranking zones in the study area are identified as: Durno-Chapel of Garioch 06, Durno-Chapel of Garioch 07, Insch, Oyne and Ythanwells 01, Insch, Oyne and Ythanwells 03 and Kintore 09. All five poorest ranking journey times are more than double the Scottish average MTM of 3.4 minutes. None of the zones sit within the key settlements of Huntly and Inverurie suggesting that smaller settlements have less access to GP surgery facilities.

Petrol Stations

The longest ranking MTM journey time for petrol stations is 13.1 minutes for the Insch, Oyne and Ythanwells 02 data zone (Red, Cyan, Pink and Brown route options) south east of the key community of Huntly. The distance is over double the Scottish average of approximately 3.7 minutes.

The five poorest ranking zones in the study area are identified as: Insch, Oyne and Ythanwells 01, Insch, Oyne and Ythanwells 02, Insch, Oyne and Ythanwells 03, Kintore 07 and Kintore 09.

As for GP surgeries, none of the zones sit within the key settlements of Huntly and Inverurie suggesting that smaller settlements have poorer access to petrol stations.

Post Offices

The longest MTM journey time for post offices is 10.1 minutes for the Insch, Oyne and Ythanwells 03 data zone (Red and Cyan route options) east of the key community of Huntly.

The five poorest ranking zones are: Durno-Chapel of Garioch 06, Durno-Chapel of Garioch 07, Insch, Oyne and Ythanwells 01, Insch, Oyne and Ythanwells 03 and Kintore 09. All five poorest ranking journey times more than double the Scottish average MTM of 2.7 minutes.

As per GP surgeries and petrol stations, none of the zones sit within the key settlements of Huntly and Inverurie suggesting that smaller settlements have less access to post offices.

Primary Schools

The longest MTM journey time for primary schools is 6.8 minutes for the Kintore 07 data zone (Violet and Orange route options) south-east of the key community of Inverurie.

The five poorest ranking zones are: Clashindarroch 02, Durno-Chapel of Garioch 01, Durno-Chapel of Garioch 03, Durno-Chapel of Garioch 04, Huntly 03 and Kintore 07. All five poorest ranking journey times are under double the Scottish average MTM of approximately 2.5 minutes. Despite Huntly being considered as a key settlement, Huntly 03 (south-east Huntly) ranks poorly for access to primary schools, suggesting a more sensitive population within this data zone.

Retail Centres

The longest MTM journey time for retail centres is 14.5 minutes for the Insch, Oyne and Ythanwells 03 data zone (Red and Cyan route options) east of the key community of Huntly.

The five poorest ranking zones are: Durno-Chapel of Garioch 06, Durno-Chapel of Garioch 07, Insch, Oyne and Ythanwells 03, Kintore 04 and Kintore 09. Three of the five poorest ranking journey times are more than the double the Scottish average MTM of 5.2 minutes.

As per GP surgeries, petrol stations and post offices, none of the zones sit within the key settlements of Huntly and Inverurie suggesting that smaller settlements have less access to retail centres.

Secondary Schools

The longest MTM journey time for secondary schools is 19.3 minutes for the Insch, Oyne and Ythanwells 02 data zone (Red, Cyan, Pink and Brown route options) south-east of the key community of Huntly.

The five poorest ranking zones are: Clashindarroch 02, Durno-Chapel of Garioch 06, Durno-Chapel of Garioch 07, Insch, Oyne and Ythanwells 01, Insch, Oyne and Ythanwells 02 and Insch, Oyne and Ythanwells 03. All five poorest ranking journey times more than double the Scottish average MTM of 6.1 minutes.

As per GP surgeries, petrol stations, post offices and retail centres none of the zones sit within the key settlements of Huntly and Inverurie suggesting that smaller settlements have less access to secondary schools

Summary

Overall, the Insch, Oyne and Ythanwell 02 and Insch, Oyne and Ythanwell 03 data zones have the worst MTM journey times for four out of the six geographic access domains identified. As identified, these data zones are both located to the east / south-east of the key community of Huntly and are both considered to be rural in nature.

These data zones are relevant to the East of Huntly to Colpy (Red and Cyan) and Colpy to Pitcaple (Pink and Brown) route options.

SIMD (2020): Crime Ranking

The average ranking of the data zones selected as part of this study is 4253, against a regional average in Aberdeenshire of 4623. The five worst ranking zones within Aberdeenshire for crime are: Huntly 04, Inverurie North 03, Inverurie South 05, Inverurie South 06 and Inverurie South 07.

Crime rankings identify two highly deprived data zones that sit within the 10% most deprived within Scotland, Huntly 04, west Huntly (ranked 608 out of 6976) and Inverurie South 06 (ranked 96 out of 6976). This outlines a distinct regional disparity in the prevalence of crime between the data zones selected as part of this study.

Overall, the worst crime ranking data zone is Inverurie South 06, located in closest proximity to the Orange route option and relevant to the Violet and Orange route options.

Appendix A22.6 **Health Evidence Literature Review**

Appendix A22.6 Health Evidence Literature Review

This appendix provides a summary of key research evidence, drawn from recently published literature reviews, research papers and policy documents, that suggest the links between health determinants and potential health outcomes. The information presented in this appendix underpins the assessment of health effects within Chapter 22: Human Health.

Environmental conditions

Air Quality

Evidence on the links between road traffic emissions and health is well established, based on numerous research studies. A WHO report in 2000 suggested that about 36,000–129,000 adult deaths a year are brought forward due to long-term exposure to air pollution generated by traffic in European cities[1]. The main health damaging pollutants released as emissions from road traffic are particulate matter (PM_{10}) and nitrogen dioxide (NO_2). It is generally accepted that particles greater than 10µm in diameter (PM_{10}) do not penetrate the lungs to cause respiratory health problems. However, dust can cause eye, nose and throat irritation and lead to deposition on cars, windows and property[2].

Populations thought particularly vulnerable to the effects of PM_{10} are those with pre-existing lung or heart disease, the elderly and children[3, 4].

PM_{10}

PM_{10}, which is an important source of pollution with regard to health impacts, comprises atmospheric particles that are less than 10µm in diameter. Road transport is a major source of PM_{10}, which is emitted from the combustion of vehicle fuels. An important property is the extent to which these particles may be deposited within the lungs, which is dependent on size of particles (smaller particles have a greater chance of reaching the deeper parts of the lungs). There is growing evidence that smaller respirable particulate matter may be more relevant to health than larger particles. Recent studies[1] have found that ultra-fine particles (less than 0.1µm) have been associated with stronger effects on the lung function and symptoms in asthmatics than either PM_{10} or $PM_{2.5}$.

Studies have also suggested that particulate pollution of various sizes may exacerbate pre-existing asthma[5].

Nitrogen dioxide (NO_2)

The effects of road traffic related NO_2 on health are less well understood than the effects of PM_{10}. Numerous epidemiological studies have identified associations between levels of NO_2

[1] World Health Organization. (2000) Transport, environment and health. WHO Regional Publications, European Series. No.89
[2] The control of dust and emissions from construction and demolition Best Practice Guidance, Greater London Authority (2006)
[3] World Health Organization. (2013). Health effects of particulate matter. Denmark: World Health Organization Europe.
[4] Defra, Netcen, Department for Communities and Local Government, National Statistics. (2006). *Air Quality and Social Deprivation in the UK: an environmental inequalities analysis (AEAT/ENV/R.2170).* London: Defra.
[5] DoH Committee of the Medical Effects of Air Pollutants, 1998, Quantification of the Effects of Air Pollution on Health in the United Kingdom

and respiratory health[6], but it may be that in these studies NO_2 is a key marker for traffic-related pollution more generally. NO_2 is a precursor for the formation of ground-level ozone, which is strongly linked with respiratory disease.

A study by Searl (2004)[7] of various experiments identified minor respiratory changes at concentrations of NO_2 similar to those that would arise at high pollution events. The results suggest exposure to such an event would have a greater adverse impact on health than a longer term exposure at lower concentrations.

Quantifying short and long term impacts of NO_2 pollution is problematic due to uncertainties in the concentration-response functions available. It has been estimated that the direct effect of NO_2 on the health of the UK's population could be that between 600 and 6000 deaths per year may have been brought forward by a matter of days or weeks as a result of the exposure of NO_2 in the ambient air. Likewise, it has been estimated that between 1,400 and 14,000 hospital admissions and between 200,000 and 2 million GP consultations for respiratory illnesses may arise as a result of exposure to the ambient NO_2 in the UK each year. Ambient NO_2 is said to contribute to an average of 1-7 extra days of symptoms in asthmatics annually[7].

Ozone (O_3)

Ground level ozone (O_3) is not released directly into the atmosphere; it is a secondary pollutant that is produced from a reaction with hydrocarbons, road traffic related NO_2 and sunlight. Ozone has the potential to irritate the eyes and air passages which can cause breathing difficulties and can increase susceptibility to infection. Short term effects of ozone include changes to lung functions and increased airways inflammation. Longer/higher exposure to ozone can result in more severe alterations in lung function[6].

Air pollution links to deprivation

Defra commissioned a study in 2006 to review recent research evidence on links between air quality and social deprivation in the UK[8]. The analysis for England showed that there is a tendency for higher relative mean annual concentrations of NO_2 and PM_{10} in the most deprived areas of the country. This distribution can largely be explained by the high urban concentrations driven by road transport sources, and the higher proportion of deprived communities in urban areas. If exceedances of National Air Quality Standards are considered, the correlation between poor air quality and deprivation is stronger, showing that when the most polluted areas are considered, the greatest burden is on the most deprived communities, and very little on the least deprived.

Noise

According to the World Health Organization (WHO), 'in some situations noise may adversely affect the health and wellbeing of individuals or populations'. The WHO recognises the health linkages between environmental noise and annoyance, sleep disturbance and physiological responses such as cardiovascular disease. There are a wide range of non-auditory health effects that may be associated with exposure to environmental noise. In the everyday

[6] Health Scotland, MRC Social and Public Health Sciences Unit and Institute of Occupational Medicine. Health Impact Assessment of Transport Initiatives: A Guide. NHS Health Scotland, 2007
[7] Searl A. 2004. A review of the acute and long term impacts of exposure to nitrogen dioxide in the United Kingdom. Institute of Occupational Medicine
[8] Defra, Netcen, Department for Communities and Local Government, National Statistics. Air Quality and Social Deprivation in the UK: an environmental inequalities analysis - Final Report to Department of Environment, Food and Rural Affairs AEAT/ENV/R/2170, June 2006

environment, the response of an individual to noise is more likely to be behavioural or psychological (i.e. non-auditory) than physiological.

The WHO suggests that some people may be less able to cope with the impacts of noise exposure and be at greater risk for harmful effects, including the elderly, the physically ill, those with existing mental illness, people with hearing impairment, and young children. Families with lower income tend to have lower mobility but greater exposure to adverse environmental conditions related to noise pollution[9].

Landscape Amenity

Research into the effects of the visual and aesthetic environment on well-being is mainly focused on the psychological effects of 'natural' versus 'man-made' or urban views. In general, evidence shows a preference for views of natural over man-made scenes. These links are often tied in with other, related issues such as opportunities for exercise and contact with nature. Open spaces and natural scenes can improve physical health, comfort, and mental well-being, as well as provide opportunities to improve people's quality of life and social interactions.

In 2013, a Position Statement by the Landscape Institute[10] looked at evidence linking the quality of places with health and wellbeing across a range of environmental, social and lifestyle determinants. This document cites evidence to suggest that health and wellbeing are influenced positively by factors such as the attractiveness, noise and other pollution, and the perceived safety of the environment.

A literature review by Abraham et al in 2010 of over 120 studies[11] identified a set of pathways that link landscape and health. The study found that:

'Landscapes have the potential to promote mental well-being through attention restoration, stress reduction, and the evocation of positive emotions; physical well-being through the promotion of physical activity in daily life as well as leisure time and through walkable environments; and social well-being through social integration, social engagement and participation, and through social support and security.'

Severance / Accessibility and the ability of communities to access community land, assets and employment

Community land

According to Quigley et al[12], the accessibility of local shops, community services and healthcare facilities may be affected by:

- Effects on the capacity of existing services;

[9] World Health Organization. (2011). Burden of Disease from Environmental Noise. Geneva, Switzerland: World Health Organization Europe.
[10] Landscape Institute (2013), *Public Health and Landscape – Creating healthy places,* https://www.landscapeinstitute.org/PDF/Contribute/PublicHealthandLandscape_CreatingHealthyPlaces_FINAL.pdf.
[11] Abraham, A., Sommerhalder, K. and Abel, T. (2010), *Landscape and well-being: a scoping study on the health-promoting impact of outdoor environments,* International Journal of Public Health
[12] Quigley, R. and Thornley, L., 2011, Literature Review on Community Cohesion and Community Severance: Definitions and Indicators for Transport Planning and Monitoring, Report to New Zealand Transport Agency, Quigley and Watts Ltd

- Physical accessibility (i.e. distances travelled and transport connections);
- Social and/or cultural access (i.e. communication issues); and
- Separation imposed by a new piece of physical infrastructure.

Research has suggested that 'access to local shops, post offices, places of entertainment and community activity all contribute to well-being'[13].

Results from a 2010/11 poll showed that 5% of adults in Great Britain feel 'isolated' as a result of difficulty in accessing local shops and services[14].

Access to leisure and cultural facilities is a determinant of health and wellbeing; according to research 'leisure activities can have a positive effect on people's physical, social, emotional and cognitive health through prevention, coping (adjustment, remediation, diversion), and transcendence'[15]. People participate in cultural activities for a number of reasons including 'enjoyment and entertainment', personal growth and development, and as a 'means of creative expression', 'to learn new skills' or 'to meet new people' and to 'pass on cultural traditions'[16].

Community assets

The World Bank definition of social capital is '…the institutions, relationships and norms that shape the quality and quantity of a society's social interactions... Social capital is not just the sum of the institutions which underpin a society – it is the glue that holds them together'[17].

According to a literature review by Cave et al. (2001)[18] social capital may:

- Protect health by buffering against the effects of life events which may be damaging to health;
- Have physiological effects, through the hormonal system, on the body's response to stress and functioning of the immune system;
- Reduce isolation, which is associated with disease, accidents and suicide;
- Enable people to cope with illness better and have better prognoses when ill; and
- Reduce or protect against mental health problems, such as anxiety and depression.

[13] Harding, T., 1997, A Life Worth Living: the Independence and Inclusion of Older People, London: Help the Aged, cited in Randall, C., 2012, Measuring National Well-being – Where we Live,2012, Office for National Statistics
[14] Randall, C., 2012, Measuring National Well-being - Where we Live – 2012, Office for National Statistics
[15] Caldwell, L.L., 2005, Leisure and health: Why is leisure therapeutic?
[16] New Zealand Government, 2007, Social Report: Leisure and Recreation, Ministry of Social Development, New Zealand Government
[17] The World Bank, 1999, What is Social Capital?, PovertyNet
[18] Cave, B., Curtis, S., Aviles, M. and Coutts, A., 2001, Health Impact Assessment for Regeneration Projects. Volume II Selected evidence base, East London and City Health Action Zone, University of London

- Social networks are also credited with 'creating opportunities for advice and informal care'[19].

The Social Exclusion Unit states that 'participation in social, cultural and leisure activities is very important to people's quality of life and can play a major part in meeting policy goals like improving health, reducing crime and building cohesive communities'.

Employment

Evidence for the links between employment and health is most commonly focused on the negative impacts of unemployment, although this can be used to infer the positive impacts associated with gaining employment.

The Marmot Review (2010)[20], which was commissioned by the Department of Health to look into health inequalities in England, looks at the differences in health and wellbeing between social groups. The report identifies six policy objectives for reducing health inequalities, one of which is to 'Create fair employment and good work for all'. The Review identifies the importance of work for health: 'being in good employment is protective of health. Conversely, unemployment contributes to poor health'.

Employment is related to social and psychological wellbeing; a study commissioned by the Department of Work and Pensions[21] found that 'work meets important psychosocial needs in societies where employment is the norm' and that 'work is central to individual identity, social roles and social status'.

As acknowledged in a National Health Service (NHS) evidence review on the causal relationship between worklessness and health[22], the relationship is complex and 'confounded by other variables such as educational attainment, the environment and economic circumstances'.

Open Green Space

A recent literature review of peer reviewed papers undertaken by the Forestry Commission[23] has found evidence that proximity, size and amount of green space available to people in urban environments influences physical and mental health outcomes. The review identifies the key health benefits of green space as:

- 'Long and short term physical benefits associated with obesity, life expectancy, heart rate and blood pressure;
- Attention and cognitive benefits associated with restoration, mood and self-esteem;

[19] Health Development Agency, 2005, Making the case: improving health through transport, National Health Service
[20] Marmot, M., Allen, J., Goldblatt, P., Boyce, T., McNeish D., Grady, M. and Geddes, I., 2010, Fair society, healthy lives: Strategic review of health inequalities in England post-2010, The Marmot Review
[21] Waddell, G., Burton, A. K., 2007, Is work good for your health and well-being?, The Stationery Office
[22] Mclean. C., Carmona.C, Francis.S, Wohlgemuth. C. and Mulvihill. C., 2005, Worklessness and health – what do we know about the causal relationship? Evidence review, NHS Health Development Agency
[23] O'Brien, L., Williams, K., Stewart, A., 2010, Urban health and health inequalities and the role of urban forestry in Britain: A review, The Research Agency of the Forest Commission

- Physical activity benefits associated with the use of greenspace;
- Self-reported benefits in terms of health and life satisfaction; and
- Community cohesion benefits through social contact fostered by greenspace'.

The review suggests various mechanisms for the beneficial effects of green space including 'providing a space that promotes social interaction and inclusion, reducing social annoyances and crime' and 'reducing stress and restoring cognitive function and capacity to function with the demands of life'.

A literature review by Greenspace Scotland[24] also found a positive relationship between green space and general health. Importantly this study also identified that 'the attractiveness or quality of greenspace is an important determination of green space use'.

The Greenspace Scotland review also identified links to mental health, stating that 'studies consistently show a relationship between levels of stress and access to urban green spaces' and identified 'activity and exercise, natural daylight, stimulation of the senses and aesthetic experience' as potential factors in reducing stress.

Physical activity can be encouraged by improving accessibility to green spaces, ensuring green spaces are of a high quality and attractive[25]. The evidence indicates that green space is most valuable as a resource for physical activity when used by high volumes of people therefore spaces need to be accessible, of sufficient size, and connected to residential areas[26]. In addition to accessibility to green space, evidence suggests that access to leisure facilities can determine levels of physical activity and reduce the risks of obesity[27].

Accessibility /Severance, WCH Facilities

Active travel applies to modes of transport that require physical activity (i.e. cycling and walking), in contrast to modes that require little physical effort such as motor vehicles. It is therefore the physical activity associated with active travel that brings about health effects.

Active travel in areas with low pollution levels has been associated with increased physical activity among older adults. Where there is a perception that there is air pollution this appears to constitute a barrier to participating in outdoor physical activity and active transport[28].

The positive effects of physical activity on physical health was summarised in the Department of Health's 2011 report[29] which suggests that:

'Regular physical activity can reduce the risk of many chronic conditions including coronary heart disease, stroke, type 2 diabetes, cancer, obesity, mental health problems and musculoskeletal conditions. Even relatively small increases in physical activity are associated with some protection against chronic diseases and an improved quality of life.'

[24] Croucher, K., Myers, L., and Bretherton, J., 2007, The links between greenspace and health: a critical literature review, Greenspace Scotland
[25] Randall, C., 2012, Measuring National Well-being - Where we Live – 2012, Office for National Statistics
[26] At least five a week: evidence on the impact of physical activity and its relationship to health, Department of Health, Physical Activity, Health Improvement and Prevention, April 2004
[27] Greenspace Scotland, 2009, Health Impact Assessment of greenspace - A Guide
[28] Annear, M., Keeling, S., Wilkinson, T., Cushman, G., Gidlow, B., & Hopkins, H. (2014). Environmental influences on healthy and active ageing: A systematic review. Ageing & Society, 34 (4), 590-622
[29] CMO (2011) Start Active, Stay Active: A report on physical activity from the four home countries' Chief Medical Officers, Department of Health, Physical Activity, Health Improvement and Protection.

Accessibility/ severance, healthcare facilities

According to the 2008 Place Survey, 44% of adults in England reported access to health services as one of the key contributors to how good somewhere was to live[30].

Access to health facilities has a direct positive effect on health[31]. Access to healthcare is important for communities as healthcare offers information, screening, prevention and treatments. Restricted access to healthcare prevents patients gaining necessary treatments and information.

Access to healthcare services is affected by transport modes, availability of financial support for those on low incomes and the location of healthcare services. Groups impacted by disability, long-term illnesses and older people are more dependent on health and social care services[32], and are therefore more vulnerable if access to health and social care services becomes restricted. Groups impacted by disability and of certain ages may experience even greater barriers to health and social care services[33]. According to the Department for Transport, 'over the course of a year over 1.4 million people miss, turn down or simply choose not to seek healthcare because of transport problems'[34].

[30] Department for Communities and Local Government, 2008, Place survey, UK Government
[31] HUDU. (2013). Planning for Health. Rapid Health Impact Assessment Tool. London: National Health Service, London Healthy Urban Development Unit.
[32] Harner, L. (2004). Improving patient access to health services: a national review and case studies of current approaches. Health Development Agency.
[33] Hamer, L., 2004, Improving patient access to health services: a national review and case studies of current approaches, Health Development Agency
[34] Social Exclusion Unit, 2003, Making the Connections: Final Report on Transport and Social Exclusion

TRANSPORT SCOTLAND
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A96 DUALLING
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transport.gov.scot/projects/a96-dualling-inverness-to-aberdeen/a96-east-of-huntly-to-aberdeen