



A96 Dualling Inverness to Nairn (including Nairn Bypass)

DMRB Stage 2 Scheme Assessment Report Volume 1 – Main Report Part 3 – Environmental Assessment

October 2014



A96 Dualling Inverness to Nairn (including Nairn Bypass)

DMRB Stage 2 Scheme Assessment Report

Part 3: Environmental Assessment

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7 Overview of Environmental Assessment

7.1 Introduction

7.1.1 This chapter outlines the general approach followed for the Design Manual for Roads and Bridges (DMRB) Stage 2 environmental assessment of the A96 Dualling Inverness to Nairn (including Nairn Bypass) route options. The national, regional and local transportation strategies and national and local planning policies that provide context to the proposed scheme are also discussed.

7.1.2 This chapter considers the following;

- relevant national, regional and local strategies, policies and plans;
- the scope of the environmental assessment;
- the structure of the environmental report; and
- an overview of the environmental consultation process.

7.1.3 The chapter is supported by the following appendices which are located in Part 6 (Appendices) of this report:

- Appendix A7.1: Policies and Plans.

7.1.4 The location of the proposed scheme is shown on Figure 7.1, with the main environmental designations and constraints within close proximity to the route options shown on Figure 7.2.

7.2 National, Regional and Local Strategies, Policies and Plans

7.2.1 In accordance with DMRB Interim Advice Note 125/09, Supplementary guidance or users of DMRB Volume 11, Environmental Assessment (The Highways Agency, 2009) (hereafter referenced as IAN125/09), the relevant policies and plans for each environmental assessment have been considered within the relevant chapters, with further details provided in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report. However, to provide context to the proposed scheme, an overview of the relevant national, regional and local transportation strategies and planning policies are discussed below.

National Guidance

7.2.2 There are a number of proposals relating to transportation in various national policy and government framework documents. These are discussed below.

Scotland's Transport Future (2004)

7.2.3 The government's vision and objectives for transport in Scotland are set out in the White Paper, 'Scotland's Transport Future' (Scottish Executive, 2004). This provides the policy framework for transport in Scotland with an overall aim to "*promote economic growth, social inclusion, health and protection of our environment through a safe, integrated, effective and efficient transport system*".

7.2.4 Paragraph 71 of the White Paper states that "*in order to enhance Scotland's global competitiveness and to enable Scotland's economy to maximise its productivity, Scotland needs to ensure that it has a well-connected, sustainable transport network...Transport can help unlock the economic and regeneration potential of particular places. It can also ensure connections for people who live and work in more remote and rural area*".

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National Transport Strategy (2006)

- 7.2.5 The National Transport Strategy (Scottish Executive, 2006) considers Scotland's transport needs and outlines the long-term strategy to meet the aims identified in Scotland's Transport Future. The following key strategic outcomes have been identified to achieve this:
- improve journey times and connections;
 - reduce emissions, to tackle the issues of climate change, air quality and health improvement; and
 - improve quality, accessibility, and affordability, giving people a choice of public transport.

Strategic Transport Projects Review (STPR) (2008)

- 7.2.6 The STPR supports the delivery of the three strategic outcomes identified in the National Transport Strategy. The STPR set out 29 investment priorities within an investment hierarchy for the 20 year period following the programme in place at that time. STPR recommended a number of road and rail based interventions to take forward on the Aberdeen to Inverness corridor. Specific trunk road interventions that emerged from the review included upgrading the A96 between Inverness and Nairn to dual carriageway (Intervention 18) and a bypass of Nairn (Intervention 22).
- 7.2.7 As part of this programme, the STPR identifies that *“enhancements to the A96 such as a bypass around Nairn would reduce the conflict between local and strategic traffic and improve journey times and journey time reliability along the Route”*.

The Government Economic Strategy (2007)

- 7.2.8 The Government Economic Strategy was originally developed in 2007 and was updated in November 2011 with the purpose of creating a more successful country, through increasing sustainable economic growth (Scottish Government, 2011). This strategy is based on the principle that an efficient transport system is one of the key enablers for enhancing productivity and delivering faster, more sustainable growth. Enhancing transport infrastructure and services can open up new markets, increase access to employment and help to build a critical mass of businesses that drive up competitiveness and deliver growth.
- 7.2.9 The strategy acknowledges the importance of Scotland's cities and towns as centres of growth and prosperity. It states that the strategy *“looks to harness the strength and quality of our cities, towns and rural areas, including coastal communities, and to ensure that Scotland is positioned to take full advantage of the opportunities offered by the digital age and the transition to a low carbon economy”*. To support this aspiration, the strategy seeks to enhance connections between Scotland's urban areas.

Scotland's Cities: Delivering for Scotland (2011)

- 7.2.10 Scotland's Cities: Delivering for Scotland was published in 2011 to complement the Government's Economic Strategy. It highlighted that the successful cities are linked by key growth supporting characteristics including being *“connected cities, with strong digital and transport infrastructure”*. Scotland's Cities also recognised that there is a *“need to work collaboratively [between cities] to optimise growth for the benefit of the whole of Scotland”* and that the *“investment in infrastructure....is a key driver of both short-term and long-term economic growth and performance”*.

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Infrastructure Investment Plan (IIP) (2011)

- 7.2.11 Recognising the key strategic outcomes and the Government's investment hierarchy, the IIP published in 2011 sets out the Government's plans for infrastructure investment over the coming decades, explaining why infrastructure is seen by the Scottish Government as being a key driver of both short and long-term economic growth. The vision for the IIP is to create a "...secure, prosperous, confident, healthy, fair, well-connected, low carbon Scotland".
- 7.2.12 The investment decisions outlined in the plan are focused on supporting the delivery of the Government's Economic Strategy. The IIP recognises that an efficient transport system is "...a key enabler for enhancing productivity and hence expanding the economic potential of the country".
- 7.2.13 It is therefore focussed on improving connections across, within and to/from Scotland. The IIP commits to completing the dualling of the road network between Scotland's cities by 2030, including between Inverness and Aberdeen. The dualling of the A96 between Inverness and Nairn and 'Targeted Bypass Schemes' including the Nairn Bypass are identified as commitments in the plan.

National Planning Framework 3 (NPF3) (2014)

- 7.2.14 The Third National Planning Framework (NPF3) was laid in the Scottish Parliament on 23 June 2014 and guides Scotland's spatial development over the next 20 to 30 years. Its vision for Scotland includes improving transport links to facilitate its ambition for growth and its commitment to an inclusive society.
- 7.2.15 NPF3 indicates that although the existing road network is extensive, in some areas it requires upgrading in order to provide sufficient capacity, reduce congestion and address safety issues. The Government is committed to dualling the trunk roads between cities, including the A96 between Inverness and Aberdeen, by 2030. NPF3 highlights that these infrastructure improvements will not only strengthen connections between cities, but will also sustain lifeline rural links and reduced congestion will support productivity. The dualling of the A96 will also provide opportunities to link the energy sectors in the two city regions of Inverness and Aberdeen and the provision of bypasses along the route will assist with improving the quality of place within towns.

National Planning Policy

- 7.2.16 The 'Town and Country Planning (Scotland) Act 1997' ('the 1997 Act') (as amended by the Planning etc. (Scotland) Act 2006) ['the 2006 Act'] provides the framework for land use planning and the development of planning policy in Scotland. A key feature of the 2006 Act is the statutory role and application of the National Planning Framework (NPF).
- 7.2.17 The Scottish Government's influence on the planning system also extends to the production of Scottish Planning Policy (SPP), Circulars, Planning Advice Notes (PANs), and approval of strategic planning documents. Each of these policy documents is material to the development of local and regional policy and provides thematic guidance on planning for a broad range of land uses and developments.
- 7.2.18 Under the 1997 Act, each planning authority in Scotland has a responsibility to publish a Development Plan, the content of which is informed by national policy. The Development Plan is material to decisions about development and future land uses, including major infrastructure works such as the A96 Dualling Inverness to Nairn (including Nairn Bypass) development.
- 7.2.19 The relevant aspects of national planning policy are discussed below.

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Scottish Planning Policy (SPP) (2014)

7.2.20 Alongside the NPF3, national land use planning guidance in Scotland is provided through Scottish Planning Policy (SPP). SPP has recently been reviewed and the revised SPP was published in June 2014. This document is a material consideration in the assessment of planning applications and also directs the form and content of Development Plans. The relevant subject policies to this DMRB Stage 2 Assessment are contained within the consolidated SPP summarised in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.

Planning Advice Notes and Circulars

7.2.21 PANs support SPP and provide advice on good practice and other relevant information to planning authorities. Planning Circulars provide statements of Scottish Government policy and guidance on implementation and/or procedural change. A summary of PANs and Planning Circulars of relevance to this DMRB Stage 2 Assessment is provided in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.

Regional and Local Plans and Strategies

7.2.22 The Planning Act 1997 requires local authorities to produce Development Plans which reflect the policies of SPP, and are a material consideration in the determination of planning applications and future land use. The Highland Council is the relevant local authority for this scheme and the relevant Development Plan documents are listed in Table 7.1.

Table 7.1: Relevant Development Plan documents

Document	Title	Published
Local Development Plan	Highland-wide Local Development Plan (HwLDP).	Adopted 5 April 2012.
Local Development Plan	Inner Moray Firth Proposed Local Development Plan (IMFPLDP).	Published for consultation on 1 November 2013 and is currently under formal examination by the Scottish Ministers.
Local Plans	Inverness Local Plan.	Adopted March 2006 (as continued in force April 2012).
	Nairnshire Local Plan.	Adopted December 2000 (as continued in force April 2012).

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Highland-wide Local Development Plan (HwLDP)

7.2.23 The HwLDP sets out the overarching vision statement, spatial strategy and general planning policies for the whole of the Highland Council area. It replaces the Highland Structure Plan (The Highland Council, 2001) and also supersedes the general policies and other related material of the Local Plans.

7.2.24 The primary objective of the HwLDP is to protect and enhance the region's environmental assets whilst promoting beneficial development. Its policies aim to achieve a more sustainable pattern of development by providing a framework within which the key elements of the built and natural environment can be protected and enhanced.

7.2.25 Section 5.2.3 of the HwLDP states that the Local Development Plan “..will have supported a *Competitive, Sustainable and Adaptable Highland Economy*” by:

- “helping to deliver, in partnership with Transport Scotland and other transport bodies, transport infrastructure improvements across the area in line with the Council's Local

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Transport Strategy and the Scottish Government's Strategic Transport Projects Review"; and

- “providing opportunities which encourage economic development and create new employment across the area focusing on the key sectors of life sciences, energy, tourism, food and drink, higher education, inward investment, financial and business services, creative industries, aquaculture and renewable energy, whilst at the same time improving the strategic infrastructure necessary to allow the economy to grow over the long term”.

7.2.26 The HwLDP seeks to resolve key infrastructure constraints by 2030 through various improvements including the dualling of the A96 and the bypass of Nairn.

Inverness and Nairnshire Local Plans (as continued in force April 2012)

7.2.27 The Nairnshire Local Plan was adopted in December 2000 and the Inverness Local Plan in March 2006. Both Local Plans were updated in April 2012 following the adoption of the HwLDP. The HwLDP updates/supersedes the ‘general policies’ of the existing adopted Local Plans. However certain site allocations, settlement development areas not covered by the HwLDP and site specific policies detailed in these Local Plans have been retained.

Inner Moray Firth Proposed Local Development Plan (IMFPLDP)

7.2.28 In support of the more general policies and guidance provided in the HwLDP, the IMFPLDP sets out The Highland Council’s proposed policies and land allocations to guide development in the Inner Moray Firth area over the next 20 years. This document will be used alongside the HwLDP and will supersede the Inverness and Nairnshire Local Plans once adopted.

7.2.29 The IMFPLDP was published for consultation between 1 November and 13 December 2013 and is currently under formal examination by Scottish Ministers. It can be used as a material consideration in the determination of planning applications alongside the HwLDP and the Inverness and Nairnshire Local Plans (as continued in force).

Local and Regional Transport Policies and Strategies

7.2.30 Table 7.2 provides details of the regional transport policies and strategies. Further details on these documents are provided in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.

Table 7.2: Transport Policies and Strategies

Document	Title	Published	Description
Regional Strategy	HITRANS Regional Transport Strategy (RTS)	2008	The RTS is a statutory document that sets out a framework for taking forward transport policy and infrastructure within The Highlands. The primary objective for the Strategy is “to improve the interconnectivity of the whole region to strategic services and destinations in order to enable the region to compete and support growth”.
Corporate Strategies	The Highland Council Local Transport Strategy (LTS) 2010/11 – 2013/14	2010	The LTS sets the direction for transport in the Highlands at a local level. The principal themes at the heart of the LTS relate to safety, sustainability, economic development and integration. The strategy identifies the A96 corridor Inverness to Nairn development as one of the key transport issues to be addressed.

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7.3 Environmental Assessment

Relevant Guidance

- 7.3.1 Annex E of Circular 8/2007 'The Environmental Impact Assessment (Scotland) Regulations 1999' (Scottish Government, 2007) provides guidance on the Environmental Impact Assessment (EIA) of trunk road projects. Although the Environmental Impact Assessment (Scotland) Regulations 2011 consolidated, updated and replaced Part II of the Environmental Impact Assessment (Scotland) Regulations 1999, Parts III and IV of the 1999 Regulations concerning Roads, Bridges and Land Drainage, remain extant. Consequently the guidance contained in Circular 8/2007 in Annex E continues to apply and is relevant to the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme.
- 7.3.2 DMRB sets out governmental guidance on the development of trunk road schemes and is applicable to the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme. Volume 11 of the DMRB specifically provides guidance on EIA, including the level of assessment required at key stages of development and the requirements for reporting environmental effects.
- 7.3.3 The objectives of the DMRB Stage 2 Assessment are to identify the factors and effects to be taken into account in the selection of a preferred option and to identify the environmental advantages, disadvantages and constraints associated with the alternative route options under consideration.

Scope of Environmental Assessment

- 7.3.4 The alternative route options are located within two sections: Inverness to Gollanfield and Nairn Bypass. For specific design details of each route option refer to Part 1, Chapter 3 (Description of Route Options) of this report.

Route Options

- 7.3.5 Eight route options for the Inverness to Gollanfield section were considered in the environmental assessment and reported separately:
- Option 1A;
 - Option 1A (MV);
 - Option 1B;
 - Option 1B (MV);
 - Option 1C;
 - Option 1C (MV);
 - Option 1D; and
 - Option 1D (MV).
- 7.3.6 The MV options (Option 1A (MV), 1B (MV), 1C (MV) and 1D (MV)) relate to a variant at Morayston, with all other aspects of these routes the same as their non MV counterpart (e.g. Option 1A (MV) is the same as Option 1A except for the variant at Morayston).
- 7.3.7 Nine route options for the Nairn Bypass section were considered in the environmental assessment and reported separately:
- Option 2A;
 - Option 2B;

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- Option 2C;
- Option 2D;
- Option 2E;
- Option 2F;
- Option 2G;
- Option 2H; and
- Option 2I.

Environmental Assessment Topics

7.3.8 In accordance with DMRB Volume 11, the following parameters have been subject to environmental assessment (reported in Chapters 8 to 17 respectively):

- Chapter 8: Air Quality.
- Chapter 9: Noise and Vibration.
- Chapter 10: Landscape and Visual.
- Chapter 11: Habitats and Biodiversity.
- Chapter 12: Geology and Soils.
- Chapter 13: Road Drainage and the Water Environment.
- Chapter 14: Cultural Heritage.
- Chapter 15: Effects on All Travellers.
- Chapter 16: Community and Private Assets.
- Chapter 17: Materials.

7.3.9 In line with the guidance provided in IAN125/09, each chapter includes details of and compliance with relevant policies and plans.

Study Area

7.3.10 The study area required or recommended by DMRB and best practice guidance varies depending on the specific environmental parameter being assessed. Details of the study area extents for each parameter are provided in the specialist environmental chapters. A 500m study area taken from the outermost edge of all of the route options is shown in Figure 7.1.

7.4 Environmental Reporting

Chapter Structure

7.4.1 Each environmental chapter as listed in paragraph 7.3.8 provides the following:

- an introduction to the subject area;
- approach and methods used in the assessment;
- an overview of relevant policies and plans;
- baseline conditions (i.e. the 'existing' situation);
- potential impacts of the route options;

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- compliance with policies and plans;
- potential mitigation, focussing on mitigation that would be developed for the preferred option during the DMRB Stage 3 Assessment;
- summary of the route options;
- scope of the DMRB Stage 3 Assessment, highlighting components that should be considered within the DMRB Stage 3 Assessment; and
- references.

General Approach

Baseline Conditions

- 7.4.2 The assessment of impacts on each environmental parameter is undertaken in comparison to baseline conditions, which were determined through field survey, desk-based review and consultation. Baseline conditions describe the existing environmental conditions in the study area (and in the wider area as pertinent to the particular environmental parameter).

Potential Impacts

- 7.4.3 The general approach to assessment is based on the determination of impact significance from a combination of the sensitivity or importance of the baseline conditions and the magnitude of potential impacts. This process is described in the respective environmental chapters, and where this approach was not appropriate alternative approaches are described and justified.
- 7.4.4 It should be noted that the magnitude and significance reported within the 'Impact Assessment' section of each chapter has been considered in the absence of mitigation. The 'Summary of Route Options' assessment then takes into account potential mitigation to determine, where possible, the likely residual impacts.
- 7.4.5 For the purposes of this DMRB Stage 2 Assessment, construction impacts are considered temporary. Impacts may start during construction (e.g. land-take) but if they persist during operation they are considered operational impacts. Any exceptions to this are noted. Operational impacts are considered long-term or permanent, again with any exceptions being noted.

Compliance with Policies and Plans

- 7.4.6 The approach used within this DMRB Stage 2 Assessment to assess compliance with policies and plans involved the following:
- describing the existing and, where appropriate, emerging planning policy guidance and development plan framework as applicable to the route options;
 - assessing the likely impacts of the proposed route options on the achievement of the objectives and policies identified; and
 - reporting the likely conflicts or compliance of the route options on key strategic and local planning policy objectives.

Potential Mitigation

- 7.4.7 As noted within the respective environmental chapters, the design at DMRB Stage 2 has not been sufficiently developed to allow mitigation measures to be developed in detail. The assessment therefore identifies potential mitigation taking into account best practice, legislation and appropriate guidance, which would be further developed and refined during

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the DMRB Stage 3 Assessment. As part of DMRB Stage 3, the design of the preferred option would be reviewed and, where possible, the preferred option would be further developed (pre-DMRB Stage 3 Assessment mitigation) to minimise the impacts on the environment.

- 7.4.8 Generally, potential impacts of 'Moderate' or above significance would be identified as priorities for mitigation. However, the need for mitigation will be confirmed during the assessment of the preferred option at DMRB Stage 3.

Summary of Route Options

- 7.4.9 This section provides a summary of the environmental assessment for the route options, and where possible, takes into account potential mitigation to provide an indication of the likely residual impacts.

7.5 Consultation

- 7.5.1 Consultation for the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme has been undertaken in accordance with guidance provided in PAN 1/2013: Environmental Impact Assessment (Scottish Government, 2013) and with reference to PAN 3/2010: Community Engagement (Scottish Government, 2010).

- 7.5.2 As best practice, public participation is being encouraged and actively sought as part of the progression of the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme. Where appropriate, issues raised through the public participation process are taken into consideration as part of the environmental assessment process.

- 7.5.3 Consultations will continue throughout the EIA process. At DMRB Stage 2, the consultation process aims to:

- ensure that statutory consultees and other bodies with a particular interest in the environment are informed of the proposal and provided with an opportunity to comment;
- obtain baseline information regarding existing environmental site conditions;
- establish key environmental issues and identify potential impacts to be considered during the environmental assessment;
- identify those issues which are likely to require more detailed study and those which can be justifiably excluded from further assessment; and
- provide a means of identifying the most appropriate methods of impact assessment.

Consultation List

- 7.5.4 A consultation list was prepared to ensure that all relevant consultees were included in the stakeholder database. This involved the following:

- Review of stakeholders involved on other major projects and related studies along the A96 route corridor.
- Input from the environment team. The environment team has been proactive in identifying additional consultees of importance to their area of expertise. These have been and will continue to be added to the database as appropriate.

- 7.5.5 The consultation list which relates specifically to the environmental assessment is provided in Table 7.3.

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Table 7.3: List of Consultees

Statutory Consultees
Historic Scotland
Marine Scotland
Moray Council - Development Services
Scottish Environmental Protection Agency (SEPA)
Scottish Natural Heritage (SNH)
The Highland Council - Planning and Building Standards
Non-statutory Consultees
Aquaculture and Freshwater Fisheries
British Geological Society
British Horse Society
Cairngorms Amphibian and Reptile Group
Forestry Commission (Highland & Islands Conservancy)
Highland Badger Network
Highland Biological Recording Group
Moray Council - Contaminated Land
North East Scotland Biological Records Centre
North Highland Bat Network
Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS)
Royal Society for the Protection of Birds (RSPB)
Saving Scotland's squirrels
Scottish Badgers
Scottish Wildlife Trust
ScotWays
Sustrans
The Highland Council - Access Officer, Biodiversity Officer, Contaminated Land and County Archaeologist.

DMRB Stage 2 Consultation

- 7.5.6 Consultation letters were issued to environmental consultees (refer to Table 7.3) to inform them of the DMRB Stage 2 environmental assessment in September 2013. A plan showing the study area was enclosed with the letters, and for statutory consultees a series of figures showing the route options in relation to environmental constraints of interest (e.g. watercourses, designated sites, contaminated land) were also enclosed. This provided consultees the opportunity to provide any baseline information and identify any key issues that should be considered in the assessment.
- 7.5.7 Follow up emails were sent to environmental consultees between September 2013 and October 2013 to either confirm receipt of a response, or if no response was received, to provide the opportunity for consultees to request to be removed from the consultation list if they wished.
- 7.5.8 The baseline data and responses received have been taken into account in the development of the route options and the subsequent environmental assessment.

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DMRB Stage 2 Consultation Responses

Scope of Assessment

- 7.5.9 Due to the scale and nature of the proposals, all environmental topic areas as identified in DMRB Volume 11 were scoped 'in' for further environmental assessment. The scope of assessment for each topic area was informed by review of previous studies and by relevant regulations and best practice guidance. During the DMRB Stage 2 consultation, consultees also had an opportunity to provide comment on the scope of the environmental assessment.

Consultee Feedback

- 7.5.10 Feedback from the DMRB Stage 2 consultation letters were collated and, where appropriate, were incorporated into the design of the route options and environmental assessment. Previous consultation findings and the baseline information provided by consultees has been used to inform the assessment and is reported separately for each environmental topic area.

DMRB Stage 3 Consultation

- 7.5.11 At the next stage of the assessment process, DMRB Stage 3 consultation letters will be issued to environmental consultees to invite comments, request more detailed information and inform the development of appropriate mitigation for the preferred option.
- 7.5.12 In addition to the DMRB Stage 3 letters, further consultation will be required with statutory consultees, non-statutory consultees and landowners. The nature of these consultations is yet to be confirmed, however they are likely to be in the form of stakeholder forums, workshops and/or one-to-one meetings. Ongoing liaison will occur throughout the design process in the form of meetings, telephone discussions, emails and letters.

Public Exhibitions

- 7.5.13 The work Transport Scotland is progressing on the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme includes a rolling programme of regular engagement with local communities and other stakeholders, which started with the public exhibitions held in November 2013. The public exhibitions were held between 12 and 29 November 2013 at the following locations; Nairn, Inverness, Forres, Keith, Elgin, Huntly Inverurie, Dyce and Fochabers.
- 7.5.14 The exhibition presented the route options under consideration and provided an opportunity for members of the public to provide comment and feedback on these. It is envisaged that a further public exhibition will be held to present the preferred option to the public once it has been selected and again at the conclusion of the DMRB Stage 3 assessment, concurrent with the publication of draft Orders and Environmental Statement.
- 7.5.15 Public exhibitions supplement the formal consultation process (i.e. publication of draft Orders and Environmental Statement). Queries and comments raised following the public exhibitions held in November 2013 have, where appropriate, been taken into account during the development of the design and the environmental assessment process.

7.6 References

Scottish Executive (2004). Scotland's Transport Future.

Scottish Executive (2006). National Transport Strategy. December 2006

Scottish Government (2007). Circular 8/2007: Environmental Impact Assessment (Scotland) Regulations 1999.

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Scottish Government (2010). Planning Advice Note (PAN) 3/2010: Community Engagement.

Scottish Government (2011). Government Economic Strategy.

Scottish Government (2011). Scotland's Cities: Delivering for Scotland.

Scottish Government (2011). Infrastructure and Investment Plan (IIP).

Scottish Government (2013). Planning Advice Note (PAN) 1/2013: Environmental Impact Assessment.

Scottish Government (2014). National Planning Framework 3 (NPF3).

Scottish Government (2014). Scottish Planning Policy. June 2014.

The Highland and Islands Transport Partnership (2008). Regional Transport Strategy, April 2008.

The Highland Council (2000). Nairnshire Local Plan. As continued in force, April 2012.

The Highland Council (2001). The Highland Structure Plan.

The Highland Council (2006). Inverness Local Plan. As continued in force, April 2012.

The Highland Council (2010). Local Transport Strategy 2010/11 to 2013/14. August 2010.

The Highland Council (2012). Highland-wide Local Development Plan. April 2012.

The Highland Council (2013). Inner Moray Firth Local Proposed Local Development Plan. November 2013.

The Highways Agency (2009). Interim Advice Note (IAN) 125/09: Supplementary Guidance for Users of DMRB Volume 11 Environmental Assessment.

Transport Scotland (2008). Strategic Transport Projects Review.

8 Air Quality

8.1 Introduction

8.1.1 This chapter presents the DMRB Stage 2 Assessment of the potential air quality impacts of each of the route options at representative sensitive receptors.

8.1.2 The assessment includes the following aspects:

- Baseline air quality: the review and assessment of the existing air quality situation within the study area.
- Local air quality: an assessment of the potential air quality impacts of the route options upon representative residential receptors within the study area.
- Designated sites: an assessment of the potential air quality impacts of the route options upon relevant designated sites within the study area. Whilst the relevant designations have been considered in this chapter, potential impacts upon ecological receptors are considered in detail in Chapter 11 (Habitats and Biodiversity) of this report.
- Regional air quality: an assessment of the potential air quality impacts of the route options upon the wider region.

8.1.3 As described in Part 1 (The Scheme), Chapter 3 (Description of Route Options) of this report, the proposed scheme is divided into two sections; Inverness to Gollanfield and the Nairn Bypass. The information presented in Section 8.2 (Approach and Methods), Section 8.3 (Policies and Plans) and Section 8.9 (Potential Mitigation) is appropriate to both sections. The information presented in Section 8.4 (Baseline Conditions), Sections 8.5 to 8.7 (Impact Assessment), Section 8.8 (Compliance with Policies and Plans) and Section 8.10 (Summary of Route Options) is reported for each section and where appropriate under the headings Inverness to Gollanfield and the Nairn Bypass.

8.1.4 Section 8.11 provides details on the proposed scope for the DMRB Stage 3 Assessment and Section 8.12 provides a full list of references that are noted within this chapter.

8.2 Approach and Methods

Scope and Guidance

8.2.1 This air quality assessment identifies potential air quality impacts by predicting the changes in concentrations of air pollution as a result of the combination of background concentrations and the contributions of the roads, including the route options, in the study area.

8.2.2 This assessment conforms to the standard practice of Environmental Impact Assessment (EIA), whereby a baseline is established, and then a future situation with the route options in place (Do-Something (DS)) is compared with the situation without them (Do-Minimum (DM)).

8.2.3 The potential impacts of the route options have been assessed following DMRB Volume 11, Section 3, Part 1 HA207/07 Air Quality (The Highways Agency et al., 2007) (hereafter referred to as HA207/07) and associated DMRB Interim Advice Note (IAN) IAN170/12v3 Updated air quality advice on the assessment of future NO_x and NO₂ projections (The Highways Agency, 2013a) and IAN174/12 Updated air quality advice on the application of the test for evaluating significant effects (The Highways Agency, 2013b) (hereafter referred to as IAN174/12 and IAN170/12v3) and Local Air Quality Management Technical Guidance (09) (Defra, 2009) (hereafter referred to as LAQM.TG(09)). Following the process set out in DMRB, a Simple Assessment has been carried out.

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Relevant Legislation

8.2.4 This section provides a summary of the relevant air quality legislation and standards that have been referenced for this assessment.

Table 8.1: Relevant air quality legislation

Legislation	Description
Environment Protection Act 1990 (Part III).	Provides statutory nuisance provisions for nuisance dust.
Environment Act 1995 (Part IV).	Defines requirements for Local Air Quality Management (LAQM).
The Air Quality (Scotland) Regulations 2000, and The Air Quality (Scotland) (Amendment) Regulations 2002.	Define the air quality objectives application to LAQM in Scotland.
The National Air Quality Strategy (NAQS) for England, Scotland, Wales and Northern Ireland, 2007.	Updates the 2000 Air Quality Strategy. Sets out how local air quality is managed, through the application of Air Quality Objectives (AQO) based on the Air Quality (Scotland) Regulations 2000 and 2002 Amendments.

8.2.5 Under The Environment Act 1995, local authorities are required to review and assess air quality in their regions on a regular basis, against the relevant AQOs set out in the NAQS for England, Scotland, Wales and Northern Ireland (Department for Environment, Food and Rural Affairs (Defra) et al., 2007) (hereafter referred to as NAQS). If the review and assessment exercise indicates any exceedances of the objectives, the local authority must declare an Air Quality Management Area (AQMA) and produce an air quality action plan to address the problem and work towards reducing concentrations.

8.2.6 The NAQS establishes AQOs for a number of specific pollutants. The pollutants relevant to this assessment are nitrogen dioxide (NO₂), nitrogen oxides (NO_x), and PM₁₀, and are shown in Table 8.2.

Table 8.2: National AQOs

Pollutant	AQOs		Date to be achieved by
	Concentration	Measured as	
Nitrogen Dioxide (NO ₂)	200µg/m ³ not to be exceeded more than 18 times/yr	1 hour mean	31-12-2005
	40µg/m ³	Annual mean	31-12-2005
Nitrogen Oxides (NO _x)	30µg/m ³	Annual mean	19-07-2001
PM ₁₀	50µg/m ³ not to be exceeded more than 7 times/yr	24 hour mean	31-12-2010
	18µg/m ³	Annual mean	31-12-2010

8.2.7 NO₂ is a colourless, odourless gas which has been shown to have adverse health effects including respiratory irritation in asthmatics. It is formed principally from the oxidation of nitric oxide (NO) through the action of ozone in the atmosphere. Combustion in air forms mainly NO and with some NO₂ (collectively termed 'NO_x') from the combination of atmospheric nitrogen and oxygen. NO_x is also emitted from internal combustion engines as well as other forms of combustion and is formed from natural sources such as lightning. NO_x is a precursor to PM₁₀.

8.2.8 PM₁₀ is the fraction of particulate matter (dust) in the air with an average aerodynamic diameter of less than 10µm. This size range of particulate matter can penetrate deep into the lungs and has been shown to have a range of adverse health effects. These include a causal association with cardiovascular and respiratory illnesses.

8.2.9 According to the NAQS, "it is not currently possible to discern a threshold concentration below which there are no effects on the whole population's health" (Defra et al., 2007, page 16). That is to say, scientific research cannot say whether any concentration of PM₁₀ at all does no harm and there is no proven safe threshold. PM₁₀ is formed from both man-made

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and natural sources. Primary PM₁₀ is formed from the incomplete combustion of fuel (e.g. soot from diesel exhausts), sea-salt and wind-blown dust. Secondary PM₁₀ is formed in the atmosphere from other pollutants such as NO_x and sulphur oxides, and in certain circumstances in photochemical smogs.

Study Area

8.2.10 The air quality study area is defined by the qualifying criteria set out in paragraph 3.12 of HA207/07. This is based on changes between the DM and DS scenarios as follows:

- road alignment will change by 5m or more; or
- daily traffic flows will change by $\geq 1,000$ AADT (Annual Average Daily Traffic); or
- Heavy Duty Vehicle (HDV) flows will change by ≥ 200 AADT; or
- daily average speed will change by ≥ 10 kph; or
- peak hour average speed will change by ≥ 20 kph.

8.2.11 The provided traffic data relating to each of the route options was screened against these criteria.

National Background Concentrations

8.2.12 Defra provides empirically-derived national background maps, which provide estimates of background pollutant concentrations on a 1km x 1km grid square resolution. This model relates the National Atmospheric Emissions Inventory to the national network of pollution measurements.

8.2.13 The national background maps used for this assessment are the 2010 versions (Defra, 2010). This was the most current version available at the time of the assessment. Defra have stated that 2010 was an unusually high year for NO_x and NO₂, and that in order to correct the background maps to other years, the NO_x concentrations should be reduced by 15%; this process has been applied in the assessment.

8.2.14 In order to obtain background concentrations for the base year 2009, the 2010 national background maps were backcast using the relationship between the 2010 and 2015 maps, following a methodology developed by the Highways Agency and Defra (The Highways Agency, 2012).

8.2.15 The 'in-grid square' contribution from motorway, trunk 'A' road and primary 'A' road sectors have been removed from the background annual mean NO_x and PM₁₀ concentration estimates, and background annual mean NO₂ estimates have been corrected using Defra's NO_x to NO₂ Calculator version 3.2 (Defra, 2012) (hereafter referred to as NO_x to NO₂ Calculator v3.2). This process has been undertaken to avoid double counting of road traffic emissions. The predicted background pollutant concentrations in the study area are significantly below the AQOs.

Impact Assessment

8.2.16 The potential impacts of the construction of the route options have not been considered as part of this assessment. This is due to the lack of detailed information on construction traffic and required haulage routes available at this stage of the assessment process.

8.2.17 The impact of the route options during operation is assessed by comparing the modelled air quality concentrations with and without the scheme in place in the modelled opening year (2016) for the local air quality assessment and the modelled opening year (2016) and design year (2031) for the regional air quality assessment. These are the future year scenarios available from the Moray Firth Transport Model and are not necessarily the actual opening

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and design years; however, they are considered to be the best available information at the time of the assessment and provide a dataset on which to compare the route options. Further details of the transport modelling are provided in Part 4 (Traffic and Economic Assessment), Chapter 18 (Modelling) of this report.

Local Air Quality Modelling Methodology

- 8.2.18 The assessment of the potential air quality impacts of the route options has been undertaken using the Simple Assessment method detailed in Annex D of HA207/07. The method consists of an excel spreadsheet model (hereafter referred to as DMRB spreadsheet tool) to carry out the local air quality calculations to produce pollutant concentrations at receptor locations.
- 8.2.19 The predictions provided by the DMRB spreadsheet tool should not be regarded as definitive statements of concentrations that will arise in the future, however they are considered to be reasonable and representative.
- 8.2.20 It should be noted that the existing DMRB spreadsheet tool includes out-dated vehicle emission factors, as well as other uncertainties. The tool is currently under revision by the Highways Agency. The factors used are the best available information at the time of the assessment and the methodology provides a robust comparison of the route options.
- 8.2.21 For this assessment, the current DMRB spreadsheet tool has been amended to include the Defra Emissions Factor Toolkit Version 5.2c (released in January 2013) (Defra, 2013) (hereafter referred to as Emission Factor Toolkit v5.2c). These emissions are vehicle-weighted averaged emissions for the Scottish vehicle fleet. Emissions factors are defined by year to represent the predicted vehicle fleet, and the range of vehicle types and Euro emissions standards present across the fleet.
- 8.2.22 NO_x and NO₂ concentrations were calculated using the NO_x to NO₂ Calculator v3.2. The calculator was issued in conjunction with the LAQM.TG(09) guidance.

Verification

- 8.2.23 The DMRB spreadsheet tool is used to predict the road traffic contributions to NO_x and PM₁₀ concentrations at specified receptors. Adjustments are applied to the model predictions based on a comparison against measured air quality concentrations, in a process known as model verification and adjustment.
- 8.2.24 The modelled road contributions of NO_x, NO₂ and PM₁₀ were adjusted to correct them against measured road components derived from air quality monitoring data from the Automatic Monitoring Station in Inverness, and data obtained from the Scottish Air Quality website (www.scottishairquality.co.uk). These adjustments followed the methodology set out in LAQM.TG(09).
- 8.2.25 It should be noted that robust verification was only available from one monitoring location (Telford Street Automatic Monitoring Station), and, together with the reliability of the traffic data provided, the model therefore has a level of uncertainty. The adjustment factors applied to the model outputs are shown in Table 8.3.

Table 8.3: Verification adjustment factors

Pollutant	Modelled Road Contribution Adjustment Factor
NO _x	2.226
NO ₂	0.871
PM ₁₀	0.707

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- 8.2.26 The modelled road contribution is multiplied by the adjustment factor. A total environmental concentration is then produced by the addition of the adjusted modelled road contribution to the background concentration.
- 8.2.27 In July 2011, Defra published a report examining the long-term air quality trends in NO_x and NO₂ concentrations (Defra, 2011). This identified that there has been a clear decrease in NO₂ concentrations between 1996 and 2002. Thereafter, NO₂ concentrations have stabilised with little to no reduction between 2004 and 2012. The report presents a similar pattern for the change in NO_x concentrations over the same time period. However, the stabilisation in concentration is not reflected in the emissions factors and modelling methodology. The consequence of the conclusions of this report is that there is now a gap between current projected vehicle emission reductions and measurements on the annual rate of improvements in ambient air quality (which are built into the vehicle emission factors), from the projected background maps and the NO_x to NO₂ calculator.
- 8.2.28 The current trends in air quality are based on measurements of emissions from the existing vehicle fleet. New vehicles will need to comply with the more stringent Euro 6/VI emissions standards from September 2014 onwards. Vehicles complying with the Euro 6/VI emissions standard are not yet on the road network, and therefore the performance of these vehicles is not present in the long-term air quality monitoring trends. If the Euro 6/VI fleet emissions perform as predicted, then this should lead to substantial reductions in predicted future roadside air quality concentrations.
- 8.2.29 The Defra report outlined a number of options for addressing the difference between measured trends, versus model predictions. This assessment has used the most conservative approach, which is to lock the emission factors and background concentrations to those used in the base year. This means that none of the anticipated improvements associated with Euro 6/VI are taken account of and the predicted air quality concentrations and impacts will likely be greater than those which would occur in reality. This is a more conservative method than an alternative Gap Analysis method, which was published in IAN170/12v3.

Assessment Scenarios

- 8.2.30 This assessment consists of two different geographic scales:
- local air quality, focusing only on the headline pollutants of NO_x, NO₂, and PM₁₀; and
 - regional air quality, focusing on NO_x, PM₁₀, carbon dioxide (CO₂), and total hydrocarbons (HC).
- 8.2.31 The assessment method is to quantify the ambient pollution concentrations for the road traffic scenarios as follows:
- baseline year (2009);
 - modelled opening year (2016) – without route option (DM); and
 - modelled opening year (2016) – with route option (DS).
- 8.2.32 As well as this, future scenarios (15 years after the modelled opening year) are also considered for the regional assessment:
- design year (2031) (DM); and
 - design year (2031) (DS).
- 8.2.33 Traffic data was provided for the following parameters for each road link for the base and modelled opening and design years:
- Annual Average Daily Traffic (AADT);

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- total traffic flow;
- percentage Heavy Duty Vehicles (HDV); and
- vehicle speed (kph).

8.2.34 The air quality assessment of ecological features focuses on nitrogen deposition and NO_x concentrations at designated sites within 200m of affected roads. The assessment includes road traffic scenarios for DM and DS in the modelled opening year (2016).

Receptors

8.2.35 Residential receptors have been identified that represent where the maximum potential impacts of the route options may occur. Building usage was determined using the Ordnance Survey (OS) Mastermap AddressBase Plus dataset (as provided in October, 2013), and calculations are made at the nearest façade to the busiest road.

8.2.36 A total of 33 residential receptors were included in the assessment and were selected using professional judgement and are either close to the affected roads, or representative of the maximum impacts of a route option in that area. Receptors within 200m of affected road links were included in the assessment. The identified receptors are shown on Figure 8.1 to 8.9 and are detailed in Table 8.4.

8.2.37 It should be noted that to provide a direct comparison between all of the route options, the same 33 receptors have been used in each route option assessment.

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Table 8.4: Modelled representative residential receptors

ID	Easting	Northing	Receptor Address
Inverness to Gollanfield Receptors			
R1	268664	845520	Mackintosh Road, Inverness, IV2 3UB
R2	269176	845735	The Snow Goose, Inverness, IV2 7PA
R3	270246	846348	Firthview, Stratton, Inverness, IV2 7NS
R4	271186	845821	Sinclair Park, Inverness, IV2 7UX
R5	271605	847495	Allanfearn Farm, Inverness, IV2 7HX
R6	273162	847559	Upper Cullernie, Edgefield, Inverness, IV2 7HU
R7	273783	848653	Newton House, Dalcross, Inverness, IV2 7JQ
R8	275076	849189	Morayston Farm Cottages, Dalcross, Inverness, IV2 7JQ
R9	276149	849735	Kerrowaird Cottages, Dalcross, Inverness, IV2 7JQ
R10	277613	850925	Mid Coul Cottages, Dalcross, Inverness, IV2 7JJ
R11	277643	851285	Culblair Cottages, Dalcross, Inverness, IV2 7JJ
R12	279132	851500	Drumine, Inverness, IV2 7QT
Nairn Bypass Receptors			
R13	283174	854202	The Cottage, Blackcastle, Adersier, IV2 7QP
R14	284460	854679	Drumdevan, Nairn, IV12 5NX
R15	284667	855273	Ashleigh, Delnies, Nairn, IV12 5NX
R16	285664	855699	Schoolhouse, Delnies, Nairn, IV12 5NT
R17	286017	855156	Woodstock, Moss-side, Nairn, IV12 5NZ
R18	286081	854404	Balnspirach, Athenry, Nairn, IV12 5NY
R19	287048	855978	Rowan Place, Nairn, IV12 4TJ
R20	287543	853816	Howford Farm, Nairn, IV12 5QU
R21	289317	856202	River Park, Nairn, IV12 5SR
R22	288980	855418	Houshill, Torvean, Nairn, IV12 5RY
R23	289712	854915	Blackpark, Nairn, IV12 5HY
R24	289102	854437	Skenepark Farmhouse, Nairn, IV12 5RY
R25	289293	853823	Foynesfield, Nairn, IV12 5SA
R26	290626	854549	Grigorhill, Nairn, IV12 5HY
R27	291804	856138	East Lodge Cottage, Nairn, IV12 5JU
R28	293468	856175	Penick Farm Cottages, Nairn, IV12 5QG
R29	292120	855413	Erenmhor, Nairn, IV12 5JX
R30	293226	855001	Sylvan House, Auldearn, Nairn, IV12 5JZ
R31	294018	855580	Innesfree, Auldearn, Nairn, IV12 5QG
R32	294141	856062	Redgaven, Penick, Nairn, IV12 5QG
R33	295845	856435	Heathfield, Nairn, IV12 5QG

8.2.38 It is understood that there are a number of consented planning applications within the study area. Some of these include consent for the development of New Towns (e.g. Stratton and Tornagrain) and/or residential dwellings. These have the potential to increase the number of residential receptors within the study area.

8.2.39 However, due to uncertainties regarding future land use (e.g. whether consented planning applications or development land allocations will be implemented and if they are, the layout of these sites), the potential air quality impacts on these receptors are considered within Chapter 16 (Community and Private Assets) of this report and this forms part of an overall assessment of the amenity impacts on these receptors.

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Designated Sites

- 8.2.40 As well as the effect on human health, the route options may result in potential air quality impacts upon the natural environment. Concentrations of pollutants in air and deposition of particles can damage vegetation directly or affect plant health and productivity. The pollutant of most concern for sensitive vegetation near roads is NO_x. Increases in concentrations of NO_x directly increase nitrogen deposition.
- 8.2.41 An assessment of designated sites within 200m of the affected roads has been undertaken from the methodology in Annex F of HA207/07. The sites included within the assessment are shown in Table 8.5.

Table 8.5: Designated sites

Ecological Site	Designation	APIS Priority Habitat Type
Longman and Castle Stuart Bays/ Inner Moray Firth	Site of Special Scientific Interest (SSSI), Special Protection Area (SPA)/Ramsar	Coastal Saltmarsh
Kildrummie Kames	SSSI	Purple Moor Grass and Rush Pastures

- 8.2.42 The assessment compares the current baseline situation (base), future baseline situation (DM) and the future situation with scheme (DS) for NO_x concentrations (levels) and nitrogen deposition (loads) where applicable.
- 8.2.43 In order to assess the risk of air pollution impacts to ecosystems Critical Loads and Critical Levels are used as benchmarks. This information has been obtained from the Air Pollution Information System (APIS) website (www.apis.ac.uk).
- 8.2.44 A transect point was measured from the boundary of the designated site to approximately the centreline of nearest affected road, and then further transect points at 10m increments up to 200m. The road NO_x contribution at each transect point was calculated, which was then used to calculate annual mean NO₂ concentration. If the resulting NO_x concentration exceeds the AQO of 30µg/m³ (refer to Table 8.2), further data calculations into the impact upon nitrogen deposition would be required.

Regional Assessment

- 8.2.45 The regional air quality assessment is an estimate of the change in total emissions of PM₁₀, NO_x, CO₂ and HC per year from all vehicles on the affected roads. The assessment was undertaken using the Emissions Factor Toolkit v5.2c using the traffic data provided for each link, for each of the route options and for both the modelled year of opening (2016) and design year (2031).

Impact Assessment & Significance

- 8.2.46 In order to convey the level of impact of the route options, it is necessary to determine significance. The significance of an environmental impact is a function of the sensitivity of the receptor and the scale or magnitude of the impact. All assessed receptors are considered of equal sensitivity.
- 8.2.47 Box 1.4 of LAQM.TG(09) details that annual mean objectives should apply to *“all locations where members of the public might be regularly exposed, building facades of residential properties, schools, hospitals, care homes etc”*.
- 8.2.48 As noted in LAQM.TG(09), there is not a specific requirement to define sensitivity or importance of receptors when using the magnitude of change criteria. If the receptor is the façade of a residential building, it is assumed that any member of the public could be present

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within the building, including the elderly, infants, or other vulnerable groups. The sensitivity of dwellings, hospitals, schools etc are therefore assumed to be equal.

- 8.2.49 IAN174/13 provides updated advice for evaluating significant local air quality effects for users of HA207/07. In line with this, the magnitude of change criteria for the assessment of air quality is shown in Table 8.6.

Table 8.6: Air quality magnitude of change criteria

Magnitude	Magnitude of Change (Annual Mean)	
	NO ₂ (AQO: 40µg/m ³)	PM ₁₀ (AQO: 18µg/m ³)
Imperceptible (<1% +/- of AQO)	<0.4µg/m ³	<0.18µg/m ³
Small (1-5% +/- of AQO)	0.4 – 2µg/m ³	0.18 – 0.85µg/m ³
Medium (5-10% +/- of AQO)	2 – 4µg/m ³	0.85 - 1.8µg/m ³
Large (>10% +/- of AQO)	>4µg/m ³	>1.8µg/m ³

- 8.2.50 As discussed in IAN174/13, where the difference in concentrations are less than 1% of the AQO, then the change at these receptors can be considered to be imperceptible, and 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 AQOs, or any changes above the air quality thresholds are imperceptible, the impact is likely to be not significant for local air quality.

- 8.2.51 Where concentrations are above the air quality thresholds and are above an imperceptible change in magnitude, the determination of the significance of the impact is undertaken using professional judgement with reference to guideline set out in sections 2 and 3 of IAN174/13.

Mitigation

- 8.2.52 Potential mitigation measures have been considered during this assessment and these are discussed in Section 8.9 (Potential Mitigation).

Limitations

- 8.2.53 It should be emphasised that because the air quality impact assessment is based on a series of spreadsheet tool models of future conditions, there is therefore a margin for error in the predictions made. Uncertainties in the model predictions are associated with the traffic data and air quality modelling methodology.

- 8.2.54 The emission factors within the DMRB spreadsheet tool used for this assessment are currently being revised by the Highways Agency (refer to paragraph 8.2.20). The spreadsheet tools and information used are the best available information at the time of this assessment. The methodology used is considered to provide a robust comparison of the route options for the purposes of the DMRB Stage 2 Assessment.

- 8.2.55 It should be noted that robust verification was only available from one monitoring location (Telford Street Automatic Monitoring Station), and, together with the reliability of the traffic data provided, the model therefore has a level of uncertainty

- 8.2.56 Elements of impact prediction, such as the specific concentration of a given pollutant at a given receptor or whether an exceedence of AQO would or would not occur at a specific location, whilst being the best prediction available, should be taken as indicative rather than precise.

- 8.2.57 It is understood that there are a number of consented planning applications within the study area. Some of these include consent for the development of New Towns (e.g. Stratton and Tornagrain) and/or residential dwellings. These have the potential to increase the number of

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residential receptors within the study area. Please refer to paragraph 8.2.39 for further details.

- 8.2.58 Identification of representative receptors is based on OS MasterMap and AddressBase Plus data (as provided in October 2013). There may in some cases be properties, such as those recently built, which are not yet present within these data sources. However, as none of the selected receptors show any significant air quality effects (refer to Section 8.6: Impact Assessment: Inverness to Gollanfield and Section 8.7: Impact Assessment: Nairn Bypass), concentrations potentially experienced by properties not currently included in this assessment are not expected to experience significant changes in air quality concentrations. Therefore, it is unlikely that these properties would be of significance in relation to comparison of the route options undertaken for this DMRB Stage 2 Assessment.

8.3 Policies and Plans

- 8.3.1 The national, regional and local planning policies and guidance relevant to air quality are identified below. An assessment of the compliance of the route options in relation to these policies is provided in Section 8.8 (Compliance with Policies and Plans).

National Planning Policy and Guidance

- 8.3.2 National planning policy on a variety of themes is contained within Scottish Planning Policy (SPP) (Scottish Government, 2014) (hereafter referred to as SPP). In terms of the impact of proposals on air quality, SPP is focussed on:

- promoting sustainable development;
- encouraging decision making to take into account the implications of development for water, air and soil quality;
- supporting healthier living by improving the quality of the built environment and by addressing environmental problems affecting communities; and
- adapting to climate change, and in particular reducing emissions of the greenhouse gases that contribute to it.

- 8.3.3 Circulars and Planning Advice Notes (PANs) produced by the Scottish Government provide further guidance on specific topics. PAN 51 (Planning, Environmental Protection and Regulation (Scottish Executive, 2006) is applicable to air quality impacts and the details of this guidance document are summarised in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.

- 8.3.4 In addition, the Scottish Executive published the Air Quality and Land Use Planning guidance document (Scottish Executive, 2004) which provides advice on LAQM which should be read in conjunction with PAN 51.

Regional and Local Planning Policy and Guidance

- 8.3.5 The Highland-wide Local Development Plan (HwLDP) (The Highland Council, 2012a) (hereafter referred to as HwLDP) is the land-use Plan which will guide the development and investment in the region over the next 20 years. The relevant policies in relation to air quality include:

- Policy 28: Sustainable Design;
- Policy 57: Natural, Built and Cultural Heritage;
- Policy 72: Pollution; and
- Policy 73: Air Quality.

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8.3.6 The HwLDP has a number of supporting supplementary guidance notes, one of which is of relevance to air quality:

- Sustainable Design Guide: Supplementary Guidance (adopted January 2013) (The Highland Council, 2013b).

8.3.7 The details of these policies and guidance are summarised in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.

Review of Planning Policies

8.3.8 The key aspects of the relevant planning policies are discussed below in relation to their relevance for air quality.

Local Air Quality

8.3.9 SPP encourages the planning system to take account of the implications of development on air quality and this is reflected in a number of policies within the HwLDP.

8.3.10 Policy 28 (Sustainable Design) of the HwLDP requires development to be designed with sustainability in mind. As such, developments will be assessed on a number of criteria including the extent to which they impact on air quality. Developments which are judged to be significantly detrimental in terms of this criteria will not accord with the HwLDP, except where no reasonable alternative exists, if there is a demonstrable overriding strategic benefit or if satisfactory mitigation is incorporated. All development proposals must demonstrate compatibility with the Sustainable Design Guide: Supplementary Guidance (The Highland Council, 2013b) which requires developments to minimise their environmental impact. Further to this, Policy 73 (Air Quality) of the HwLDP states that development proposals which may adversely affect the air quality in an area, to a level which could cause harm to human health and well-being or the natural environment, must demonstrate how such impacts will be mitigated. This requirement for mitigation, where significant impacts in terms of pollution cannot be avoided, is also highlighted in Policy 72 (Pollution) of the HwLDP.

Designated Sites

8.3.11 Both SPP and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP require that where developments may lead to significant adverse effects on features of national importance, such as SSSIs, the effects must be clearly outweighed by social or economic benefits of national importance. Developments likely to have a significant impact on a site of international importance such as a SPA, Special Area of Conservation or Ramsar site either alone or in combination with other projects, and which are not directly connected with or necessary to the management of the site, should be subject to an appropriate assessment in line with the requirements of the Habitats Directive (Council Directive 92/43/EEC).

Regional Air Quality

8.3.12 SPP notes that decision making in the planning system should contribute to the reduction in greenhouse gasses in line with the targets set in the Climate Change (Scotland) Act 2009. The Act sets a target of an 80% reduction in emissions by 2050 and an interim target of a 42% reduction by 2020 for Scotland. The design of new development should address the causes of climate change by minimising carbon and other greenhouse gas emissions.

8.4 Baseline Conditions

8.4.1 A review and assessment of the current air quality information in the vicinity of the route options has been undertaken to establish a 'baseline' situation by which the assessment results can be compared to.

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The Highland Council Monitoring Data

- 8.4.2 Under Part IV of the Environment Act 1995 and the establishment of SEPA, LAQM was introduced which places a duty on local authorities to undertake periodic reviews of air quality in their areas to assess present and likely future air quality against the NAQS objectives. Where these objectives are not likely to be met, the local authority must designate an AQMA, and produce an action plan for improvement in air quality.
- 8.4.3 For both Inverness to Gollanfield and Nairn Bypass areas, the study area falls within the local authority area of The Highland Council and for the purposes of this assessment, the 2013 Air Quality Progress Report (The Highland Council, 2013a) has been reviewed.
- 8.4.4 The report summarises previous rounds of LAQM assessments and concludes that air quality in the area is good, but that new monitoring data had identified possible exceedences of the AQOs for NO₂ at roadside locations in Inverness. The Updating and Screening Assessment in 2012 (The Highland Council, 2012b) identified exceedences of the NO₂ annual mean objective at a diffusion tube site in central Inverness (not within the study area of this scheme). A detailed assessment was undertaken in 2013 (The Highland Council, 2014) and it has recently been announced that the area should be declared as an AQMA.

Automatic Monitoring Data

- 8.4.5 The Highland Council operate an Automatic Monitoring Station on Telford Street, Inverness, four metres from the A862, which monitors NO_x, NO₂, PM₁₀ and PM_{2.5}. The relevant monitoring data is shown in Table 8.7.

Table 8.7: Automatic Monitoring Station Data: Telford Street, Inverness

Telford Street Station	Grid Reference	Data Capture 2009	2008 µg/m ³	2009 µg/m ³	2010 µg/m ³	2011 µg/m ³	2012 µg/m ³
NO ₂	265709, 845670	96 %	20.6	20.7	24.5	27.0	29.1
PM ₁₀		94 %	12.3	11.6	14.0	11.8	11.0

- 8.4.6 The 2013 report notes that the Telford Street monitoring station continues to show an increasing trend in NO₂ annual mean concentration, which is not typical of monitoring elsewhere in Scotland. However, a very conservative approach to the future projection of NO₂ has been used in this assessment.
- 8.4.7 For the purposes of verification, as part of the modelling assessment the 2009 annual mean NO_x concentration of 42.6µg/m³ (with a 96% data capture) and PM₁₀ concentration of 11.6µg/m³ (94% data capture) was also obtained through the Scottish Air Quality website (www.scottishairquality.co.uk).

Non-automatic Monitoring Data

- 8.4.8 The Highland Council operate 10 passive NO₂ diffusion tubes across both Inverness and Dingwall. The locations and positioning of these tubes have been reviewed with regard to using the data as background concentrations for the assessment, and to feed into the modelling verification process. The review concluded:
- Inverness: the diffusion tubes were located along the main streets within Inverness town centre, and in areas where taller buildings would create a 'street canyon' whereby pollutant concentrations tend to be higher due to the reduced level of dispersion where tall buildings are present. This type of monitoring location was not thought to be representative of the rural nature of the study area and was not included as part of the assessment.

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- Dingwall: the two relevant diffusion tube locations are classified as 'urban backgrounds' within Dingwall town and are not suitable for model verification.

Base Year Model Results

8.4.9 The baseline provides a reference level against which any potential changes in air quality can be assessed. Since the baseline air quality is predicted to change into the future (mainly because vehicle emissions are changing), the baseline situation is extrapolated forward to the modelled opening year, and therefore the DM scenario is the predicted baseline for the modelled opening year. The DS scenario is the same as the DM, but also includes the concentrations from the operation of the route options. The baseline year used for the scheme is 2009 since this is the base year of the transport model.

8.4.10 The base year model results are shown in Table 8.8.

Table 8.8: Base 2009 - Annual mean NO₂ and PM₁₀ concentrations

Receptor	Base 2009			
	NO ₂ (µg/m ³)	% of AQO	PM ₁₀ (µg/m ³)	% of AQO
Inverness to Gollanfield				
R1	24.5	61%	12.6	70%
R2	25.9	65%	13.5	75%
R3	17.5	44%	11.2	62%
R4	14.4	36%	10.3	57%
R5	14.1	35%	10.1	56%
R6	7.4	19%	9.2	51%
R7	7.5	19%	9.3	51%
R8	25.5	64%	12.4	69%
R9	20.1	50%	11.0	61%
R10	17.8	45%	10.5	58%
R11	5.8	15%	8.5	47%
R12	7.1	18%	9.6	54%
Nairn Bypass				
R13	10.6	26%	9.7	54%
R14	2.8	7%	8.9	49%
R15	15.2	38%	10.5	58%
R16	18.7	47%	12.0	67%
R17	3.2	8%	9.2	51%
R18	3.0	7%	9.3	52%
R19	19.5	49%	11.3	63%
R20	2.8	7%	8.8	49%
R21	15.6	39%	11.8	65%
R22	5.9	15%	8.9	50%
R23	2.8	7%	9.0	50%
R24	2.8	7%	9.0	50%
R25	4.2	10%	8.7	48%
R26	4.0	10%	8.1	45%
R27	3.0	8%	8.3	46%
R28	2.5	6%	8.5	47%
R29	6.9	17%	9.1	51%
R30	2.6	6%	7.8	44%
R31	3.1	8%	8.2	46%

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Nairn Bypass				
R32	2.4	6%	8.1	45%
R33	13.9	35%	10.2	57%

8.4.11 The model results show that none of the receptors approach the NO₂ or PM₁₀ AQOs in the base year.

8.5 Impact Assessment: Introduction

8.5.1 This section provides an introduction to the impact assessment of the route options within Section 8.6 (Impact Assessment: Inverness to Gollanfield) and Section 8.7 (Impact Assessment: Nairn Bypass).

8.5.2 The potential impacts detailed in Sections 8.6 and 8.7 are reported in line with the following:

- Potential impacts are described without mitigation and therefore represent a worst-case scenario. Mitigation to reduce these impacts will be developed for the preferred option during the DMRB Stage 3 Assessment.
- Potential impacts are presented during operation only. Potential impacts from construction dust have not been assessed as the necessary data (such as quantified HDV movements and designated haulage routes) are not available. This will be progressed as part of the DMRB Stage 3 Assessment of the preferred option.

8.5.3 To provide context to the impact assessment, an overview of the potential impacts for road schemes in relation to air quality are presented below.

Potential Impacts: Construction

8.5.4 Construction activities have the potential to cause temporary dust emissions into the atmosphere. These can be produced by a range of activities including demolition work, earthworks, construction activities and the transfer of dust making materials from site to the local road network (track out). In general, construction dust rarely represent an adverse risk to human health due to its temporary nature and the size of the dust particles, and impacts are more typically associated with consequences of material depositing onto property or habitats.

Potential Impacts: Operation

8.5.5 Operational impacts in relation to air quality are measured in relation to the concentrations of pollutants in the air, taking into account the effects of the concentrations on both human health, and ecosystems. Vehicle emissions are a major contributor to the concentrations of these pollutants, and in rural areas vehicle emissions are often the main source of air pollutants. Therefore, any changes to the road infrastructure can affect the air quality at sensitive receptors, such as:

- A change in the road alignment, bringing the road closer to a sensitive receptor, or the creation of a new road through a rural area which brings the exposure of the sensitive receptor closer to air pollutants, and therefore has the potential to result in an adverse increase in air quality concentrations.
- Changes in traffic quantity, location, speed and composition (e.g. level of HDVs), which could affect the level of exposure to air pollutant concentrations at sensitive receptors (human and/or ecological), both adversely or beneficially.

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8.6 Impact Assessment: Inverness to Gollanfield

8.6.1 This section describes the impacts that are specific to the Inverness to Gollanfield section for local and regional air quality and the designated sites of Longman and Castle Stuart Bays SSSI and Inner Moray Firth SPA/Ramsar.

Local Air Quality

8.6.2 Each of the route option alignments have been measured to each of the representative receptors and modelled using the DMRB spreadsheet tool. The level of impact at a given receptor is derived by subtracting the DS concentration from the DM concentration (DS-DM). Table 8.9 shows the NO₂ and PM₁₀ concentrations for the DM 2016 scenario.

Table 8.9: Annual mean NO₂ and PM₁₀ concentrations (DM 2016)

Receptor	NO ₂ (µg/m ³)		PM ₁₀ (µg/m ³)	
	DM	% of AQO	DM	% of AQO
R1	25.2	63%	12.6	70%
R2	27.7	69%	13.8	77%
R3	18.9	47%	11.4	63%
R4	12.5	31%	9.9	55%
R5	15.3	38%	10.2	57%
R6	8.0	20%	9.2	51%
R7	8.1	20%	9.3	52%
R8	26.6	67%	12.5	70%
R9	21.1	53%	11.1	61%
R10	18.1	45%	10.5	58%
R11	5.8	15%	8.5	47%
R12	7.1	18%	9.6	54%

8.6.3 The results show that the representative receptors in the Inverness to Gollanfield area are within the relevant AQOs for NO₂ and PM₁₀. The highest concentrations (% of AQO) are 69% and 77% respectively for DM 2016. These are seen at R2 (The Snow Goose, Inverness).

8.6.4 The results for the DS 2016 scenarios for the route options indicate that NO₂ and PM₁₀ concentrations at the representative receptors are below the annual average NO₂ and PM₁₀ annual mean AQOs. Therefore no significant air quality impacts are expected (refer to paragraph 8.2.50). Each of the route options creates minor variances in pollutant concentrations at the representative receptors. These are discussed in the sections below.

Option 1A

8.6.5 The DMRB assessment results for Option 1A are presented in Table 8.10.

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Table 8.10: DS Scenario (2016) - Annual mean NO₂ and PM₁₀ concentrations (Option 1A)

Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R1	24.9	-0.3	62%	12.6	0.0	70%
R2	27.5	-0.2	69%	13.8	0.0	77%
R3	7.0	-11.9	18%	9.3	-2.1	52%
R4	12.7	0.2	32%	10.0	0.0	56%
R5	21.8	6.5	55%	11.3	1.1	63%
R6	6.7	-1.2	17%	9.0	-0.2	50%
R7	8.2	0.1	21%	9.3	0.0	52%
R8	21.7	-4.9	54%	11.5	-1.0	64%
R9	7.7	-13.4	19%	8.8	-2.3	49%
R10	4.1	-14.0	10%	8.2	-2.3	46%
R11	6.8	1.0	17%	8.7	0.1	48%
R12	3.2	-3.9	8%	9.0	-0.6	50%

8.6.6 A summary of the magnitude of change for Option 1A is shown in Table 8.11. This shows that overall Option 1A would provide reductions in air quality concentrations at the majority of representative receptors.

Table 8.11: DS Scenario (2016) - Number of representative receptors and magnitude change of annual mean NO₂ and PM₁₀ concentrations (Option 1A)

Magnitude of Change	NO ₂		PM ₁₀	
	Increase	Decrease	Increase	Decrease
Neutral	-		4	
Imperceptible	2	2	1	-
Small	1	1	-	2
Medium	-	1	1	1
Large	1	4	-	3
Total (excl. neutral)	4	8	2	6

8.6.7 All receptor results for Option 1A are below the relevant AQOs and therefore no significant air quality impacts are expected. The highest concentrations (% of AQO) are 69% (NO₂) and 77% (PM₁₀) at R2 (The Snow Goose, Inverness).

8.6.8 The results show that the maximum increase in NO₂ and PM₁₀ occurs at R5 (Allanfean Farm, Inverness), with increases of 6.5µg/m³ and 1.1µg/m³, respectively. This receptor is located close to the existing A96 Aberdeen – Inverness Trunk Road (hereafter referred to as the existing A96) where the new route option alignment would be constructed (online in this section, but would be wider as dual carriageway). As such, the route option alignment (and exposure to vehicle emissions) would be closer to the receptor than the existing roads.

8.6.9 The results show that the maximum decrease in NO₂ occurs at R10 (Mid Coul Cottages, Dalcross), with a decrease of 14.0µg/m³. For PM₁₀, the maximum reduction of 2.3µg/m³ occurs at both R9 (Kerrowaird Cottages, Dalcross) and R10, which are located close to the existing A96. Option 1A would move the majority of traffic flow (and therefore exposure to vehicle emissions) further away from these receptors.

Option 1A (MV)

8.6.10 The DMRB assessment results for Option 1A (MV) are shown in Table 8.12.

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Table 8.12: DS Scenario (2016) - Annual mean NO₂ and PM₁₀ concentrations (Option 1A (MV))

Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R1	25.1	-0.1	63%	12.6	0.0	70%
R2	27.5	-0.2	69%	13.8	0.0	77%
R3	7.1	-11.9	18%	9.3	-2.1	52%
R4	13.3	0.7	33%	10.1	0.1	56%
R5	21.2	5.9	53%	11.2	1.0	62%
R6	6.2	-1.8	16%	8.9	-0.3	49%
R7	6.0	-2.0	15%	9.0	-0.3	50%
R8	10.5	-16.1	26%	9.7	-2.8	54%
R9	8.4	-12.6	21%	8.9	-2.1	49%
R10	4.2	-13.9	11%	8.3	-2.2	46%
R11	6.8	0.9	17%	8.7	0.1	48%
R12	3.3	-3.9	8%	9.0	-0.6	50%

8.6.11 A summary of the magnitude of impact for Option 1A (MV) is shown in Table 8.13. This shows that overall Option 1A (MV) would provide reductions in air quality concentrations at the majority of representative receptors.

Table 8.13: DS Scenario (2016) - Number of representative receptors and magnitude change of annual mean NO₂ and PM₁₀ concentrations (Option 1A (MV))

Magnitude of Change	NO ₂		PM ₁₀	
	Increase	Decrease	Increase	Decrease
Neutral	-		2	
Imperceptible	-	2	2	-
Small	2	1	-	3
Medium	-	2	1	-
Large	1	4	-	4
Total (excl. neutral)	3	9	3	7

8.6.12 All receptor results for Option 1A (MV) are below the relevant AQOs and therefore no significant air quality impacts are expected. The highest concentrations (% of AQO) are 69% (NO₂) and 77% (PM₁₀) at R2 (The Snow Goose, Inverness).

8.6.13 The results show that the maximum increase in NO₂ and PM₁₀ occurs at R5 (Allanfearn Farm, Inverness), with increases of 5.9µg/m³ and 1.0µg/m³ respectively. This receptor is located close to the existing A96 where the new route option alignment would be constructed (online in this section, but would be wider as dual carriageway). As such, the route option alignment (and exposure to vehicle emissions) would be closer to the receptor than the existing roads.

8.6.14 The results show that the maximum decrease in NO₂ and PM₁₀ occurs at R8 (Morayston Farm Cottages, Dalcross), with decreases of 16.1µg/m³ and 2.8µg/m³ respectively. This receptor is located close to the existing A96. Option 1A (MV) would move the majority of traffic flow (and exposure to vehicle emissions) further away from this receptor.

Option 1B

8.6.15 The DMRB assessment results for Option 1B are shown in Table 8.14.

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Table 8.14: DS Scenario (2016) - Annual mean NO₂ and PM₁₀ concentrations (Option 1B)

Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R1	24.9	-0.3	62%	12.6	0.0	70%
R2	27.5	-0.2	69%	13.8	0.0	77%
R3	7.0	-12.0	18%	9.3	-2.1	52%
R4	12.5	-0.1	31%	9.9	0.0	55%
R5	22.8	7.4	57%	11.5	1.3	64%
R6	7.3	-0.6	18%	9.1	0.0	51%
R7	8.0	-0.1	20%	9.3	0.0	52%
R8	21.0	-5.6	53%	11.4	-1.1	63%
R9	8.7	-12.4	22%	9.0	-2.1	50%
R10	19.5	1.4	49%	10.7	0.2	59%
R11	>200m from affected road/route option alignment.					
R12	5.5	-1.7	14%	9.4	-0.3	52%

8.6.16 A summary of the magnitude of impact for Option 1B is shown in Table 8.15. This shows that overall Option 1B would provide reductions in air quality concentrations at the majority of representative receptors.

Table 8.15: DS Scenario (2016) - Number of representative receptors and magnitude change of annual mean NO₂ and PM₁₀ concentrations (Option 1B)

Magnitude of Change	NO ₂		PM ₁₀	
	Increase	Decrease	Increase	Decrease
Neutral	-		5	
Imperceptible	-	4	-	-
Small	1	2	1	1
Medium	-	-	1	1
Large	1	3	-	2
Total (excl. neutral)	2	9	2	4

8.6.17 All receptor results for Option 1B are below the relevant AQOs and therefore no significant air quality impacts are expected. The highest concentrations (% of AQO) are 69% (NO₂) and 77% (PM₁₀) at R2 (The Snow Goose, Inverness).

8.6.18 The results show that the maximum increase in NO₂ and PM₁₀ occurs at R5 (Allanfearn Farm, Inverness), with increases of 7.4µg/m³ and 1.3µg/m³ respectively. This receptor is located close to the existing A96 where the new route option alignment would be constructed (online in this section, but would be wider as dual carriageway). As such, the route option alignment (and exposure to vehicle emissions) would be closer to the receptor than the existing roads.

8.6.19 The results show that the maximum decrease in NO₂ and occurs at R9 (Kerrowaird Cottages, Dalcross), with a decrease of 12.4µg/m³. For PM₁₀, the maximum decrease of 2.1µg/m³ occurs at both R3 (Firthview, Stratton) and R9. These receptors are located close to the existing A96. Option 1B would move the majority of traffic flow (and exposure to vehicle emissions) further away from these receptors.

Option 1B (MV)

8.6.20 The DMRB assessment results for Option 1B (MV) are shown in Table 8.16.

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Table 8.16: DS Scenario (2016) - Annual mean NO₂ and PM₁₀ concentrations (Option 1B (MV))

Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R1	24.9	-0.4	62%	12.6	0.0	70%
R2	27.4	-0.3	69%	13.8	0.0	77%
R3	7.1	-11.9	18%	9.3	-2.1	52%
R4	13.4	0.9	34%	10.1	0.2	56%
R5	21.7	6.4	54%	11.3	1.0	63%
R6	6.2	-1.7	16%	8.9	-0.3	49%
R7	6.9	-1.2	17%	9.1	-0.2	51%
R8	9.2	-17.4	23%	9.5	-3.0	53%
R9	10.3	-10.8	26%	9.2	-1.8	51%
R10	18.8	0.7	47%	10.5	0.0	58%
R11	>200m from affected road/route option alignment.					
R12	5.4	-1.8	14%	9.4	-0.3	52%

8.6.21 A summary of the magnitude of impact for Option 1B (MV) is shown in Table 8.17. This shows that overall, Option 1B (MV) would provide reductions in air quality concentrations at the majority of representative receptors.

Table 8.17: DS Scenario (2016) - Number of representative receptors and magnitude change of annual mean NO₂ and PM₁₀ concentrations (Option 1B (MV))

Magnitude of Change	NO ₂		PM ₁₀	
	Increase	Decrease	Increase	Decrease
Neutral	-		3	
Imperceptible	-	1	-	-
Small	2	4	1	3
Medium	-	-	1	-
Large	1	3	-	3
Total (excl. neutral)	3	8	2	6

8.6.22 All receptor results for Option 1B (MV) are below the relevant AQOs and therefore no significant air quality impacts are expected. The highest concentrations (% of AQO) are 69% (NO₂) and 77% (PM₁₀) at R2 (The Snow Goose, Inverness).

8.6.23 The results show that the maximum increase in NO₂ and PM₁₀ occurs at R5 (Allanfearn Farm, Inverness), with increases of 6.4µg/m³ and 1.0µg/m³ respectively. This receptor is located close to the existing A96 where the new route option alignment would be constructed (online in this section, but would be wider as dual carriageway). As such the route option alignment (and exposure to vehicle emissions) would be closer to the receptor than the existing roads.

8.6.24 The results show that the maximum decrease in NO₂ and PM₁₀ occurs at R8 (Morayston Farm Cottage, Dalcross), with decreases of 17.4µg/m³ and 3.0µg/m³ respectively. This receptor is located close to the existing A96. Option 1B (MV) would move the majority of traffic flow (and exposure to vehicle emissions) further away from this receptor.

Option 1C

8.6.25 The DMRB assessment results for Option 1C are shown in Table 8.18.

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Table 8.18: DS Scenario (2016) - Annual mean NO₂ and PM₁₀ concentrations (Option 1C)

Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R1	24.6	-0.6	62%	12.6	-0.1	70%
R2	27.5	-0.2	69%	13.8	0.0	77%
R3	6.9	-12.0	17%	9.3	-2.1	52%
R4	11.9	-0.7	30%	9.8	-0.1	54%
R5	>200m from affected road/route option alignment.					
R6	8.2	0.3	21%	9.3	0.1	52%
R7	4.5	-3.6	11%	8.8	-0.5	49%
R8	20.2	-6.4	51%	11.2	-1.3	62%
R9	7.3	-13.8	18%	8.7	-2.3	48%
R10	4.1	-14.0	10%	8.2	-2.3	46%
R11	6.8	1.0	17%	8.7	0.1	48%
R12	3.2	-3.9	8%	9.0	-0.6	50%

8.6.26 A summary of the magnitude of impact for Option 1C is shown in Table 8.19. This shows that overall Option 1C would provide reductions in air quality concentrations at the majority of representative receptors.

Table 8.19: DS Scenario (2016) - Number of representative receptors and magnitude change of annual mean NO₂ and PM₁₀ concentrations (Option 1C)

Magnitude of Change	NO ₂		PM ₁₀	
	Increase	Decrease	Increase	Decrease
Neutral	-		1	
Imperceptible	1	1	2	2
Small	1	2	-	2
Medium	-	2	-	1
Large	-	4	-	3
Total (excl. neutral)	2	9	2	8

8.6.27 All receptor results for Option 1C are below the relevant AQOs and therefore no significant air quality impacts are expected. The highest concentrations (% of AQO) are 69% (NO₂) and 77% (PM₁₀) at R2 (The Snow Goose, Inverness).

8.6.28 The results show that the maximum increase in NO₂ occurs at R11 (Culblair Cottages, Dalcross), with an increase of 1.0µg/m³. The maximum increase in PM₁₀ of 0.1µg/m³ occurs at R6 (Upper Cullernie, Edgefield) and R11. These receptors are located where the new route option alignment would be constructed. Option 1C would bring the route option alignment (and exposure to vehicle emissions) closer to the receptor than existing roads.

8.6.29 The results show that the maximum decrease in NO₂ occurs at R10 (Mid Coul Cottages, Inverness) with a decrease of 14.0µg/m³. The maximum reduction in PM₁₀ occurs at R9 (Kerrowaird Cottages, Dalcross) and R10, with a decrease of 2.3µg/m³. These receptors are located close to the existing A96. Option 1C would move the majority of traffic flow (and exposure to vehicle emissions), further away from these receptors.

Option 1C (MV)

8.6.30 The DMRB assessment results for Option 1C (MV) are shown in Table 8.20.

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Table 8.20: DS Scenario (2016) - Annual mean NO₂ and PM₁₀ concentrations (Option 1C (MV))

Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R1	24.6	-0.6	62%	12.6	-0.1	70%
R2	27.5	-0.2	69%	13.8	0.0	77%
R3	6.9	-12.0	17%	9.3	-2.1	52%
R4	11.9	-0.7	30%	9.8	-0.1	54%
R5	>200m from affected road/route option alignment.					
R6	8.2	0.3	21%	9.3	0.1	52%
R7	4.5	-3.5	11%	8.8	-0.5	49%
R8	10.2	-16.4	26%	9.7	-2.9	54%
R9	7.7	-13.4	19%	8.8	-2.3	49%
R10	4.2	-13.9	11%	8.2	-2.3	46%
R11	6.8	0.9	17%	8.7	0.1	48%
R12	3.3	-3.9	8%	9.0	-0.6	50%

8.6.31 A summary of the magnitude of impact for Option 1C (MV) is shown in Table 8.21. This shows that overall Option 1C (MV) would provide reductions in air quality concentrations at the representative receptors.

Table 8.21: DS Scenario (2016) – Number of representative receptors and magnitude change of annual mean NO₂ and PM₁₀ concentrations (Option 1C (MV))

Magnitude of Change	NO ₂		PM ₁₀	
	Increase	Decrease	Increase	Decrease
Neutral	-		1	
Imperceptible	1	1	2	2
Small	1	2	-	2
Medium	-	2	-	-
Large	-	4	-	4
Total (excl. neutral)	2	9	2	8

8.6.32 All receptor results for Option 1C (MV) are below the relevant AQOs and therefore no significant air quality impacts are expected. The highest concentrations (% of AQO) are 69% (NO₂) and 77% (PM₁₀) at R2 (The Snow Goose, Inverness).

8.6.33 The results show that the maximum increase in NO₂ occurs at R11 (Culblair Cottages, Dalcross), with an increase of 0.9µg/m³. For PM₁₀, the maximum increase of 0.1µg/m³ occurs at R6 (Upper Cullernie, Edgefield) and R11. These receptors are located close to where the new route option alignment would be constructed, and as such the route option alignment (and exposure to vehicle emissions) would be closer to the receptor than the existing roads.

8.6.34 The results show that the maximum decrease in NO₂ and PM₁₀ occurs at R8 (Morayston Farm, Dalcross), with decreases of 16.4µg/m³ and 2.9µg/m³ respectively. This receptor is located close to the existing A96. Option 1C (MV) would move the majority of traffic flow (and exposure to vehicle emissions), further from this receptor.

Option 1D

8.6.35 The DMRB assessment results for Option 1D are shown in Table 8.22.

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Table 8.22: DS Scenario (2016) - Annual Mean NO₂ and PM₁₀ concentrations (Option 1D)

Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R1	24.9	-0.3	62%	12.6	0.0	70%
R2	27.5	-0.2	69%	13.8	0.0	77%
R3	6.9	-12.0	17%	9.3	-2.1	52%
R4	11.7	-0.8	29%	9.8	-0.2	54%
R5	>200m from affected road/route option alignment.					
R6	8.3	0.3	21%	9.3	0.1	52%
R7	5.5	-2.5	14%	8.9	-0.4	49%
R8	20.2	-6.5	51%	11.3	-1.2	63%
R9	10.8	-10.2	27%	9.3	-1.8	52%
R10	17.2	-0.9	43%	10.3	-0.2	57%
R11	>200m from affected road/route option alignment.					
R12	6.6	-0.6	17%	9.5	-0.1	53%

8.6.36 A summary of the magnitude of impact for Option 1D is shown in Table 8.23. This shows that overall Option 1D would provide reductions in air quality concentrations at the majority of representative receptors.

Table 8.23: DS Scenario (2016) - Number of representative receptors and magnitude change of annual mean NO₂ and PM₁₀ concentrations (Option 1D)

Magnitude of Change	NO ₂		PM ₁₀	
	Increase	Decrease	Increase	Decrease
Neutral	-		2	
Imperceptible	1	2	1	1
Small	-	3	-	3
Medium	-	1	-	1
Large	-	3	-	2
Total (excl. neutral)	1	9	1	7

8.6.37 All receptor results for Option 1D are below the relevant AQOs and therefore no significant air quality impacts are expected. The highest concentrations (% of AQO) are 69% (NO₂) and 77% (PM₁₀) at R2 (The Snow Goose, Inverness).

8.6.38 The results show that the maximum increase in NO₂ and PM₁₀ occurs at R6 (Upper Cullerine, Edgefield), with increases of 0.3µg/m³ and 0.1µg/m³ respectively. This receptor is located near to where the new route option alignment would be constructed, and as such the route option alignment (and exposure to vehicle emissions) would be closer to the receptor.

8.6.39 The results show that the maximum decrease in NO₂ and PM₁₀ occurs at R3 (Firthview, Stratton), with decreases of 12.0µg/m³ and 2.1µg/m³ respectively. This receptor is located close to existing A96. Option 1D would move the majority of traffic flow, and (and exposure to vehicle emissions) further away from this receptor.

Option 1D (MV)

8.6.40 The DMRB assessment results for Option 1D (MV) are shown in Table 8.24.

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Table 8.24: DS Scenario (2016) - Annual mean NO₂ and PM₁₀ concentrations (Option 1D (MV))

Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R1	25.1	-0.1	63%	12.6	0.0	70%
R2	27.5	-0.2	69%	13.8	0.0	77%
R3	6.9	-12.0	17%	9.3	-2.1	52%
R4	11.7	-0.8	29%	9.8	-0.2	54%
R5	>200m from affected road/route option alignment.					
R6	8.3	0.3	21%	9.3	0.1	52%
R7	5.7	-2.4	14%	9.0	-0.4	50%
R8	10.6	-16.1	27%	9.7	-2.8	54%
R9	11.6	-9.5	29%	9.4	-1.6	52%
R10	16.9	-1.2	42%	10.2	-0.3	57%
R11	>200m from affected road/route option alignment.					
R12	6.5	-0.6	16%	9.5	-0.1	53%

8.6.41 A summary of the magnitude of impact for Option 1D (MV) is shown in Table 8.25. This shows that overall Option 1D (MV) would provide reductions in air quality concentrations at the majority of representative receptors.

Table 8.25: DS Scenario (2016) – Number of representative receptors and magnitude change of annual mean NO₂ and PM₁₀ concentrations (Option 1D (MV))

Magnitude of Change	NO ₂		PM ₁₀	
	Increase	Decrease	Increase	Decrease
Neutral	-		2	
Imperceptible	1	2	1	1
Small	-	3	-	3
Medium	-	1	-	1
Large	-	3	-	2
Total (excl. neutral)	1	9	1	7

8.6.42 All receptor results for Option 1D (MV) are below the relevant AQOs and therefore no significant air quality impacts are expected. The highest concentrations (% of AQO) are 69% (NO₂) and 77% (PM₁₀) at R2 (The Snow Goose, Inverness).

8.6.43 The results show that the maximum increase in NO₂ and PM₁₀ occurs at R6 (Upper Cullernie, Edgefield), with increases of 0.3µg/m³ and 0.1µg/m³ respectively. This receptor is located near to where the new route option alignment would be constructed, and as such the route option alignment (and exposure to vehicle emissions) would be closer to the receptor.

8.6.44 The results show that the maximum reduction in NO₂ and PM₁₀ occurs at R8 (Morayston Farm Cottages, Dalcross), with decreases of 16.1µg/m³ and 2.8µg/m³ respectively. This receptor is located close to the existing A96. Option 1D (MV) would move the majority of traffic flow (and exposure to vehicle emissions) further from this receptor.

Designated Sites

8.6.45 An air quality assessment was undertaken at the Longman and Castle Stuart Bays SSSI and Inner Moray Firth SPA/Ramsar sites. The priority habitat is coastal saltmarsh. Further details on these sites are available in Chapter 11 (Habitats and Biodiversity) of this report.

8.6.46 The site is approximately 70m from the centreline of the existing A96, which meets the air quality criteria as an 'affected' road. The first transect point for the assessment was the boundary of the site, and then at 10m increments up to 200m.

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- 8.6.47 The results from the assessment for the DS scenarios are all below the NO_x AQO of 30µg/m³. Further calculations into nitrogen deposition were therefore not required, based on guidance in IAN174/13. The results for the DS annual mean concentrations at the closest point to the road, and the DS-DM results are shown in Table 8.26.

Table 8.26: DS Scenario (2016) – Annual mean NO_x at Longman and Castle Stuart Bays SSSI and Inner Moray Firth SPA/Ramsar

Annual Mean NO _x DM Concentration (µg/m ³)							
1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6
Annual Mean NO _x DS Concentration (µg/m ³)							
1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
24.5	24.5	24.6	24.5	24.6	24.6	24.6	24.6
Change in Concentration (DS-DM) (µg/m ³)							
1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
-0.1	-0.1	-	-0.1	-	-	-	-

- 8.6.48 The maximum concentration (as shown in Table 8.26) for each of the route options occurs at the closest transect point to the existing A96. Whilst total vehicle flows are predicted to increase in the DS scenario, HDV flows reduce slightly between DM and DS scenarios, which results in a marginal reduction in emission rate compared to the DM scenario.
- 8.6.49 The route options would result in a zero or imperceptible decrease in NO_x concentrations at the assessed designated sites. Therefore, no significant air quality impacts upon the Longman and Castle Stuart Bays SSSI and Inner Moray Firth SPA/Ramsar are expected from any of the route options.

Regional Assessment

- 8.6.50 An assessment of the regional emissions relating to the route options has been undertaken following guidance provided in HA207/07, and utilising the Emissions Factor Toolkit v5.2c.
- 8.6.51 The assessment results for regional air quality are shown in Table 8.27. The estimated annual emissions of pollutants in the base year (2009), DM and DS scenarios for 2016 and 2031 are shown allowing for a comparison of total mass emissions between the route options.

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Table 8.27: Regional air quality assessment (annual mass emissions in kg/year for all substances with the exception of CO₂ which is tonnes/year)

Pollutant	Base 2009	DM 2016	DS 2016	DS-DM	DM 2031	DS 2031	DS-DM
Option 1A							
NO _x	162,077	93,004	116,197	23,193	43,882	62,248	18,366
PM _{2.5}	7,832	6,397	6,126	-271	4,718	5,560	842
PM ₁₀	10,749	10,648	9,350	-1,298	8,187	9,562	1,375
CO ₂	47,488	44,083	54,112	10,030	49,681	63,845	14,165
HC	17,842	8,160	8,704	544	14,876	16,525	1,649
Option 1A (MV)							
NO _x	162,077	93,004	116,486	23,482	43,882	62,440	18,558
PM _{2.5}	7,832	6,397	6,137	-260	4,718	5,584	866
PM ₁₀	10,749	10,648	9,368	-1,280	8,187	9,604	1,417
CO ₂	47,488	44,083	54,253	10,170	49,681	64,134	14,453
HC	17,842	8,160	8,705	544	14,876	16,577	1,700
Option 1B							
NO _x	162,077	93,004	116,360	23,356	43,882	59,356	15,474
PM _{2.5}	7,832	6,397	6,128	-269	4,718	5,529	811
PM ₁₀	10,749	10,648	9,352	-1,296	8,187	9,481	1,294
CO ₂	47,488	44,083	54,140	10,058	49,681	63,016	13,335
HC	17,842	8,160	8,698	537	14,876	15,816	940
Option 1B (MV)							
NO _x	162,077	93,004	114,443	21,439	43,882	61,414	17,532
PM _{2.5}	7,832	6,397	6,064	-332	4,718	5,487	769
PM ₁₀	10,749	10,648	9,267	-1,381	8,187	9,436	1,249
CO ₂	47,488	44,083	53,522	9,440	49,681	63,035	13,354
HC	17,842	8,160	8,613	452	14,876	16,267	1,391
Option 1C							
NO _x	162,077	93,004	117,065	24,061	43,882	63,341	19,459
PM _{2.5}	7,832	6,397	6,140	-257	4,718	5,551	833
PM ₁₀	10,749	10,648	9,358	-1,290	8,187	9,536	1,349
CO ₂	47,488	44,083	54,353	10,270	49,681	64,481	14,800
HC	17,842	8,160	8,691	531	14,876	16,415	1,539
Option 1C (MV)							
NO _x	162,077	93,004	117,125	24,121	43,882	63,522	19,640
PM _{2.5}	7,832	6,397	6,147	-250	4,718	5,559	841
PM ₁₀	10,749	10,648	9,370	-1,278	8,187	9,548	1,361
CO ₂	47,488	44,083	54,415	10,332	49,681	64,509	14,829
HC	17,842	8,160	8,698	538	14,876	16,490	1,614
Option 1D							
NO _x	162,077	93,004	115,752	22,748	43,882	61,414	17,532
PM _{2.5}	7,832	6,397	6,102	-295	4,718	5,487	769
PM ₁₀	10,749	10,648	9,311	-1,337	8,187	9,436	1,249
CO ₂	47,488	44,083	53,894	9,812	49,681	63,035	13,354
HC	17,842	8,160	8,662	502	14,876	16,267	1,391
Option 1D (MV)							
NO _x	162,077	93,004	115,751	22,747	43,882	61,421	17,539
PM _{2.5}	7,832	6,397	6,104	-293	4,718	5,496	779
PM ₁₀	10,749	10,648	9,317	-1,331	8,187	9,453	1,266
CO ₂	47,488	44,083	53,923	9,840	49,681	63,106	13,425
HC	17,842	8,160	8,665	504	14,876	16,299	1,423

8.6.52 Table 8.27 shows that the route options are expected to produce similar emissions. A summary of the emissions is provided below:

- NO_x: all route options are expected to produce an increase of 23% to 26% in NO_x emissions in 2016, with Option 1C (MV) showing the largest increase by 24,121kg/year. All route options are also expected to produce an increase of 35% to 45% in NO_x emissions in 2031, with the largest increase in Option 1C (MV) by 19,640kg/year.
- CO₂: all route options are expected to produce an increase of 21% to 23% in CO₂ emissions in 2016, with Option 1C (MV) showing the largest increase by 10,332 tonnes/year. All route options are also expected to produce an increase of 27% to 30%

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in CO₂ emissions in 2031, with the largest increase in Option 1C (MV) by 14,829 tonnes/year.

- PM₁₀: all route options are expected to produce a decrease of 12% to 13% in PM₁₀ emissions in 2016, with Option 1B (MV) showing the largest decrease by 1,381kg/year. However, in 2031, all route options are expected to produce an increase of 15% to 17% in PM₁₀ emissions, with Option 1A (MV) showing the largest increase by 1,417kg/year.

8.7 Impact Assessment: Nairn Bypass

8.7.1 This section describes the impacts that are specific to the Nairn Bypass section for local and regional air quality and the designated site of Kildrummie Kames SSSI.

Local Air Quality

8.7.2 Each of the route option alignments have been measured to each of the representative receptors and modelled using the DMRB spreadsheet tool. Table 8.28 below reports the NO₂ and PM₁₀ concentrations for the DM 2016 scenario.

Table 8.28: Annual mean NO₂ and PM₁₀ concentrations (DM Scenario)

Receptor	Do-Minimum 2016			
	NO ₂ (µg/m ³)	% of AQO	PM ₁₀ (µg/m ³)	% of AQO
R13	10.8	27%	9.7	54%
R14	2.8	7%	8.9	49%
R15	15.5	39%	10.5	58%
R16	19.2	48%	12.0	67%
R17	3.2	8%	9.2	51%
R18	3.0	7%	9.3	52%
R19	20.0	50%	11.3	63%
R20	2.8	7%	8.8	49%
R21	16.2	41%	11.8	66%
R22	6.2	15%	9.0	50%
R23	2.8	7%	9.0	50%
R24	2.8	7%	9.0	50%
R25	4.2	10%	8.7	48%
R26	4.0	10%	8.1	45%
R27	3.0	8%	8.3	46%
R28	2.5	6%	8.5	47%
R29	7.1	18%	9.1	51%
R30	2.6	6%	7.8	44%
R31	3.1	8%	8.2	46%
R32	2.4	6%	8.1	45%
R33	14.3	36%	10.3	57%

8.7.3 The results show that the representative receptors in the Nairn Bypass area are within the relevant annual mean objectives for NO₂ and PM₁₀ in the DM scenario. The highest concentrations (% of AQO) are 50% (NO₂) and 67% (PM₁₀) of the AQO for DM 2016. These are seen at R19 (Rowan Place, Nairn) and R16 (Schoolhouse Delnies), respectively.

8.7.4 The results for the DS 2016 scenario for the route options indicate that NO₂ and PM₁₀ concentrations at the representative receptors are below the annual average NO₂ and PM₁₀ annual mean AQOs. Therefore no significant air quality impacts are expected (refer to paragraph 8.2.50). Each of the route options creates minor variances in concentrations of pollutants at the representative receptors. These are discussed below. It should be noted that the modelled receptors in Nairn centre (R19 and R21) are representative of the scale of impacts at more properties than those selected in the vicinity of the route options. Direct comparison of the number of benefits or impacts is therefore not appropriate.

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Option 2A

8.7.5 The DMRB assessment results for Option 2A are shown in Table 8.29.

Table 8.29: DS Scenario (2016) - Annual mean NO₂ and PM₁₀ concentrations (Option 2A)

Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R13	15.4	4.6	39%	10.4	0.7	58%
R14	>200m from affected road/route option alignment.					
R15	15.6	0.1	39%	10.5	0.0	58%
R16	10.8	-8.4	27%	10.7	-1.3	59%
R17	5.2	2.1	13%	9.4	0.3	52%
R18	>200m from affected road/route option alignment.					
R19	9.8	-10.2	25%	10.0	-1.4	56%
R20	2.7	0.0	7%	8.8	0.0	49%
R21	7.6	-8.6	19%	10.7	-1.2	59%
R22	7.2	1.0	18%	9.2	0.2	51%
R23	8.0	5.2	20%	9.7	0.7	54%
R24	4.2	1.4	11%	9.1	0.2	51%
R25	3.9	-0.2	10%	8.6	0.0	48%
R26	3.7	-0.4	9%	8.0	-0.1	44%
R27	6.1	3.1	15%	8.8	0.4	49%
R28	2.5	0.0	6%	8.5	0.0	47%
R29	4.3	-2.8	11%	8.7	-0.4	48%
R30	2.6	0.0	7%	7.8	0.0	43%
R31	3.8	0.7	10%	8.3	0.1	46%
R32	2.4	0.0	6%	8.1	0.0	45%
R33	15.2	0.9	38%	10.4	0.1	58%

8.7.6 A summary of the magnitude of impact for Option 2A is shown in Table 8.30. This shows that Option 2A would provide both increases and decreases in NO₂ and PM₁₀ concentrations. In general, the increases are at receptors which are in close proximity of the new route option alignment and the decreases are at receptors that are within or close to the bypassed area of Nairn.

Table 8.30: DS Scenario (2016) - Number of representative receptors and magnitude change of annual mean NO₂ and PM₁₀ concentrations (Option 2A)

Magnitude of Change	NO ₂		PM ₁₀	
	Increase	Decrease	Increase	Decrease
Neutral	4		6	
Imperceptible	1	1	2	1
Small	4	1	6	1
Medium	2	1	-	3
Large	2	3	-	-
Total (excl. neutral)	9	6	8	5

8.7.7 All receptor results for Option 2A are below the relevant AQOs and therefore no significant air quality impacts are expected. The highest concentrations (% of AQO) are 39% (NO₂) at R13 (The Cottage, Blackcastle) and R15 (Ashleigh, Delnies) and 59% (PM₁₀) at R16 (Schoolhouse, Delnies) and R21 (River Park, Nairn).

8.7.8 The results show that the maximum increase in NO₂ occurs at R23 (Blackpark, Nairn), with an increase of 5.2µg/m³. For PM₁₀, a maximum increase of 0.7µg/m³ occurs at R13 (The Cottage, Blackcastle) and R23. R13 is located close to the existing A96 and although this section is online, the widening of the existing A96 would bring the new route option alignment (and exposure to vehicle emissions) closer to the receptor. R23 is located in a

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rural area where the new route option alignment would be constructed. As such, the route option alignment (and exposure to vehicle emissions) would be closer to this receptor than existing roads.

- 8.7.9 The results show that the maximum reduction in NO₂ and PM₁₀ occurs at R19 (Rowan Place, Nairn), with decreases of 10.2µg/m³ and 1.4µg/m³, respectively. This receptor is located close to existing A96 in the centre of Nairn. Option 2A would move the majority of traffic flow (and exposure to vehicle emissions) further away from this receptor.

Option 2B

- 8.7.10 The DMRB assessment results for Option 2B are shown in Table 8.31.

Table 8.31: DS Scenario (2016) - Annual mean NO₂ and PM₁₀ concentrations (Option 2B)

Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R13	15.4	4.6	39%	10.4	0.7	58%
R14	>200m from affected road/route option alignment.					
R15	15.6	0.1	39%	10.5	-0.1	58%
R16	10.8	-8.4	27%	10.7	-1.3	59%
R17	5.2	2.0	13%	9.4	0.3	52%
R18	>200m from affected road/route option alignment.					
R19	9.8	-10.2	25%	10.0	-1.4	56%
R20	2.8	0.0	7%	8.8	0.0	49%
R21	7.6	-8.6	19%	10.7	-1.2	59%
R22	7.1	0.9	18%	9.2	0.2	51%
R23	8.0	5.2	20%	9.7	0.7	54%
R24	4.2	1.4	11%	9.1	0.2	51%
R25	4.0	-0.2	10%	8.6	0.0	48%
R26	3.7	-0.4	9%	8.0	-0.1	44%
R27	3.0	0.0	8%	8.3	0.0	46%
R28	>200m from affected road/route option alignment.					
R29	5.3	-1.8	13%	8.9	-0.3	49%
R30	2.6	0.0	7%	7.8	0.0	43%
R31	4.0	0.9	10%	8.3	0.1	46%
R32	2.8	0.4	7%	8.1	0.0	45%
R33	15.1	0.8	38%	10.4	0.1	58%

- 8.7.11 A summary of the magnitude of impact for Option 2B is shown in Table 8.32. This shows that Option 2B would provide both increases and decreases in NO₂ and PM₁₀ concentrations. In general, the increases are at receptors which are in close proximity of the new route option alignment and the decreases are at receptors that are within or close to the bypassed area of Nairn.

Table 8.32: DS Scenario (2016) - Number of representative receptors and magnitude change of annual mean NO₂ and PM₁₀ concentrations (Option 2B)

Magnitude of Change	NO ₂		PM ₁₀	
	Increase	Decrease	Increase	Decrease
Neutral	3		5	
Imperceptible	1	1	2	2
Small	5	2	5	1
Medium	1	0	-	3
Large	2	3	-	-
Total (excl. neutral)	9	6	7	6

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- 8.7.12 All receptor results for Option 2B are below the relevant AQOs and therefore no significant air quality impacts are expected. The highest concentrations (% of AQO) are 39% (NO₂) at R13 (The Cottage, Blackcastle) and R15 (Ashleigh, Delnies) and 59% (PM₁₀) at R16 (Schoolhouse, Delnies) and R21 (River Park, Nairn).
- 8.7.13 The results show that the maximum increase in NO₂ occurs at R23 (Blackpark, Nairn), with an increase of 5.2µg/m³. For PM₁₀, the maximum increase of 0.7µg/m³ occurs at both R13 (The Cottage, Blackcastle) and R23. R13 is located close to the existing A96 and although this section is online, the widening of the existing A96 would bring the new route option alignment (and exposure to vehicle emissions) closer to the receptor. R23 is located in a rural area where the new route option alignment would be constructed. As such, the route option alignment (and exposure to vehicle emissions) would be closer to the receptors than existing roads.
- 8.7.14 The results show that the maximum decrease in NO₂ and PM₁₀ occurs at R19 (Rowan Place, Nairn), with decreases of 10.2µg/m³ and 1.4µg/m³, respectively. This receptor is located close to the existing A96 in the centre of Nairn. Option 2B would move the majority of traffic flow (and exposure to vehicle emissions) further away from this receptor.

Option 2C

- 8.7.15 The DMRB assessment results for Option 2C are shown in Table 8.33.

Table 8.33: DS Scenario (2016) - Annual mean NO₂ and PM₁₀ concentrations (Option 2C)

Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R13	15.6	4.8	39%	10.5	0.7	58%
R14	>200m from affected road/route option alignment.					
R15	15.8	0.3	40%	10.5	0.0	58%
R16	9.3	-9.9	23%	10.4	-1.6	58%
R17	5.3	2.1	13%	9.5	0.3	53%
R18	>200m from affected road/route option alignment.					
R19	9.9	-10.1	25%	10.0	-1.4	56%
R20	2.8	0.0	7%	8.8	0.0	49%
R21	7.5	-8.7	19%	10.6	-1.2	59%
R22	6.1	0.0	15%	9.0	0.0	50%
R23	>200m from affected road/route option alignment.					
R24	5.6	2.8	14%	9.3	0.4	52%
R25	3.7	-0.5	9%	8.6	-0.1	48%
R26	4.0	-0.1	10%	8.1	0.0	45%
R27	3.0	0.0	8%	8.3	0.0	46%
R28	2.5	0.0	6%	8.5	0.0	47%
R29	4.4	-2.7	11%	8.7	-0.4	48%
R30	5.7	3.1	14%	8.3	0.4	46%
R31	4.1	1.0	10%	8.3	0.1	46%
R32	2.8	0.4	7%	8.1	0.0	45%
R33	15.2	0.9	38%	10.4	0.1	58%

- 8.7.16 A summary of the magnitude of change for Option 2C is shown in Table 8.34. This shows that Option 2C would provide both increases and decreases in NO₂ and PM₁₀ concentrations. In general, the increases are at receptors which are in close proximity of the new route option alignment and the decreases are at receptors that are within or close to the bypassed area of Nairn.

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Table 8.34: DS Scenario (2016) – Number of representative receptors and magnitude change of annual mean NO₂ and PM₁₀ concentrations (Option 2C)

Magnitude of Change	NO ₂		PM ₁₀	
	Increase	Decrease	Increase	Decrease
Neutral	4		7	
Imperceptible	1	1	2	1
Small	3	1	4	1
Medium	3	1	-	3
Large	1	3	-	-
Total (excl. neutral)	8	6	6	5

- 8.7.17 All receptor results for Option 2C are below the relevant AQOs and therefore no significant air quality impacts are expected. The highest concentrations (% of AQO) are 40% (NO₂) at R15 (Ashleigh, Delnies) and 59% (PM₁₀) at R21 (River Park, Nairn).
- 8.7.18 The results show that the maximum increase in NO₂ and PM₁₀ occurs at R13 (The Cottage, Blackcastle), with increases of 4.8µg/m³ and 0.7µg/m³ respectively. This receptor is located close to the existing A96 and although this section is online, the widening of the existing A96 would bring the new route option alignment (and exposure to vehicle emissions) closer to the receptor.
- 8.7.19 The results show that the maximum decrease in NO₂ occurs at R19 (Rowan Place, Nairn), with a decrease of 10.1µg/m³. For PM₁₀, a maximum decrease of 1.6µg/m³ occurs at R16 (Schoolhouse, Delnies). These receptors are located close to existing A96. Option 2C would move the majority of traffic flow (and exposure to vehicle emissions) further away from these receptors.

Option 2D

- 8.7.20 The DMRB assessment results for Option 2D are shown in Table 8.35.

Table 8.35: DS Scenario (2016) - Annual mean NO₂ and PM₁₀ concentrations (Option 2D)

Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R13	15.4	4.6	39%	10.4	0.7	58%
R14	>200m from affected road/route option alignment.					
R15	15.0	-0.5	38%	10.4	-0.2	58%
R16	10.9	-8.3	27%	10.7	-1.3	59%
R17	5.2	2.1	13%	9.4	0.3	52%
R18	>200m from affected road/route option alignment.					
R19	10.1	-9.9	25%	10.0	-1.3	56%
R20	3.9	1.1	10%	8.9	0.2	49%
R21	7.5	-8.7	19%	10.6	-1.2	59%
R22	5.7	-0.5	14%	8.9	-0.1	49%
R23	>200m from affected road/route option alignment.					
R24	>200m from affected road/route option alignment.					
R25	4.4	0.3	11%	8.8	0.1	49%
R26	3.3	-0.7	8%	8.0	-0.1	44%
R27	3.0	0.0	8%	8.3	0.0	46%
R28	2.5	0.0	6%	8.5	0.0	47%
R29	4.4	-2.6	11%	8.8	-0.4	49%
R30	5.2	2.6	13%	8.2	0.4	46%
R31	4.1	1.0	10%	8.3	0.1	46%
R32	2.8	0.4	7%	8.1	0.0	45%
R33	15.2	0.9	38%	10.4	0.1	58%

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8.7.21 A summary of the magnitude of impact for Option 2D is shown in Table 8.36. This shows that Option 2D would provide both increases and decreases in NO₂ and PM₁₀ concentrations. In general, the increases are at receptors which are in close proximity of the new route option alignment and the decreases are at receptors that are within or close to the bypassed area of Nairn.

Table 8.36: DS Scenario (2016) - Number of representative receptors and magnitude change of annual mean NO₂ and PM₁₀ concentrations (Option 2D)

Magnitude of Change	NO ₂		PM ₁₀	
	Increase	Decrease	Increase	Decrease
Neutral	2		3	
Imperceptible	1	-	3	2
Small	4	3	4	2
Medium	2	1	-	3
Large	1	3	-	-
Total (excl. neutral)	8	7	7	7

8.7.22 All receptor results for Option 2D are below the relevant AQOs and therefore no significant air quality impacts are expected. The highest concentrations (% of AQO) are 39% (NO₂) at R13 (The Cottage, Blackcastle) and 59% (PM₁₀) at R16 (Schoolhouse, Delnies) and R21 (River Park, Nairn).

8.7.23 The results show that the maximum increase in NO₂ and PM₁₀ occurs at R13 (The Cottage, Blackcastle), with increases of 4.6µg/m³ and 0.7µg/m³ respectively. This receptor is located close to the existing A96 and although this section is online, the widening of the existing A96 would bring the new route option alignment (and exposure to vehicle emissions) closer to the receptor.

8.7.24 The results show that the maximum decrease in NO₂ occurs at R19 (Rowan Place, Nairn), with a decrease of 9.9µg/m³. For PM₁₀, the maximum decrease of 1.3µg/m³ occurs at both R16 (Schoolhouse, Delnies) and R19. These receptors are located close to the existing A96, with R19 in the centre of Nairn. Option 2D would move the majority of traffic flow (and therefore exposure to vehicle emissions) further away from these receptors.

Option 2E

8.7.25 The DMRB assessment results for Option 2E are shown in Table 8.37.

Table 8.37: DS Scenario (2016) - Annual Mean NO₂ and PM₁₀ concentrations (Option 2E)

Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R13	8.6	-2.2	22%	9.3	-0.4	52%
R14	>200m from affected road/route option alignment.					
R15	7.3	-8.2	18%	9.3	-1.2	52%
R16	8.7	-10.5	22%	10.4	-1.7	58%
R17	3.2	0.0	8%	9.2	0.0	51%
R18	3.4	0.5	9%	9.4	0.1	52%
R19	9.8	-10.2	25%	10.0	-1.4	56%
R20	2.7	0.0	7%	8.8	0.0	49%
R21	7.4	-8.8	19%	10.6	-1.2	59%
R22	6.7	0.5	17%	9.1	0.1	51%
R23	7.6	4.7	19%	9.6	0.7	53%
R24	3.6	0.8	9%	9.1	0.1	51%
R25	3.9	-0.3	10%	8.6	0.0	48%
R26	3.7	-0.3	9%	8.0	0.0	44%
R27	6.3	3.3	16%	8.8	0.5	49%

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Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R28	2.5	0.0	6%	8.5	0.0	47%
R29	4.3	-2.8	11%	8.7	-0.4	48%
R30	2.6	0.0	7%	7.8	0.0	43%
R31	3.8	0.7	10%	8.3	0.1	46%
R32	2.4	0.0	6%	8.1	0.0	45%
R33	15.3	1.0	38%	10.4	0.1	58%

8.7.26 A summary of the magnitude of impact for Option 2E is shown in Table 8.38. This shows that Option 2E would provide both increases and decreases in NO₂ and PM₁₀ concentrations. In general, the increases are at receptors which are in close proximity of the new route option alignment and the decreases are at receptors that are within or close to the bypassed area of Nairn.

Table 8.38: DS Scenario (2016) - Number of representative receptors and magnitude change of annual mean NO₂ and PM₁₀ concentrations (Option 2E)

Magnitude of Change	NO ₂		PM ₁₀	
	Increase	Decrease	Increase	Decrease
Neutral	5		7	
Imperceptible	-	2	5	-
Small	5	-	2	2
Medium	1	2	-	4
Large	1	4	-	-
Total (excl. neutral)	7	8	7	6

8.7.27 All receptor results for Option 2E are below the relevant AQOs and therefore no significant air quality impacts are expected. The highest concentrations (% of AQO) are 38% (NO₂) at R33 (Heathfield, Nairn) and 59% (PM₁₀) at R21 (River Park, Nairn).

8.7.28 The results show that the maximum increase in NO₂ and PM₁₀ occurs at R23 (Blackpark, Nairn), with an increase of 4.7µg/m³ and 0.7µg/m³, respectively. R23 is located in a rural area where the new route option alignment would be constructed. As such, the route option alignment (and exposure to vehicle emissions) would be closer to the receptor than existing roads.

8.7.29 The results show that the maximum decrease in NO₂ and PM₁₀ occurs at R16 (Schoolhouse, Delnies) with decreases of 10.5µg/m³ and 1.7µg/m³, respectively. This receptor is located close to the existing A96. Option 2E would move the majority of traffic flow, and therefore exposure to vehicle emissions, further from this receptor.

Option 2F

8.7.30 The DMRB assessment results for Option 2F are shown in Table 8.39.

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Table 8.39: DS Scenario (2016) - Annual mean NO₂ and PM₁₀ concentrations (Option 2F)

Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R13	8.5	-2.3	21%	9.3	-0.4	52%
R14	>200m from affected road/route option alignment.					
R15	7.2	-8.2	18%	9.3	-1.3	52%
R16	8.6	-10.6	22%	10.3	-1.7	57%
R17	3.2	0.0	8%	9.2	0.0	51%
R18	3.4	0.5	9%	9.4	0.1	52%
R19	9.7	-10.3	24%	10.0	-1.4	56%
R20	2.7	0.0	7%	8.8	0.0	49%
R21	7.8	-8.4	20%	10.7	-1.1	59%
R22	7.4	1.3	19%	9.2	0.2	51%
R23	7.6	4.7	19%	9.6	0.7	53%
R24	3.6	0.8	9%	9.1	0.1	51%
R25	4.0	-0.2	10%	8.6	0.0	48%
R26	3.6	-0.5	9%	8.0	-0.1	44%
R27	3.0	0.0	8%	8.3	0.0	46%
R28	2.5	0.0	6%	8.5	0.0	47%
R29	5.3	-1.8	13%	8.9	-0.3	49%
R30	2.6	0.0	7%	7.8	0.0	43%
R31	4.0	0.9	10%	8.3	0.1	46%
R32	2.8	0.4	7%	8.1	0.0	45%
R33	15.1	0.8	38%	10.4	0.1	58%

8.7.31 A summary of the magnitude of impact for Option 2F is shown in Table 8.40. This shows that Option 2F would provide both increases and decreases in NO₂ and PM₁₀ concentrations. In general, the increases are at receptors which are in close proximity of the new route option alignment and the decreases are at receptors that are within or close to the bypassed area of Nairn.

Table 8.40: DS Scenario (2016) - Number of representative receptors and magnitude change of annual mean NO₂ and PM₁₀ concentrations (Option 2F)

Magnitude of Change	NO ₂		PM ₁₀	
	Increase	Decrease	Increase	Decrease
Neutral	5		7	
Imperceptible	-	1	4	1
Small	6	2	2	2
Medium	-	1	-	4
Large	1	4	-	-
Total (excl. neutral)	7	8	6	7

8.7.32 All receptor results for Option 2F are below the relevant AQOs and therefore no significant air quality impacts are expected. The highest concentrations (% of AQO) are 38% (NO₂) at R33 (Heathfield, Nairn) and 59% (PM₁₀) at R21 (Riverpark, Nairn).

8.7.33 The results show that the maximum increase in NO₂ and PM₁₀ occurs at R23 (Blackpark, Nairn), with increases of 4.7µg/m³ and 0.7µg/m³, respectively. R23 is located in a rural area where the new route option alignment would be constructed. As such, the route option alignment (and exposure to vehicle emissions) would be closer to the receptor than existing roads.

8.7.34 The results show that the maximum reduction in NO₂ and PM₁₀ occurs at R16 (Schoolhouse, Delnies), with decreases of 10.6µg/m³ and 1.7µg/m³, respectively. This receptor is located close to the existing A96. Option 2F would move the majority of traffic flow (and exposure to vehicle emissions) further away from this receptor.

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Option 2G

8.7.35 The DMRB assessment results for Option 2G are shown in Table 8.41.

Table 8.41: DS Scenario (2016) - Annual Mean NO₂ and PM₁₀ concentrations (Option 2G)

Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R13	8.7	-2.1	22%	9.4	-0.4	52%
R14	>200m from affected road/route option alignment.					
R15	7.4	-8.1	19%	9.3	-1.2	52%
R16	8.6	-10.6	22%	10.3	-1.7	57%
R17	3.2	0.0	8%	9.2	0.0	51%
R18	3.5	0.5	9%	9.4	0.1	52%
R19	9.7	-10.3	24%	10.0	-1.4	56%
R20	2.7	0.0	7%	8.8	0.0	49%
R21	7.5	-8.7	19%	10.6	-1.2	59%
R22	6.5	0.4	16%	9.0	0.1	50%
R23	>200m from affected road/route option alignment.					
R24	5.0	2.2	13%	9.3	0.3	52%
R25	3.7	-0.5	9%	8.6	-0.1	48%
R26	4.0	-0.1	10%	8.1	0.0	45%
R27	3.0	0.0	8%	8.3	0.0	46%
R28	2.5	0.0	6%	8.5	0.0	47%
R29	4.4	-2.6	11%	8.8	-0.4	49%
R30	6.0	3.4	15%	8.3	0.5	46%
R31	4.1	1.0	10%	8.3	0.1	46%
R32	2.8	0.4	7%	8.1	0.0	45%
R33	15.2	1.0	38%	10.4	0.2	58%

8.7.36 A summary of the magnitude of impact for Option 2G is shown in Table 8.42. This shows that Option 2G would provide both increases and decreases in NO₂ and PM₁₀ concentrations. In general, the increases are at receptors which are in close proximity of the new route option alignment and the decreases are at receptors that are within or close to the bypassed area of Nairn.

Table 8.42: DS Scenario (2016) - Number of representative receptors and magnitude change of annual mean NO₂ and PM₁₀ concentrations (Option 2G)

Magnitude of Change	NO ₂		PM ₁₀	
	Increase	Decrease	Increase	Decrease
Neutral	4		6	
Imperceptible	-	1	3	1
Small	5	1	3	2
Medium	2	2	-	4
Large	-	4	-	-
Total (excl. neutral)	7	8	6	7

8.7.37 All receptor results for Option 2G are below the relevant AQOs and therefore no significant air quality impacts are expected. The highest concentrations (% of AQO) are 38% (NO₂) at R33 (Heathfield, Nairn) and 59% (PM₁₀) at R21 (Riverpark, Nairn).

8.7.38 The results show that the maximum increases in NO₂ and PM₁₀ occurs at R30 (Sylvan House, Nairn), with increases of 3.4µg/m³ and 0.5µg/m³ respectively. R30 is located in a rural area where the new route option alignment would be constructed. As such, the route option alignment (and exposure to vehicle emissions) would be closer to the receptor than existing roads.

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- 8.7.39 The results show that the maximum decrease in NO₂ and PM₁₀ occurs at R16 (Schoolhouse, Delnies), with decreases of 10.6µg/m³ and 1.7µg/m³, respectively. This receptor is located close to the existing A96. Option 2G would move the majority of traffic flow, and therefore exposure to vehicle emissions, further away from this receptor.

Option 2H

- 8.7.40 The DMRB assessment results for Option 2H are shown in Table 8.43.

Table 8.43: DS Scenario (2016) - Annual mean NO₂ and PM₁₀ concentrations (Option 2H)

Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R13	8.5	-2.3	21%	9.3	-0.4	52%
R14	>200m from affected road/route option alignment.					
R15	7.3	-8.2	18%	9.3	-1.3	52%
R16	8.7	-10.4	22%	10.4	-1.6	58%
R17	3.2	0.0	8%	9.2	0.0	51%
R18	6.1	3.1	15%	9.8	0.4	54%
R19	9.8	-10.2	25%	10.0	-1.4	56%
R20	3.5	0.7	9%	8.9	0.1	49%
R21	7.7	-8.5	19%	10.7	-1.1	59%
R22	7.2	1.0	18%	9.2	0.2	51%
R23	>200m from affected road/route option alignment.					
R24	>200m from affected road/route option alignment.					
R25	4.0	-0.2	10%	8.7	0.0	48%
R26	3.7	-0.4	9%	8.0	-0.1	44%
R27	6.4	3.3	16%	8.8	0.5	49%
R28	3.4	0.9	9%	8.7	0.1	48%
R29	4.2	-2.9	11%	8.7	-0.4	48%
R30	2.6	0.0	7%	7.8	0.0	43%
R31	3.8	0.7	10%	8.3	0.1	46%
R32	2.4	0.0	6%	8.1	0.0	45%
R33	15.1	0.8	38%	10.4	0.1	58%

- 8.7.41 A summary of the magnitude of impact for Option 2H is shown in Table 8.44. This shows that Option 2H would provide both increases and decreases in NO₂ and PM₁₀ concentrations. In general, the increases are at receptors which are in close proximity of the new route option alignment and the decreases are at receptors that are within or close to the bypassed area of Nairn.

Table 8.44: DS Scenario (2016) - Number of representative receptors and magnitude change of annual mean NO₂ and PM₁₀ concentrations (Option 2H)

Magnitude of Change	NO ₂		PM ₁₀	
	Increase	Decrease	Increase	Decrease
Neutral	3		4	
Imperceptible	-	1	4	1
Small	5	1	3	2
Medium	2	2	-	4
Large	-	4	-	-
Total (excl. neutral)	7	8	7	7

- 8.7.42 All receptor results for Option 2H are below the relevant AQOs and therefore no significant air quality impacts are expected. The highest concentrations (% of AQO) are 38% (NO₂) at R33 (Heathfield, Nairn) and 59% (PM₁₀) at R21 (River Park, Nairn).

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- 8.7.43 The results show that the maximum increase in NO₂ and PM₁₀ occurs at R27 (East Lodge Cottage, Nairn), with increases of 3.3µg/m³ and 0.5µg/m³ respectively. R27 is located in a rural area where the new route option alignment would be constructed. As such, the route option alignment (and exposure to vehicle emissions) would be closer to the receptor than existing roads.
- 8.7.44 The results show that the maximum decrease in NO₂ and PM₁₀ occurs at R16 (Schoolhouse, Delnies), with decreases of 10.4µg/m³ and 1.6µg/m³, respectively. This receptor is located close to the existing A96. Option 2H would move the majority of traffic flow (and exposure to vehicle emissions) further away from this receptor.

Option 2I

- 8.7.45 The DMRB assessment results for Option 2I are shown in Table 8.45.

Table 8.45: DS Scenario (2016) - Annual mean NO₂ and PM₁₀ concentrations (Option 2I)

Receptor	NO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		
	DS	DS-DM	% of AQO	DS	DS-DM	% of AQO
R13	8.7	-2.1	22%	9.4	-0.4	52%
R14	>200m from affected road/route option alignment.					
R15	7.7	-7.8	19%	9.3	-1.2	52%
R16	8.9	-10.3	22%	10.4	-1.6	58%
R17	3.2	0.0	8%	9.2	0.0	51%
R18	5.3	2.4	13%	9.7	0.3	54%
R19	10.0	-10.0	25%	10.0	-1.3	56%
R20	3.7	0.9	9%	8.9	0.1	49%
R21	7.5	-8.7	19%	10.6	-1.2	59%
R22	6.0	-0.1	15%	9.0	0.0	50%
R23	>200m from affected road/route option alignment.					
R24	>200m from affected road/route option alignment.					
R25	4.7	0.6	12%	8.8	0.1	49%
R26	3.3	-0.7	8%	8.0	-0.1	44%
R27	3.0	0.0	8%	8.3	0.0	46%
R28	>200m from affected road/route option alignment.					
R29	4.4	-2.6	11%	8.8	-0.4	49%
R30	5.6	3.0	14%	8.3	0.4	46%
R31	4.1	1.0	10%	8.3	0.1	46%
R32	2.8	0.4	7%	8.1	0.0	45%
R33	15.2	0.9	38%	10.4	0.2	58%

- 8.7.46 A summary of the magnitude of impact for Option 2I is shown in Table 8.46. This shows that Option 2I would provide both increases and decreases in NO₂ and PM₁₀ concentrations. In general, the increases are at receptors which are in close proximity of the new route option alignment and the decreases are at receptors that are within or close to the bypassed area of Nairn.

Table 8.46: DS Scenario (2016) - Number of representative receptors and magnitude change of annual mean NO₂ and PM₁₀ concentrations (Option 2I)

Magnitude of Change	NO ₂		PM ₁₀	
	Increase	Decrease	Increase	Decrease
Neutral	2		4	
Imperceptible	-	1	3	1
Small	5	1	3	2
Medium	2	2	-	4
Large	-	4	-	-
Total (excl. neutral)	7	8	6	7

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- 8.7.47 All receptor results for Option 2I are below the relevant AQOs and therefore no significant air quality impacts are expected. The highest concentrations (% of AQO) are 38% (NO₂) at R33 (Heathfield, Nairn) and 59% (PM₁₀) at R21 (River Park, Nairn).
- 8.7.48 The results show that the maximum increase in NO₂ and PM₁₀ occurs at R30 (Sylvan House, Nairn), with increases of 3.0µg/m³ and 0.4µg/m³, respectively. R30 is located in a rural area where the new route option alignment would be constructed. As such, the route option alignment (and exposure to vehicle emissions) would be closer to the receptor than existing roads.
- 8.7.49 The results show that the maximum reduction in NO₂ and PM₁₀ occurs at R16 (Schoolhouse, Delnies), with decreases of 10.3µg/m³ and 1.6µg/m³, respectively. This receptor is located close to the existing A96. Option 2I would move the majority of traffic flow (and exposure to vehicle emissions) further away from this receptor.

Designated Sites

- 8.7.50 An air quality assessment was undertaken at the Kildrummie Kames SSSI, which is situated to the south of Nairn. The priority habitat for the site is purple moor grass and rush pastures.
- 8.7.51 The site is currently of a very rural nature, but would be affected by a number of the route options, which, in places, are planned to encroach on part of the site. This is further discussed in Chapters 11 (Habitats and Biodiversity) and Chapter 12 (Geology and Soils) of this report.
- 8.7.52 An air quality assessment has been undertaken using transect points from the middle of the eastern end of the SSSI, and then at 10m increments up to 200m, creating 21 transect points. The affected road links within 200m of each point were then included in the assessment. Options 2A, 2B, 2C, 2E, 2F, and 2G did not require assessment as the affected roads were more than 200m from any transect point.
- 8.7.53 The base and DM scenario assessments did not include any affected road links. Therefore, the site background concentration was applied to each transect point.
- 8.7.54 The results from the assessment for the base, DM and DS scenarios are all below the NO_x AQO of 30µg/m³. Further calculations into nitrogen deposition were therefore not required.
- 8.7.55 The results for the DM and DS concentrations and the DS-DM results at the closest transect point to the affected road are shown in Table 8.47.

Table 8.47: DS Scenario (2016) - Annual mean NO_x at Kildrummie Kames SSSI

Receptor	Annual Mean NO _x DM Concentration (µg/m ³)		
	2D	2H	2I
Kildrummie Kames SSSI	4.0	4.0	4.0
Receptor	Annual Mean NO _x DS Concentration (µg/m ³)		
	2D	2H	2I
Kildrummie Kames SSSI	12.8	16.4	19.4
Receptor	Change in Concentration (DS-DM) (µg/m ³)		
	2D	2H	2I
Kildrummie Kames SSSI	8.8	12.4	15.4

- 8.7.56 The maximum concentration for each of the route options (as shown in Table 8.47) is found at the first transect point, with concentrations reducing as transect points are assessed further from the route option alignments.

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8.7.57 The change in concentrations show that route options 2D, 2H and 2I are predicted to deliver an increase in annual mean NO_x at the site, with the greatest increase from Option 2I. However, as all concentrations are below the NO_x AQO for designated sites (30µg/m³), no significant air quality impacts are expected for any of these route options.

Regional Assessment

8.7.58 An assessment of the regional emissions relating to the route options has been undertaken following guidance provided in HA207/07 and utilising the Emissions Factor Toolkit v5.2c.

8.7.59 The assessment results for regional air quality are shown in Table 8.48. The estimated emissions of pollutants in the Base, DM and DS scenarios for 2016 and 2031 are shown allowing for a comparison of total mass emissions between the route options.

Table 8.48: Regional air quality assessment (annual mass emissions in kg/year for all substances with the exception of CO₂ which is tonnes/year)

Pollutant	Base 2009	DM 2016	DS 2016	DS-DM	DM 2031	DS 2031	DS-DM
Option 2A							
NO _x	162,077	93,004	114,877	21,873	43,882	60,728	16,847
PM _{2.5}	7,832	6,397	6,053	-344	4,718	5,429	711
PM ₁₀	10,749	10,648	9,239	-1,410	8,187	9,337	1,150
CO ₂	47,488	44,083	53,484	9,402	49,681	62,406	12,725
HC	17,842	8,160	8,591	430	14,876	16,079	1,202
Option 2B							
NO _x	162,077	93,004	116,197	23,193	43,882	62,248	18,366
PM _{2.5}	7,832	6,397	6,126	-271	4,718	5,560	842
PM ₁₀	10,749	10,648	9,350	-1,298	8,187	9,562	1,375
CO ₂	47,488	44,083	54,112	10,030	49,681	63,845	14,165
HC	17,842	8,160	8,704	544	14,876	16,525	1,649
Option 2C							
NO _x	162,077	93,004	114,578	21,574	43,882	59,993	16,111
PM _{2.5}	7,832	6,397	6,037	-360	4,718	5,351	633
PM ₁₀	10,749	10,648	9,212	-1,436	8,187	9,202	1,015
CO ₂	47,488	44,083	53,353	9,270	49,681	61,544	11,863
HC	17,842	8,160	8,557	397	14,876	15,850	974
Option 2D							
NO _x	162,077	93,004	116,909	23,905	43,882	62,526	18,644
PM _{2.5}	7,832	6,397	6,160	-237	4,718	5,545	827
PM ₁₀	10,749	10,648	9,399	-1,249	8,187	9,532	1,345
CO ₂	47,488	44,083	54,444	10,362	49,681	64,286	14,606
HC	17,842	8,160	8,731	571	14,876	17,033	2,157
Option 2E							
NO _x	162,077	93,004	116,202	23,198	43,882	62,456	18,574
PM _{2.5}	7,832	6,397	6,110	-287	4,718	5,518	800
PM ₁₀	10,749	10,648	9,314	-1,334	8,187	9,483	1,297
CO ₂	47,488	44,083	54,035	9,953	49,681	63,972	14,291
HC	17,842	8,160	8,657	497	14,876	16,294	1,417
Option 2F							
NO _x	162,077	93,004	115,312	22,308	43,882	61,171	17,289
PM _{2.5}	7,832	6,397	6,090	-307	4,718	5,498	780
PM ₁₀	10,749	10,648	9,298	-1,350	8,187	9,459	1,272
CO ₂	47,488	44,083	53,765	9,682	49,681	63,061	13,380
HC	17,842	8,160	8,666	506	14,876	16,325	1,448
Option 2G							
NO _x	162,077	93,004	115,864	22,860	43,882	61,787	17,905
PM _{2.5}	7,832	6,397	6,118	-279	4,718	5,539	821
PM ₁₀	10,749	10,648	9,338	-1,310	8,187	9,526	1,339
CO ₂	47,488	44,083	54,009	9,927	49,681	63,547	13,866
HC	17,842	8,160	8,698	537	14,876	16,431	1,554

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Pollutant	Base 2009	DM 2016	DS 2016	DS-DM	DM 2031	DS 2031	DS-DM
Option 2H							
NO _x	162,077	93,004	115,965	22,961	43,882	61,335	17,453
PM _{2.5}	7,832	6,397	6,125	-272	4,718	5,511	793
PM ₁₀	10,749	10,648	9,351	-1,297	8,187	9,480	1,293
CO ₂	47,488	44,083	54,081	9,998	49,681	63,177	13,496
HC	17,842	8,160	8,701	540	14,876	16,362	1,486
Option 2I							
NO _x	162,077	93,004	114,323	21,319	43,882	60,727	16,846
PM _{2.5}	7,832	6,397	6,035	-362	4,718	5,440	722
PM ₁₀	10,749	10,648	9,211	-1,437	8,187	9,356	1,169
CO ₂	47,488	44,083	53,307	9,224	49,681	62,425	12,745
HC	17,842	8,160	8,562	401	14,876	16,151	1,275

8.7.60 Table 8.48 shows that the route option alignments are expected to produce similar emissions. A summary of the maximum emissions is provided below:

- NO_x: all route options are expected to produce an increase of 23% to 26% in NO_x emissions in 2016, with Option 2D showing the largest increase by 23,905kg/year. The route options also produce an increase of 37% to 42% in NO_x emissions in 2031, with the largest increase in Option 2D by 18,644kg/year.
- CO₂: all route options are expected to produce an increase of 21% to 24% in CO₂ emissions in 2016, with Option 2D showing the largest increase by 10,366 tonnes/year. The route options also produce an increase of 24% to 29% in CO₂ emissions in 2031, with the largest increase in Option 2D by 14,606 tonnes/year.
- PM₁₀: all route options are expected to produce a decrease of 12% to 13% in PM₁₀ emissions in 2016, with Option 2I showing the largest decrease by 1,437kg/year. However, in 2031, all route options are expected to produce an increase of 12% to 17% in PM₁₀ emissions, with Option 2B showing the largest increase by 1,375kg/year.

8.8 Compliance with Policies and Plans

8.8.1 An assessment of the compliance of the route options in relation to the policies and plans mentioned in Section 8.3 (Policies and Plans) is presented for local and regional air quality and designated sites. The compliance with policies and plans for air quality is the same for both sections of the scheme and therefore the sections are considered collectively.

Local Air Quality

8.8.2 The level of impact at the representative receptors are within the AQO's for NO₂ and PM₁₀ and no significant air quality impacts are expected to result from any of the route options. Therefore there is no conflict with the relevant section of SPP or Policy 28 (Sustainable Design), Policy 72 (Pollution) and Policy 58 (Air Quality) of the HwLDP.

Designated Sites

8.8.3 No significant air quality impacts are expected on any designated sites. Therefore there is no conflict with the relevant section of SPP or Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP in this regard.

Regional Air Quality

8.8.4 All the route options are expected to increase emissions of NO_x and CO₂. Without mitigation, all the route options are therefore expected to conflict with SPP which supports the targets set in the Climate Change (Scotland) Act 2009 to reduce greenhouse gas emissions.

8.8.5 Delivering carbon savings is a central feature of the National Transport Strategy (Scottish Executive, 2006) which acknowledges that a key challenge for transport is to break the link

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between economic growth, increased traffic and increased emissions. It identifies a number of existing measures that are being taken forward across the UK to reduce carbon emissions. These measures are not expected to reduce the overall level of emissions from transport, but rather to offset the growth in transport emissions that is expected to occur.

- 8.8.6 Although all the route options would result in increases to greenhouse gas emissions, as measures are being implemented at a national level to offset such growth from transport emissions, a conflict with SPP in relation to increases in greenhouse gas emissions is not expected.

8.9 Potential Mitigation

- 8.9.1 For a DMRB Stage 2 Assessment the design has not been sufficiently developed to allow mitigation measures to be defined in detail at this stage. The objective of this section is to identify potential mitigation taking into account best practice, legislation and guidance, which would be developed and refined during the DMRB Stage 3 Assessment. As part of DMRB Stage 3, the design of the preferred option would be reviewed and, where possible, the preferred option would be further developed (pre-DMRB Stage 3 Assessment mitigation) to minimise impacts on air quality.

Construction

- 8.9.2 The potential impacts of the construction of the route options have not been considered as part of this assessment, due to the lack of known construction traffic and required haulage routes at this stage. The construction of the preferred option may give rise to fugitive dust emissions which may create a temporary dust nuisance. Appropriate best practice dust mitigation measures should be put in place and these would be defined in the Construction Environmental Management Plan (CEMP).

Operation

- 8.9.3 The assessment results indicate that no significant air quality impacts would result from any of the route options, and that where there are variations in the concentrations of pollutants, the differences are small.
- 8.9.4 Based on the results from this assessment, no operational phase mitigation measures are expected for any of the route options.

8.10 Summary of Route Options

- 8.10.1 This section provides a summary of the Simple Assessment for representative residential and ecological receptors, and regional emissions. The assessment focuses on operational impacts as data required to assess the construction impacts is not fully known.

Inverness to Gollanfield

Local Air Quality

- 8.10.2 The results from the assessment indicate that no significant air quality impacts result from any of the route options. All DS concentrations at the representative receptors are below the relevant AQOs for NO₂ and PM₁₀. As such no operational mitigation is proposed.
- 8.10.3 With each route option, a small number of the representative properties assessed are expected to experience an increase in concentrations of NO₂ and PM₁₀. However the overall pattern is a decrease in concentration at the majority of assessed receptors. This is summarised in Table 8.49 for NO₂. The results for PM₁₀ follow a similar pattern as for NO₂ and as such have not been summarised.

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Table 8.49: Number of representative receptors and magnitude of change of annual mean NO₂ concentrations (Inverness to Gollanfield)

Magnitude of Change	Option							
	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Neutral	-	-	-	-	-	-	-	-
Increase								
Imperceptible	2	-	-	-	1	1	1	1
Small	1	2	1	2	1	1	-	-
Medium	-	-	-	-	-	-	-	-
Large	1	1	1	1	-	-	-	-
Total	4	3	2	3	2	2	1	1
Decrease								
Imperceptible	2	2	4	1	1	1	2	2
Small	1	1	2	4	2	2	3	3
Medium	1	2	-	-	2	2	1	1
Large	4	4	3	3	4	4	3	3
Total	8	9	9	8	9	9	9	9

8.10.4 Table 8.49 shows that the impacts across the route options are very similar, with overall net benefits (i.e. a decrease in air quality) at representative receptors across all route options. Overall, there are more representative receptors expected to experience a decrease in air quality. The majority of the increases in concentrations of pollutants are small or imperceptible for all route options, with only Options 1A, 1A (MV), 1B and 1B (MV) having a large increase at one representative receptor. Taking into account the increases and decreases in concentrations, Options 1D and 1D (MV) are expected to have the most benefits, with Options 1A and 1B (MV) expected to have the least. However, given the limitations of the model predictions (refer to paragraph 8.2.53 and 8.2.54), and because there are no exceedences of AQOs, none of the route options are considered to be materially better or worse overall.

8.10.5 In relation to compliance with planning policies and impacts on local air quality it is expected that there would be no conflict with the relevant section of SPP or Policy 28 (Sustainable Design), Policy 72 (Pollution) and Policy 58 (Air Quality) of the HwLDP.

Designated Sites

8.10.6 The results from the assessment for Longman and Castle Stuart Bays SSSI and Inner Moray Firth SPA/Ramsar show that Base, DM and DS concentrations for all of the route options are all below the NO_x AQO for designated sites of 30µg/m³. Furthermore, all route options are predicted to deliver an imperceptible change in annual mean NO_x at the site.

8.10.7 Therefore, there are no significant air quality impacts from any of the route options upon the Longman and Castle Stuart Bays SSSI and Inner Moray Firth SPA/Ramsar. No operational mitigation is therefore proposed.

8.10.8 In relation to compliance with planning policies and air quality impacts on designated sites it is expected that there would be no conflict with the relevant section of SPP or Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP.

Regional Air Quality Assessment

8.10.9 The results from the regional air quality assessment indicate that all of the route options are expected to increase emissions of NO_x and CO₂ in both 2016 and 2031. Emissions related to PM₁₀ are expected to decrease in 2016 and increase in 2031 for all route options.

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- 8.10.10 Overall there are small variations between the route options, with the largest variation seen for NO_x in 2031, where differences between the route options are expected to vary by approximately 10%. In relation to this, Option 1C (MV) expected to have the greatest increase (45% increase) in NO_x and Option 1B the least (35% increase).
- 8.10.11 In relation to compliance with planning policies and impacts on regional air quality, although all route options would result in increases to greenhouse gas emissions, measures are being implemented at a national level to offset such growth from transport emissions and conflict with SPP is not expected.

Nairn Bypass

Local Air Quality

- 8.10.12 The results from the assessment indicate that no significant air quality impacts result from any of the route options. All DS concentrations at the representative receptors are below the relevant air quality objectives for NO₂ and PM₁₀. As such, no operational mitigation is proposed.
- 8.10.13 The route option results are summarised in Table 8.50 for NO₂. The results for PM₁₀ follow a similar pattern to NO₂ and as such have not been summarised. With each route option a small number of the representative receptors assessed are expected to experience an increase in concentrations of NO₂ and PM₁₀. It should be noted that the modelled receptors in Nairn centre are representative of the scale of impacts at more properties than those selected in the vicinity of the new route option alignments. Direct comparison of the total number of benefits and impacts is therefore not appropriate.

Table 8.50: Number of representative receptors and magnitude of change of annual mean NO₂ concentrations (Nairn Bypass)

Magnitude of Change	Option								
	2A	2B	2C	2D	2E	2F	2G	2H	2I
Neutral	4	3	4	2	5	5	4	3	2
Increase									
Imperceptible	1	1	1	1	-	-	-	-	-
Small	4	5	3	4	5	6	5	5	5
Medium	2	1	3	2	1	-	2	2	2
Large	2	2	1	1	1	1	-	-	-
Total	9	9	8	8	7	7	7	7	7
Decrease									
Imperceptible	1	1	1	-	2	1	1	1	1
Small	1	2	1	3	-	2	1	1	1
Medium	1	-	1	1	2	1	2	2	2
Large	3	3	3	3	4	4	4	4	4
Total	6	6	6	7	8	8	8	8	8

- 8.10.14 Table 8.50 shows that expected impacts and benefits for the route options are very similar. The predicted increases in concentrations of pollutants relate to a number of the assessed rural receptors which were chosen due to their proximity to the route option alignments. The predicted decreases in concentration of pollutants mainly relate to receptors within the centre of Nairn. As there are more representative receptors along the route option alignments, the results indicate that there are more instances of increases than decreases in concentrations of pollutants. However, as the representative receptors in Nairn would represent a much higher number of receptors overall, the route options are expected to benefit more receptors, especially those in the centre of Nairn.

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- 8.10.15 Taking into account the increases and decreases in concentrations, Options 2E, 2F, 2G, 2H and 2I are expected to have the smallest increases in concentrations, with Options 2A and 2B expected to have the greatest. However, given the limitations in the model predictions (refer to paragraph 8.2.53 and 8.2.54), and because there are no exceedences of AQOs, none of the route options are considered to be materially better or worse overall.
- 8.10.16 In relation to compliance with planning policies and impacts on local air quality it is expected that there would be no conflict with the relevant section of SPP and Policy 28 (Sustainable Design), Policy 72 (Pollution) and Policy 58 (Air Quality) of the HwLDP.

Designated Sites

- 8.10.17 Only Options 2D, 2H and 2I were assessed for their potential impact on designated sites, as the affected roads were more than 200m from any transect point for all the other route options. The results from the assessment for Kildrummie Kames SSSI show that concentrations for the Base, DM and DS scenarios for Options 2D, 2H and 2I are all below the NO_x AQO for designated sites of 30µg/m³.
- 8.10.18 The change in annual mean NO_x concentrations show that Options 2D, 2H and 2I are predicted to deliver an increase in annual mean NO_x at the site. Option 2I is expected to have the largest increase, with Option 2D expected to have the smallest increase. However, as all concentrations are below the ecological NO_x AQO, no significant air quality impacts are expected upon the Kildrummie Kames SSSI. No operational mitigation is therefore proposed.
- 8.10.19 In relation to compliance with planning policies and air quality impacts on designated sites it is expected that there would be no conflict with the relevant section of SPP and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP.

Regional Air Quality Assessment

- 8.10.20 The results from the regional air quality assessment indicate that all of the route options are expected to increase emissions of NO_x and CO₂ in both 2016 and 2031. Emissions related to PM₁₀ are expected to decrease in 2016 and increase in 2031 for all route options.
- 8.10.21 There are small variations between the route options, with the largest variation seen for NO_x, CO₂ and PM₁₀ in 2031, where differences between the route options vary by approximately 5%. In relation to this, Options 2B, 2D and 2E are expected to have the greatest increase for NO_x and CO₂, (29% and 42% respectively) with Option 2C the least for these pollutants (24% and 37% respectively). For PM₁₀, Option 2B is expected to have the greatest increase (17% increase) and Option 2C the least (12% increase).
- 8.10.22 In relation to compliance with planning policies and impacts on regional air quality, although all route options would result in increases to greenhouse gas emissions, measures are being implemented at a national level to offset such growth from transport emissions and conflict with SPP is not expected.

8.11 Scope of DMRB Stage 3 Assessment

- 8.11.1 Following the identification of a preferred option and the production of finalised traffic data and the option alignment, the DMRB Stage 3 Assessment is expected to include a detailed quantitative air quality assessment. This should be in accordance with of HA207/07 and should use the ADMS-Roads Air Dispersion Modelling Software (provided by Cambridge Environmental Research Consultants).
- 8.11.2 Additionally, it is expected that an air quality monitoring exercise would be required across the study area to permit a more robust validation of the performance of the air quality model.

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8.12 References

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9 Noise and Vibration

9.1 Introduction

9.1.1 This chapter presents the DMRB Stage 2 Assessment of the expected noise and vibration impacts arising from each of the route options on the nearest sensitive receptors (such as residential properties, schools, hospitals and care homes).

9.1.2 The assessment includes the following:

- baseline conditions within the study area;
- potential impacts of each of the route options with regard to the identified baseline conditions;
- anticipated mitigation measures to allow subsequent identification of potential residual impacts; and
- a summary of the route option assessment identifying, where possible, residual impacts taking into account likely mitigation.

9.1.3 The assessment is supported by the following appendix which is located within Part 6 (Appendices) of this report:

- Appendix A9.1: Noise and Vibration – Technical Definitions.

9.1.4 As described in Part 1 (The Scheme), Chapter 3 (Description of Route Options) of this report, the proposed scheme is divided into two sections; Inverness to Gollanfield and the Nairn Bypass. The information presented in Section 9.2 (Approach and Methods), Section 9.3 (Policies and Plans) Section 9.4 (Baseline Conditions) and Section 9.9 (Potential Mitigation) is appropriate to both sections. The information presented in Sections 9.5 to 9.7 (Impact Assessment), Section 9.8 (Compliance with Policies and Plans) and Section 9.10 (Summary of Route Options) is reported for each section and where appropriate under the headings Inverness to Gollanfield and the Nairn Bypass.

9.1.5 Section 9.11 provides details on the proposed scope for the DMRB Stage 3 Assessment and Section 9.12 provides a full list of references that are noted within this chapter.

9.2 Approach and Methods

Scope and Guidance

9.2.1 The assessment of road traffic noise and vibration is carried out according to established prediction and assessment methodologies that are governed or guided by the following key documents:

- DMRB Volume 11, Section 3, Part 7 (HD 213/11 – Revision 1), Noise and Vibration (The Highways Agency et al, 2011) (hereafter referred to as HD213/11);
- DMRB Volume 11, Section 2, Part 5 (HA205/08), Assessment and Management of Environmental Effects (The Highways Agency et al., 2008) (hereafter referred to as HA205/08); and
- Calculation of Road Traffic Noise (CRTN) (Department of Transport Welsh Office, 1988) (hereafter referred to as CRTN).

9.2.2 In undertaking the assessment, consideration is also given to the advice contained in the document 'Guidance for possible measures to manage noise from road and rail' produced by the Scottish Government (Scottish Government, undated).

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Study Area

- 9.2.3 The study area (e.g. calculation area) for the noise assessment was defined in accordance with HD213/11.
- 9.2.4 The calculation area is defined as all residential dwellings and other noise sensitive receptors within 600m of the following:
- route option;
 - bypassed routes through Nairn; and
 - roads, within 1km of the route options and bypassed routes, on the existing road network that are predicted to result in noise changes of 1dB in the modelled opening year or 3dB in the modelled design year.
- 9.2.5 HD213/11 also requires consideration beyond the calculation area, to take into account the likely noise impacts on the wider road network (considered in terms of change in basic noise level (BNL)). This is required for such roads where there is a 1dB increase or decrease in noise in the opening year and/or a 3dB increase or decrease in the future assessment year in comparison with the opening year. At this stage of the assessment process, BNL have not been calculated for each of the route options and therefore the likely noise impacts on the wider road network have not been considered. This is discussed further in the limitations section below.

Baseline Data

- 9.2.6 The future year scenarios available from the Moray Firth Transport Model (MFTM) for the DMRB Stage 2 Assessment are the modelled opening year of 2016 and the design year of 2031. These are the future year scenarios available from the MFTM for the DMRB Stage 2 Assessment and are not necessarily the actual opening and design years of the scheme; however, they are considered to be the best available information at the time of the assessment and provide a dataset on which to compare the route options. Further details of the transport modelling are provided in Part 4 (Traffic and Economic Assessment), Chapter 18 (Modelling) of this report.
- 9.2.7 Baseline noise monitoring has not been undertaken for the route options at this stage in the assessment process. Instead, baseline (or Do-Minimum (DM)) noise levels have been established using predicted traffic data for the modelled opening year (2016), without the route options in place. This is discussed further in the limitations section below.
- 9.2.8 Much of the area through which the route options pass is rural and is likely to have a relatively low baseline noise climate. Where there are more populated areas, including Nairn itself, the existing noise climate is likely to be higher, with road traffic noise a significant contributor.

Impact Assessment

- 9.2.9 Disruption caused during the construction phase of the route options has the potential to impact residents and other sensitive receptors adjacent to the works. Both HD213/11 and the Scottish Government publication 'Technical Advice Note (TAN) - Assessment of Noise' (Scottish Government, 2011c) advise on the use of BS5228 to assess and control noise and vibration from construction activities.
- 9.2.10 At present, there is no construction programme and the details of the likely construction plant and equipment to be used is not available to assist in carrying out detailed construction noise predictions. Therefore, an assessment of construction noise impacts cannot be carried out at this stage. Construction noise predictions would be carried out during the DMRB Stage 3 Assessment, when a preferred option has been identified and the DMRB Stage 3 design has

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been progressed. Predicted impacts would be assessed against the criteria set out in BS5228-1 Method 2.

- 9.2.11 The assessment of noise levels during operation (e.g. road traffic noise) at various noise sensitive receivers has followed the Simple Assessment methodology outlined in HD213/11. The assessment considers the noise and vibration climate both with and without the route options, referred to as the Do-Something (DS) and Do-Minimum (DM), respectively.

Noise Model Assumptions

- 9.2.12 Noise levels have been calculated at residential dwellings and other sensitive receptors within the calculation area as defined in paragraph 9.2.4. HD213/11 provides examples of noise sensitive receptors. These include dwellings, hospitals, schools, community facilities, designated areas (e.g. National Scenic Area (NSA), National Park, Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Sites of Special Scientific Interest (SSSI)) and public rights of way such as footpaths.
- 9.2.13 This assessment considers noise level changes at dwellings and other sensitive receptors according to their baseline façade noise levels. It should be noted that in this context, the baseline is considered to be the DM scenario in the modelled opening year (2016).
- 9.2.14 The following comparisons are made:
- DM scenario in the modelled opening year (2016) against DS scenario in the modelled opening year (2016); and
 - DM scenario in modelled opening year (2016) against DS scenario in the modelled future assessment year (2031).
- 9.2.15 The future assessment year is that defined as the year within the first 15 years of the modelled opening year where traffic flows are greatest. The future assessment year is therefore usually the design year of the proposed scheme (15 years after the modelled opening year), which in this assessment is 2031.
- 9.2.16 Consideration has also been given to night-time noise levels in accordance with HD213/11. Consideration is given to those receptors that are predicted to experience a $L_{\text{night, outside}}$ noise level of 55dB or greater in any scenario.
- 9.2.17 In the absence of hourly traffic data, Method 3 within the Transport Research Laboratory (TRL) Report 'Converting the UK traffic noise index $L_{A10,18hr}$ to EU noise indices for noise mapping' (TRL, 2002) has been used to determine estimated night-time levels from day-time 18-hour Annual Average Weekday Traffic (AAWT) flows. The estimated night-time levels are dependent upon whether the road is classified as a 'Motorway' or 'Non Motorway'. In general, for 'Motorways', the estimated night-time noise levels using Method 3 are slightly lower than the day-time levels, to represent the relatively consistent use of the motorway network during all periods (day, evening and night). For 'Non Motorways', estimated night-time noise levels are considerably lower than day-time levels, which is generally consistent with traffic usage on these types of road.
- 9.2.18 The night-time noise predictions presented in this assessment have assumed that the proposed road is classified as a 'Non-Motorway' and the following comparison is made:
- DM scenario in modelled opening year (2016) against DS scenario in the modelled design year (2031).
- 9.2.19 Noise levels at receptors have been calculated using the CadnaA noise modelling package, which incorporates the methodology contained in CRTN. CRTN is a technical memorandum produced by the Department for Transport and Welsh Office providing a method for predicting road traffic noise in the United Kingdom.

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- 9.2.20 Noise level predictions take account of typical weekday volumes of traffic during the eighteen hour period from 6am to midnight (18-hour AAWT flows) and the following variables:
- percentage of Heavy Goods Vehicles (HGVs);
 - traffic speeds;
 - road gradient;
 - local topography;
 - nature of the ground cover between the road and the receptor;
 - shielding effects of any intervening structures, including allowances for limited angles of view from the road and any reflection effects from relevant surfaces; and
 - road surfacing type.
- 9.2.21 It has been assumed that the road surface on the existing road network is conventional hot rolled asphalt (HRA) with a texture depth of 2mm, in both the modelled opening and design years. A low noise road surface (LNRS) would be used for the entirety of the route options and slip roads, but not for any altered local roads (which remain as HRA). The roads which have a LNRS have been assumed to have an associated surface correction of -3.5dB in line with the maximum allowable correction contained within HD213/11.
- 9.2.22 Annex 4, paragraph A4.29 of HD213/11 provides specific guidance in relation to the noise level correction that should be applied when using LNRS for new carriageways. It states that, *“where new carriageways are to be constructed and a thin surfacing system [low noise surfacing] used, or where an existing surface is to be replaced with a thin surfacing system, a -3.5dB(A) correction should be assumed for the thin surface system [equivalent to a Road Surface Influence (RSI) of -5dB(A)] unless any information is available regarding the specific surface to be installed. This advice applies where the mean traffic speed is \geq 75kph. Where the mean speed is $<$ 75kph, a -1dB(A) correction should be applied to a new low-noise surface.”*
- 9.2.23 In line with HD213/11, a minimum traffic speed of 20kph is used in the noise model where the traffic model predictions provide speeds less than this.
- 9.2.24 Within the traffic modelling data provided for each of the route options there are some road links on which a traffic flow of $<$ 1,000 vehicles (18-hour AAWT flow) are detailed. CRTN paragraph 30 provides guidance on the reliability of low traffic flows and states that calculations of noise level for traffic flows below 1,000 vehicles (18-hour AAWT) are unreliable. As such, a number of assumptions have been made for this assessment:
- where, for a particular road link, the traffic flows for all years assessed are all $<$ 1,000 vehicles (18-hour AAWT flow), the flow for each scenario is assumed to be zero vehicles, i.e. the road is not included in the assessment;
 - where, for a particular road link, the traffic flow is less than $<$ 750 vehicles (18-hour AAWT flow), the flow is adjusted to zero vehicles regardless of what the flow is in other scenarios and/or years, i.e. the road is not included in the assessment; and
 - where, for a particular road link, the traffic flows vary around the threshold level of 1,000 vehicles (e.g. DM 2016 = 800, DS 2016 = 950, and DS 2031 = 1,200), the traffic flows which are $<$ 1,000 vehicles (18-hour AAWT flow) are included in the assessment as having a flow of 1,000 vehicles (18-hour AAWT flow), and the flows $>$ 1,000 vehicles (18-hour AAWT flow) are not adjusted.
- 9.2.25 Horizontal and vertical alignment information of the route options and surrounding areas were derived from the three dimensional model of the DMRB Stage 2 route option designs.
- 9.2.26 Identification of sensitive receptors is based on Ordnance Survey (OS) MasterMap and Address BasePlus data as provided in October 2013. The heights of buildings within the

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noise model have been derived from Google Street View and Microsoft Birdseye View mapping. Two storey high buildings are assumed to be 7m in height. In general, building height increases by 2.5m per storey.

- 9.2.27 The noise model receptor heights have been assumed to be 1.5m for bungalows, and where applicable for churches, schools, parks, doctor surgeries and other ground floor level receptors. A receptor height of 4m (i.e. first floor height) has been assumed for all two-storey or taller properties.
- 9.2.28 Where applicable, noise levels at sensitive receptors have been predicted at a distance of 1m from the most exposed façade and include a 2.5 dB façade correction. Noise levels for sensitive receptors positioned in open spaces and for the night-time period are free-field.
- 9.2.29 In accordance with HD213/11, for open space sensitive receptors, such as parks and other recreational areas, a representative position in close proximity to the nearest main road where the public could potentially be exposed to traffic noise has been selected.

Assessment of Impact

- 9.2.30 The general approach to the environmental assessment provides for the identification of impact significance taking into account the value or sensitivity of a receptor and the magnitude of impact. However, as discussed in paragraph 3.36 of HD213/11, in terms of road traffic noise, a standard methodology has not yet been developed to assign a significance according to both value/sensitivity and magnitude. Therefore, when considering the operational noise impact, the HD213/11 assessment criteria relates to impact magnitude only.
- 9.2.31 Section 3 of HD213/11 provides guidance on the magnitude of impacts for traffic noise. Magnitude of impact is considered for both the short-term and long-term. A change in road traffic noise of 1dB in the short-term (for example when a project is opened) is the smallest that is considered perceptible. In the long-term, a 3dB change is considered perceptible. The classification of noise impact magnitude is as detailed in Tables 9.1 and 9.2.

Table 9.1: Classification of magnitude of short-term noise impacts

Noise Change (LA10,18hr)	Magnitude of Impact
0	No change
0.1 – 0.9	Negligible
1 – 2.9	Minor
3 – 4.9	Moderate
5+	Major

Table 9.2: Classification of magnitude of long-term noise impacts

Noise Change (LA10,18hr)	Magnitude of Impact
0	No change
0.1 – 2.9	Negligible
3 – 4.9	Minor
5 – 9.9	Moderate
10+	Major

- 9.2.32 For the assessment of night-time noise impacts, HD213/11 advises that until further research is available, only noise impacts in the long-term should be considered. Therefore, the classification in Table 9.2 is used in this assessment for determining night-time noise impacts. In addition, HD213/11 advises only those sensitive receptors predicted to be subject to free-field noise levels exceeding 55 dB $L_{\text{night, outside}}$ should be considered.

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9.2.33 In relation to the above, the Scottish Government's TAN (Scottish Government, 2011c) provides details the significance of noise impacts based on noise change and the sensitivity of the receptor. Table 9.3 reproduces Table 2.6 - Significance of Effects from the TAN.

Table 9.3: Significance of Effects (TAN)

Magnitude of Impact	Level of Significance relative to Sensitivity of Receptor		
	Low	Medium	High
Major	Slight/Moderate	Moderate/Large	Large/Very Large
Moderate	Slight	Moderate	Moderate/Large
Minor	Neutral/Slight	Slight	Slight/Moderate
Negligible	Neutral/Slight	Neutral Slight	Slight
No Change	Neutral	Neutral	Neutral

9.2.34 The level of significance and its relevance to the decision making process is detailed in the TAN, as follows:

- Very Large: these effects represent key factors in the decision making process. They are generally, but not exclusively, associated with impacts where mitigation is not practical or would be ineffective.
- Large: these effects are likely to be important considerations in the decision making process, but where mitigation may be effectively employed such that resultant adverse effects are likely to have a Moderate or Slight significance.
- Moderate: these effects, if adverse, while important, are not likely to be key factors in the decision making process.
- Slight: these effects may be raised but are unlikely to be of importance in the decision making process.
- Neutral: no effect, not significant, noise need not be considered as a determining factor in the decision making process.

9.2.35 As noted above, this assessment is based on an assessment of impact magnitude, and as all the receptors considered fall within the high sensitivity category, the level of significance within the TAN can be directly correlated to the magnitude of impact from HD213/11.

Ground borne Vibration and Vibration Nuisance

9.2.36 HD213/11 advises that an assessment of ground borne vibration and vibration nuisance should only be considered during a Detailed Assessment. Therefore, this should be considered during the DMRB Stage 3 Assessment of the preferred option and is not considered in this DMRB Stage 2 Assessment.

Mitigation

9.2.37 Potential mitigation measures are discussed in Section 9.9 (Potential Mitigation). This provides information on the types of mitigation that could be incorporated into the DMRB Stage 3 design for the preferred option.

9.2.38 At this stage, it is not possible to design specific mitigation measures and therefore predict the reduction of impacts for each of the route options. However, it is possible for each of the route options to illustrate the numbers of properties for which mitigation would ideally be required (and more specifically those within the higher adverse impact categories, which would be most targeted for mitigation).

9.2.39 For this assessment, the criteria adopted to determine whether mitigation is required has been taken from HD213/11 paragraph 4.2, which states, "In terms of permanent impacts, a

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change of 1dB(A) in the short-term (e.g. when a project is opened) is the smallest that is considered perceptible. In the long term, a 3dB(A) change is considered perceptible. Such increases in noise should be mitigated if possible."

Limitations to Assessment

- 9.2.40 There are a number of consented planning applications within the study area which are likely to include additional sensitive receptors. However, due to uncertainties regarding future land use (e.g. whether consented planning applications or development land allocations will be implemented and if they are, the layout of these sites), the potential noise and vibration impacts on these receptors are considered within Chapter 16 (Community and Private Assets) of this report and this forms part of an overall assessment of the amenity impacts on these receptors.
- 9.2.41 Identification of sensitive receptors is based on Ordnance Survey (OS) MasterMap and AddressBase Plus data as provided in October 2013. There may in some cases be properties, such as those recently built, which are not yet present within these data sources. In comparison to the large number of receptors considered in the study area, these properties are not expected to be significant in number and are therefore not expected to have a great influence on the route options comparison undertaken for this DMRB Stage 2 Assessment.
- 9.2.42 Baseline noise monitoring has not been undertaken for the route options at this stage in the assessment process. Instead, baseline (or DM) noise levels have been established using predicted traffic data for the modelled opening year (2016), without the route options in place.
- 9.2.43 Traffic data is fundamental to predicting noise levels, thus facilitating the noise and vibration assessment of a scheme. Traffic flow, composition and speed data all contribute in calculating noise levels. Traffic data have been provided for the modelled opening year (2016) and modelled design year (2031) for the DM and DS scenarios, using the DMRB Stage 2 design for the route options. The accuracy of the noise predictions performed has a direct correlation with the accuracy of the traffic data provided.
- 9.2.44 It is considered that all data inputs for this assessment are of an adequate level to support a Simple Assessment as defined in HD213/11.
- 9.2.45 BNL calculations have not been undertaken at this stage of the assessment process, instead the route options comparisons have focussed on sensitive receptors within the noise model area. BNL changes outside the noise modelling area would be considered during the DMRB Stage 3 Assessment of the noise impact of the preferred option.

9.3 Policies and Plans

- 9.3.1 The national, regional and local planning policies and guidance relevant to noise and vibration are identified below. An assessment of the compliance of the route options in relation to these policies is provided in Section 9.8 (Compliance with Policies and Plans).

National Planning Policy and Guidance

- 9.3.2 National planning policy on a variety of themes is contained within Scottish Planning Policy (SPP) (Scottish Government, 2014a) (hereafter referred to as SPP). In terms of the impact of proposals on noise and vibration, SPP is focussed on:
- supporting development that will contribute to sustainable economic growth and to high quality sustainable places; and
 - supporting healthier living by improving the quality of the built environment and by addressing environmental problems affecting communities.

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- 9.3.3 Circulars and Planning Advice Notes (PANs) produced by the Scottish Government provide further guidance on specific topics. PAN 1/2011 Planning and Noise (Scottish Government, 2011b) is applicable to noise impacts and details of this guidance document is summarised in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.

Regional and Local Planning Policy and Guidance

- 9.3.4 The Highland-wide Local Development Plan (HwLDP) (The Highland Council, 2012) (hereafter referred to as HwLDP) is the land-use Plan which will guide the development and investment in the region over the next 20 years. The relevant policies in relation to noise and vibration include:

- Policy 28: Sustainable Design; and
- Policy 72: Pollution.

- 9.3.5 The details of these policies are summarised in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.

Review of Planning Policies

- 9.3.6 The SPP emphasises the Scottish Government's commitment to sustainable development and this is reflected in Policy 28 (Sustainable Design) of the HwLDP which supports developments that promote and enhance the social, economic and environmental well-being of the people of the Highlands. In view of this, developments which are judged to be significantly detrimental in terms of their impact on individual and community residential amenity will not accord with the HwLDP, unless there are no reasonable alternatives, if there is a demonstrable overriding strategic benefit to the development, or if satisfactory mitigation is incorporated.

- 9.3.7 Unwanted noise can have a significant impact on environmental quality, public health and amenity and it is important to be aware of the sources of noise in the environment in order to minimise or prevent its effects. As such, for proposals that may result in significant noise pollution, Policy 72 (Pollution) of the HwLDP requires detailed assessment to be carried out on the levels, character and transmission and receiving environment of potential noise pollution. Proposals that result in significant noise pollution will only be approved where they show how noise pollution can be appropriately avoided and if necessary mitigated.

9.4 Baseline Conditions

- 9.4.1 Baseline noise levels within the study area were predicted using the noise model for the DM baseline year (2016) traffic scenario as required by HD213/11, paragraph 3.8. The CRTN prediction method provides noise forecasts across the entire study area under consistent scenarios (i.e. not subject to traffic flow variations, or meteorological variations that would affect propagation scenarios). The CRTN procedure assumes a moderately adverse wind scenario; that is with the wind blowing from the source to the receiver (as described in CRTN paragraph 4).

- 9.4.2 Due to the large number of receptors within the study area, the predicted baseline noise levels have not been provided in this section, but have been used in the assessment to determine noise change on scheme opening and in the long-term.

- 9.4.3 The noise environment in parts of the study area is likely to be dominated by traffic noise (at locations close to the residential areas of Smithton, Culloden, Balloch and Nairn, and close to the existing A96 Aberdeen – Inverness Trunk Road (hereafter referred to as the existing A96)) and therefore predictable using the road traffic noise model. This method of using the traffic model to quantify baseline noise levels is standard practice for highway noise assessment, with the predicted levels for areas further from traffic noise sources or areas close to non-traffic sources being checked against noise survey measurement data.

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9.4.4 Other locations are rural and appear to have relatively few sources of road traffic in the area. The noise climate at such locations are likely to be influenced by farming activities, birdsong and other local noise sources, as well as distant transportation noise. Baseline noise monitoring at representative sensitive receptors would be performed at a later stage in the assessment process, once a preferred option for the scheme has been identified.

9.4.5 In accordance with the Environmental Noise Directive 2002/49/EC (END), a series of Transportation Noise Action Plans (TNAP) have been prepared by the Scottish Government for the largest Scottish Cities and transport routes, recently published in July 2014 (Scottish Government, 2014b).

9.4.6 Part of the A82 (within Inverness) was included in the noise mapping exercise and subsequent TNAP. However, no Candidate Noise Management Area (CNMA) has been proposed near to the route options under assessment.

9.5 Impact Assessment: Introduction

9.5.1 This section provides an introduction to the impact assessment of the route options within Section 9.6 (Impact Assessment: Inverness to Gollanfield) and Section 9.7 (Impact Assessment: Nairn Bypass).

9.5.2 The potential impacts detailed in Section 9.6 and 9.7 are reported in line with the following:

- With the exception of a LNRS, the potential impacts are described without mitigation and therefore represent a worst-case scenario. Mitigation to reduce these impacts will be developed for the preferred option during the DMRB Stage 3 Assessment.
- Potential impacts are presented during operation only. Construction impacts have not been considered as part of this DMRB Stage 2 Assessment, as the construction programme including details of likely construction plant and equipment to be used is not currently available. Construction impacts will be assessed as part of the DMRB Stage 3 Assessment.
- A large number of factors influence predicted noise levels at nearby sensitive receptors, including traffic flows, composition, speeds, relative heights of source and receptors, road gradients, type of intervening ground and screening. With such a multitude of factors, noise impacts can be quite variable even for a given group of receptors within a single area. As such, it is expected that there will be very few impacts which are common to all (i.e. where the change in noise level will be the same). Therefore, no common to all impacts have been reported, with all impacts reported collectively for each route option.
- Due to the large number of receptors potentially impacted by each of the route options, the impacts have not been listed separately against each receptor. The assessment approach is concerned with the total numbers of receptors impacted by the route options in each impact category, and not where those receptors are specifically located. In line with this, the greatest consideration has been given to those receptors with the greatest noise impacts (falling within the moderate or major categories).
- Based on the assessment methodology detailed within HD213/11, noise calculation areas have been determined individually for each of the route options. Depending upon the location of the route option and the changes in traffic on existing roads, there is some variation in the noise model areas used between route options. Therefore, the total numbers of receptors considered for each route option will not necessarily be the same.

9.5.3 To provide context to the impact assessment an overview of the potential impacts for road schemes in relation to noise and vibration are discussed below.

9.5.4 Adverse construction noise and vibration impacts would be temporary in nature and are likely to be greatest for:

- earthworks – where large cuttings or embankments are proposed;

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- piling – near to proposed structures such as bridges; and
 - pavement laying – for all new carriageways.
- 9.5.5 During operation, noise changes are experienced where there are changes in horizontal or vertical alignments, changes in traffic flows, speeds or composition, increased or decreased screening, changes in road surfacing type and so on.
- 9.5.6 Adverse residual operational noise and vibration impacts would be permanent in nature and in general terms, where a new road is constructed and results in road traffic being moved closer to a sensitive receptor, an adverse impact will occur (assuming no noise mitigation). The magnitude of this impact will depend on a number of factors, including (but not limited to):
- distance between the new road and the noise sensitive receptors;
 - traffic flow, composition, speed, and road running surface; and
 - presence of existing/proposed screening of the road noise source.
- 9.5.7 Beneficial operational noise and vibration impacts would be permanent in nature and are likely to occur where the road traffic is relocated further away from receptors and/or through the use of LNRS.

9.6 Impact Assessment: Inverness to Gollanfield

- 9.6.1 This section describes the potential impacts that are specific to the route options in the Inverness to Gollanfield section. Tables 9.4 and 9.5 present the HD213/11 short-term noise change, whilst Tables 9.6, 9.7 and 9.8 present the long-term noise change.
- 9.6.2 The impacts are discussed against each route option in relation to the perceptible noise increases and the number of receptors where mitigation should be considered. For the short-term assessment, a change in noise level of 1dB or greater is considered perceptible, whilst a 3dB change is required in the long-term to see a perceptible impact. Perceptible impacts are correlated by a minor, moderate or major magnitude of change. The total number of receptors with perceptible noise impacts or benefits is highlighted in Tables 9.4 to 9.8.
- 9.6.3 Noise impacts at sensitive receptors are predicted for the day-time period on opening and for both the day-time and night-time periods in the long-term. A receptor may have significant noise impacts on scheme opening and in the long-term, but this is still counted as a single receptor when the numbers of receptors for which noise mitigation should be considered are determined. It is for this reason, the number of receptors detailed in the text for potential mitigation do not correspond directly to those detailed in the HD213/11 assessment tables.

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Table 9.4: Short-term noise changes - dwellings

Short-term - DM 2016 vs DS 2016 – Dwellings										
Change in Noise Level (dB)		Magnitude	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Increase in noise level, LA10,18h	0.1-0.9	Negligible	18	175	204	447	260	256	184	196
	1.0-2.9	Minor*	7	6	44	49	117	117	100	101
	3-4.9	Moderate*	6	8	4	10	20	19	15	12
	5 +	Major*	8	7	1	0	10	11	3	3
	Total Perceptible Impacts			21	21	49	59	147	147	118
No change	0		62	55	106	80	162	164	35	40
Decrease in noise level, LA10,18h	0.1-0.9	Negligible	719	714	538	437	1892	1894	1927	2138
	1.0-2.9	Minor*	856	1233	790	1131	117	116	130	187
	3-4.9	Moderate*	27	37	23	44	17	18	21	22
	5 +	Major*	32	29	28	31	39	39	27	26
	Total Perceptible Benefits			915	1299	841	1206	173	173	178

* minor, moderate or major magnitude of change is determined to be a perceptible noise impact or benefit.

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Table 9.5: Short-term noise changes - other sensitive receptors

Short-term - DM 2016 vs DS 2016 - Other Sensitive Receptors										
Change in Noise Level (dB)		Magnitude	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Increase in noise level, LA10,18h	0.1-0.9	Negligible	-	4	4	5	7	7	4	4
	1.0-2.9	Minor*	-	-	-	-	-	-	-	-
	3-4.9	Moderate*	-	-	1	1	-	-	1	1
	5 +	Major*	-	-	-	-	-	-	-	-
	Total Perceptible Impacts			-	-	1	1	-	-	1
No change	0		2	1	-	-	1	2	2	2
Decrease in noise level, LA10,18h	0.1-0.9	Negligible	10	7	6	4	6	5	10	8
	1.0-2.9	Minor*	1	3	2	4	2	2	1	2
	3-4.9	Moderate*	3	2	1	-	1	1	-	-
	5 +	Major*	-	-	-	-	-	-	-	-
	Total Perceptible Benefits			4	5	3	4	3	3	1

* minor, moderate or major magnitude of change is determined to be a perceptible noise impact or benefit.

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Table 9.6: Long-term noise change - dwellings

Long-term - DM 2016 vs DS 2031 – Dwellings										
Change in Noise Level (dB)		Magnitude	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Increase in noise level, LA10,18h	0.1-2.9	Negligible	694	629	901	907	2422	2419	2080	2344
	3.0-4.9	Minor*	5	7	13	21	48	46	34	37
	5-9.9	Moderate*	14	13	5	5	13	14	6	5
	10 +	Major*	3	3	2	1	5	6	4	4
	Total Perceptible Impacts			22	23	20	27	66	66	44
No change	0		145	148	59	69	27	31	141	147
Decrease in noise level, LA10,18h	0.1-2.9	Negligible	849	1417	730	1187	86	85	154	156
	3.0-4.9	Minor*	14	17	13	13	19	15	14	16
	5-9.9	Moderate*	10	28	14	19	13	17	8	14
	10 +	Major*	1	2	1	7	1	1	1	2
	Total Perceptible Benefits			25	47	28	39	33	33	23

* minor, moderate or major magnitude of change is determined to be a perceptible noise impact or benefit.

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Table 9.7: Long-term noise change - other sensitive receptors

Long-term - DM 2016 vs DS 2031 - Other Sensitive Receptors										
Change in Noise Level (dB)		Magnitude	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Increase in noise level, LA10,18h	0.1-2.9	Negligible	7	8	9	7	12	12	12	12
	3.0-4.9	Minor*	-	-	-	1	-	-	1	1
	5-9.9	Moderate*	-	-	1	-	-	-	-	-
	10 +	Major*	1	1	1	1	1	1	1	1
	Total Perceptible Impacts			1	1	2	2	1	1	2
No change	0		3	1	-	1	1	1	2	-
Decrease in noise level, LA10,18h	0.1-2.9	Negligible	4	7	3	4	3	3	2	3
	3.0-4.9	Minor*	1	-	-	-	-	-	-	-
	5-9.9	Moderate*	-	-	-	-	-	-	-	-
	10 +	Major*	-	-	-	-	-	-	-	-
	Total Perceptible Benefits			1	-	-	-	-	-	-

* minor, moderate or major magnitude of change is determined to be a perceptible noise impact or benefit.

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Table 9.8: Long-term noise change - dwellings (night-time)

Long-term - DM 2016 vs DS 2031 – Dwellings (Night Time)										
Change in Noise Level (dB)		Magnitude	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Increase in noise level, LA10,18h	0.1-2.9	Negligible	5	5	5	5	2	2	4	2
	3.0-4.9	Minor*	1	1	1	1	1	1	1	1
	5-9.9	Moderate*	-	-	-	-	-	-	-	-
	10 +	Major*	-	-	-	-	-	-	1	-
	Total Perceptible Impacts			1	1	1	1	1	1	2
No change	0		-	-	-	-	-	-	-	-
Decrease in noise level, LA10,18h	0.1-2.9	Negligible	1	1	1	1	1	1	1	1
	3.0-4.9	Minor*	6	6	3	3	6	1	8	3
	5-9.9	Moderate*	4	5	9	3	5	10	5	9
	10 +	Major*	1	-	-	6	1	1	-	1
	Total Perceptible Benefits			11	11	12	12	12	12	13

* minor, moderate or major magnitude of change is determined to be a perceptible noise impact or benefit.

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Option 1A

Short-term Impacts

- 9.6.4 In the short-term, a total of 21 dwellings are expected to experience perceptible noise increases (1dB and above), whilst 915 dwellings and four other sensitive receptors are expected to experience perceptible noise benefits.
- 9.6.5 Of the perceptible noise increases, eight dwellings are expected to experience a major adverse impact, whilst six are expected to experience a moderate adverse impact. Conversely, 32 dwellings are expected to experience a major beneficial impact, and 27 are expected to experience a moderate beneficial impact.
- 9.6.6 No other sensitive receptors are expected to experience either a major or moderate adverse impact, whilst three are expected to experience a moderate beneficial impact. None see a major beneficial impact.

Long-term Impacts

- 9.6.7 In the long-term day-time situation, a total of 22 dwellings and one other sensitive receptor are expected to experience perceptible noise increases (3dB and above), whilst 25 dwellings and one other sensitive receptor are expected to experience perceptible noise benefits.
- 9.6.8 Of the perceptible noise increases, three dwellings are expected to experience a major adverse impact, with 14 experiencing a moderate adverse impact. Conversely, one dwelling is expected to see a major noise benefit, whilst 10 are expected to see a moderate benefit.
- 9.6.9 One other sensitive receptor is expected to see a major adverse impact. None are expected to experience a moderate adverse impact. No other sensitive receptors are expected to experience either a moderate or major noise benefit.
- 9.6.10 In the long-term night-time situation, one dwelling is expected to experience a perceptible noise increase (3dB and above), whilst 11 dwellings are expected to experience perceptible noise benefits.
- 9.6.11 Of the perceptible noise increases, no dwellings are expected to experience either a moderate or major adverse impact. Conversely, one dwelling is expected to experience a major benefit, with four experiencing a moderate benefit.

Potential Mitigation

- 9.6.12 Overall, a total of 27 sensitive receptors (including dwellings and other sensitive receptors) are expected to experience perceptible noise increases as a result of Option 1A (in either the short-term or long-term or both), without mitigation. Of these, 20 fall within the moderate or major adverse noise impact category and should be considered as the priority for mitigation.

Option 1A (MV)

Short-term Impacts

- 9.6.13 In the short-term, a total of 21 dwellings are expected to experience perceptible noise increases (1dB and above), whilst 1,299 dwellings and five other sensitive receptors are expected to experience perceptible noise benefits.
- 9.6.14 Of the perceptible noise increases, seven dwellings are expected to experience a major adverse impact, whilst eight are expected to experience a moderate adverse impact. Conversely, 29 dwellings are expected to experience a major beneficial impact, and 37 are expected to experience a moderate beneficial impact.

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- 9.6.15 No other sensitive receptors are expected to experience either a major or moderate adverse impact, whilst two are expected to experience a moderate beneficial impact. None are expected to experience a major beneficial impact.

Long-term Impacts

- 9.6.16 In the long-term day-time situation, a total of 23 dwellings and one other sensitive receptor are expected to experience perceptible noise increases (3dB and above), whilst 47 dwellings are expected to experience perceptible noise benefits.
- 9.6.17 Of the perceptible noise increases, three dwellings are expected to experience a major adverse impact, and 13 are expected to experience a moderate adverse impact. Conversely, two dwellings are expected to see a major noise benefit, and 28 are expected to see a moderate benefit.
- 9.6.18 One other sensitive receptor is expected to see a major adverse impact. None are expected to experience a moderate adverse impact. No other sensitive receptors are expected to experience either a moderate or major noise benefit.
- 9.6.19 In the long-term night-time situation, a total of one dwelling is expected to experience a perceptible noise increase (3dB and above), whilst 11 dwellings are expected to experience perceptible noise benefits.
- 9.6.20 Of the perceptible noise increases, no dwellings are expected to experience a moderate or major adverse impact, whilst five will experience a moderate benefit. None fall within the major category.

Potential Mitigation

- 9.6.21 Overall, a total of 27 sensitive receptors (including dwellings and other sensitive receptors) are expected to experience perceptible noise increases as a result of Option 1A (MV) (in either the short-term or long-term or both), without mitigation. Of these, 20 fall within the moderate or major adverse noise impact category and should be considered as the priority for mitigation.

Option 1B

Short-term Impacts

- 9.6.22 In the short-term, a total of 49 dwellings and one other sensitive receptor are expected to experience perceptible noise increases (1dB and above), whilst 841 dwellings and three other sensitive receptors are expected to experience perceptible noise benefits.
- 9.6.23 Of the perceptible noise increases, one dwelling is expected to experience a major adverse impact, whilst four are expected to experience a moderate adverse impact. Conversely, 28 dwellings are expected to experience a major beneficial impact, and 23 are expected to experience a moderate beneficial impact.
- 9.6.24 One other sensitive receptor is expected to experience a moderate adverse impact. None are expected to experience a major adverse impact, whilst one other sensitive receptor is expected to experience a moderate beneficial impact. None are expected to experience a major beneficial impact.

Long-term Impacts

- 9.6.25 In the long-term day-time situation, a total of 20 dwellings and two other sensitive receptors are expected to experience perceptible noise increases (3dB and above), whilst 28 dwellings are expected to experience perceptible noise benefits.

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- 9.6.26 Of the perceptible noise increases, two dwellings are expected to experience a major adverse impact, and five are expected to experience a moderate adverse impact. Conversely, one dwelling is expected to see a major noise benefit, and 14 are expected to see a moderate benefit.
- 9.6.27 One other sensitive receptor is expected to see a major adverse impact, with one experiencing a moderate adverse impact. No other sensitive receptors are expected to experience either a moderate or major noise benefit.
- 9.6.28 In the long-term night-time situation, a total of one dwelling is expected to experience a perceptible noise increase (3dB and above), whilst 12 dwellings are expected to experience perceptible noise benefits.
- 9.6.29 Of the perceptible noise increases, no dwellings are expected to experience a moderate or major adverse impact, whilst nine will experience a moderate benefit. None fall within the major category.

Potential Mitigation

- 9.6.30 Overall, a total of 56 sensitive receptors (including dwellings and other sensitive receptors) are expected to experience perceptible noise increases as a result of Option 1B (in either the short-term or long-term or both), without mitigation. Of these, 11 fall within the moderate or major adverse noise impact category and should be considered as the priority for mitigation.

Option 1B (MV)

Short-term Impacts

- 9.6.31 In the short-term, a total of 59 dwellings and one other sensitive receptor are expected to experience perceptible noise increases (1dB and above), whilst 1,206 dwellings and four other sensitive receptors are expected to experience perceptible noise benefits.
- 9.6.32 Of the perceptible noise increases, 10 dwellings are expected to experience a moderate adverse impact. None fall within the major adverse category. Conversely, 31 dwellings are expected to experience a major beneficial impact, and 44 are expected to experience a moderate beneficial impact.
- 9.6.33 One other sensitive receptor is likely to experience a moderate adverse impact. None are expected to experience a major adverse impact. No other sensitive receptors are expected to experience either a moderate or major beneficial impact.

Long-term Impacts

- 9.6.34 In the long-term day-time situation, a total of 27 dwellings and two other sensitive receptors are expected to experience perceptible noise increases (3dB and above), whilst 39 dwellings are expected to experience perceptible noise benefits.
- 9.6.35 Of the perceptible noise increases, one dwelling is expected to experience a major adverse impact, and five are expected to experience a moderate adverse impact. Conversely, seven dwellings are expected to see a major noise benefit, and 19 are expected to see a moderate benefit.
- 9.6.36 One other sensitive receptor is expected to experience a major adverse impact. None are expected to experience a moderate adverse impact. No other sensitive receptors are expected to experience either a major or moderate beneficial impact.

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9.6.37 In the long-term night-time situation, one dwelling is expected to experience a perceptible noise increase (3dB and above), whilst 12 dwellings are expected to experience perceptible noise benefits.

9.6.38 Of the perceptible noise increases, no dwellings are expected to experience a moderate or major adverse impact. Conversely, six dwellings are expected to experience a major benefit, with three experiencing a moderate benefit.

Potential Mitigation

9.6.39 Overall, a total of 66 sensitive receptors (including dwellings and other sensitive receptors) are expected to experience perceptible noise increases as a result of Option 1B (MV) (in either the short-term or long-term or both), without mitigation. Of these, 14 fall within the moderate or major adverse noise impact category and should be considered as the priority for mitigation.

Option 1C

Short-term Impacts

9.6.40 In the short-term, a total of 147 dwellings are expected to experience perceptible noise increases (1dB and above), whilst 173 dwellings and three other sensitive receptors are expected to experience perceptible noise benefits.

9.6.41 Of the perceptible noise increases, 10 dwellings are expected to experience a major adverse impact, whilst 20 are expected to experience a moderate adverse impact. Conversely, 39 dwellings are expected to experience a major beneficial impact, and 17 are expected to experience a moderate beneficial impact.

9.6.42 No other sensitive receptors are expected to experience major or moderate adverse impacts, whilst one other sensitive receptor is expected to experience a moderate beneficial impact. None are expected to experience a major beneficial impact.

Long-term Impacts

9.6.43 In the long-term day-time situation, a total of 66 dwellings and one other sensitive receptor are expected to experience perceptible noise increases (3dB and above), whilst 33 dwellings are expected to experience perceptible noise benefits.

9.6.44 Of the perceptible noise increases, five dwellings are expected to experience a major adverse impact, and 13 are expected to experience a moderate adverse impact. Conversely, one dwelling is expected to see a major noise benefit, and 13 are expected to see a moderate benefit.

9.6.45 One other sensitive receptor is expected to experience a major adverse impact. None are expected to experience a moderate adverse impact. No other sensitive receptors are expected to experience either a major or moderate beneficial impact.

9.6.46 In the long-term night-time situation, a total of one dwelling is expected to experience a perceptible noise increase (3dB and above), whilst 12 dwellings are expected to experience perceptible noise benefits.

9.6.47 Of the perceptible noise increases, no dwellings experience a moderate or major adverse impact. Conversely, one dwelling is expected to experience a major benefit, with five expected to experience a moderate benefit.

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Potential Mitigation

- 9.6.48 Overall, a total of 153 sensitive receptors (including dwellings and other sensitive receptors) are expected to experience perceptible noise increases as a result of Option 1C (in either the short-term or long-term or both), without mitigation. Of these, 33 fall within the moderate or major adverse noise impact category and should be considered as the priority for mitigation.

Option 1C (MV)

Short-term Impacts

- 9.6.49 In the short-term, a total of 147 dwellings are expected to experience perceptible noise increases (1dB and above), whilst 173 dwellings and three other sensitive receptors are expected to experience perceptible noise benefits.
- 9.6.50 Of the perceptible noise increases, 11 dwellings are expected to experience a major adverse impact, whilst 19 are expected to experience a moderate adverse impact. Conversely, 39 dwellings are expected to experience a major beneficial impact, and 18 are expected to experience a moderate beneficial impact.
- 9.6.51 No other sensitive receptors are expected to experience major or moderate adverse impacts, whilst one other sensitive receptor is expected to experience a moderate beneficial impact. None are expected to experience a major beneficial impact.

Long-term Impacts

- 9.6.52 In the long-term day-time situation, a total of 66 dwellings and one other sensitive receptor are expected to experience perceptible noise increases (3dB and above), whilst 33 dwellings are expected to experience perceptible noise benefits.
- 9.6.53 Of the perceptible noise increases, six dwellings are expected to experience a major adverse impact, and 14 are expected to experience a moderate adverse impact. Conversely, one dwelling is expected to see a major noise benefit, and 17 are expected to see a moderate benefit.
- 9.6.54 One other sensitive receptor is expected to experience a major adverse impact. None are expected to experience a moderate adverse impact. No other sensitive receptors are expected to experience either a major or moderate beneficial impact.
- 9.6.55 In the long-term night-time situation, a total of one dwelling is expected to experience a perceptible noise increase (3dB and above), whilst 12 dwellings are expected to experience perceptible noise benefits.
- 9.6.56 Of the perceptible noise increases, no dwellings are expected to experience a moderate or major adverse impact. Conversely, one dwelling is expected to experience a major benefit, with 10 experiencing a moderate benefit.

Potential Mitigation

- 9.6.57 Overall, a total of 153 sensitive receptors (including dwellings and other sensitive receptors) are expected to experience perceptible noise increases as a result of the Option 1C (MV) (in either the short-term or long-term or both), without mitigation. Of these, 35 fall within the moderate or major adverse noise impact category and should be considered as the priority for mitigation.

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Option 1D

Short-term Impacts

- 9.6.58 In the short-term, a total of 118 dwellings and one other sensitive receptor are expected to experience perceptible noise increases (1dB and above), whilst 178 dwellings and one other sensitive receptor are expected to experience perceptible noise benefits.
- 9.6.59 Of the perceptible noise increases, three dwellings are expected to experience a major adverse impact, whilst 15 are expected to experience a moderate adverse impact. Conversely, 27 dwellings are expected to experience a major beneficial impact, and 21 are expected to experience a moderate beneficial impact.
- 9.6.60 One other sensitive receptor is expected to experience a moderate adverse impact. None are expected to experience a major adverse impact. No other sensitive receptors are expected to experience either a moderate or major beneficial impact.

Long-term Impacts

- 9.6.61 In the long-term day-time situation, a total of 44 dwellings and two other sensitive receptors are expected to experience perceptible noise increases (3dB and above), whilst 23 dwellings are expected to experience perceptible noise benefits.
- 9.6.62 Of the perceptible noise increases, four dwellings are expected to experience a major adverse impact, and six are expected to experience a moderate adverse impact. Conversely, one dwelling is expected to see a major noise benefit, and eight are expected to see a moderate benefit.
- 9.6.63 One other sensitive receptor is expected to experience a major adverse impact. None are expected to experience a moderate adverse impact. No other sensitive receptors are expected to experience either a major or moderate beneficial impact.
- 9.6.64 In the long-term night-time situation, a total of two dwellings are expected to experience a perceptible noise increase (3dB and above), whilst 13 dwellings are expected to experience perceptible noise benefits.
- 9.6.65 Of the perceptible noise increases, one dwelling is expected to experience a major adverse impact. None are expected to experience a moderate adverse impact. Conversely, no dwellings are expected to experience a major benefit, with five experiencing a moderate benefit.

Potential Mitigation

- 9.6.66 Overall, a total of 125 sensitive receptors (including dwellings and other sensitive receptors) are expected to experience perceptible noise increases as a result of the Option 1D (in either the short-term or long-term or both), without mitigation. Of these, 25 fall within the moderate or major adverse noise impact category and should be considered as the priority for mitigation.

Option 1D (MV)

Short-term Impacts

- 9.6.67 In the short-term, a total of 116 dwellings and one other sensitive receptor are expected to experience perceptible noise increases (1dB and above), whilst 235 dwellings and two other sensitive receptors are expected to experience perceptible noise benefits.

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- 9.6.68 Of the perceptible noise increases, three dwellings are expected to experience a major adverse impact, whilst 12 are expected to experience a moderate adverse impact. Conversely, 26 dwellings are expected to experience a major beneficial impact, and 22 are expected to experience a moderate beneficial impact.
- 9.6.69 One other sensitive receptor is expected to experience a moderate adverse impact. None are expected to experience a major adverse impact. No other sensitive receptors are expected to experience either a moderate or major beneficial impact.

Long-term Impacts

- 9.6.70 In the long-term day-time situation, a total of 46 dwellings and two other sensitive receptors are expected to experience perceptible noise increases (3dB and above), whilst 32 dwellings are expected to experience perceptible noise benefits.
- 9.6.71 Of the perceptible noise increases, four dwellings are expected to experience a major adverse impact, and five are expected to experience a moderate adverse impact. Conversely, two dwellings are expected to see a major noise benefit, and 14 are expected to see a moderate benefit.
- 9.6.72 One other sensitive receptor is expected to experience a major adverse impact. None are expected to experience a moderate adverse impact. No other sensitive receptors are expected to experience either a major or moderate beneficial impact.
- 9.6.73 In the long-term night-time situation, one dwelling is expected to experience a perceptible noise increase (3dB and above), whilst 13 dwellings are expected to experience perceptible noise benefits.
- 9.6.74 Of the perceptible noise increases, no dwellings are expected to experience major or moderate adverse impacts. Conversely, one dwelling is expected to experience a major benefit, with nine experiencing a moderate benefit.

Potential Mitigation

- 9.6.75 Overall, a total of 124 sensitive receptors (including dwellings and other sensitive receptors) are expected to experience perceptible noise increases as a result of Option 1D (MV) (in either the short-term or long-term or both), without mitigation. Of these, 22 fall within the moderate or major adverse noise impact category and should be considered as the priority for mitigation.

9.7 Impact Assessment: Nairn Bypass

- 9.7.1 This section describes the potential impacts that are specific to the route options of the Nairn Bypass section. Tables 9.9 and 9.10 present the HD213/11 short-term noise change, whilst Tables 9.11, 9.12 and 9.13 present the long-term noise change for each of the route options.
- 9.7.2 The impacts are discussed against each route option in relation to the perceptible noise increases and the number of receptors where mitigation should be considered. For the short-term assessment, a change in noise level of 1dB or greater is considered perceptible, whilst a 3dB change is required in the long-term to see a perceptible impact. Perceptible impacts are correlated by a minor, moderate or major magnitude of change. The total number of receptors with perceptible noise impacts or benefits is highlighted in Tables 9.9 to 9.13.
- 9.7.3 Noise impacts at sensitive receptors are predicted for the day-time period on opening and for both the day-time and night-time periods in the long-term. A receptor may have significant noise impacts on scheme opening and in the long-term, but this is still counted as a single receptor when the numbers of receptors for which noise mitigation should be considered are

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determined. It is for this reason that the number of receptors detailed in the text for potential mitigation do not correspond directly to those detailed in the HD213/11 assessment tables.

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Table 9.9: Short-term noise change - dwellings

Short-term - DM 2016 vs DS 2016 – Dwellings											
Change in Noise Level (dB)		Magnitude	2A	2B	2C	2D	2E	2F	2G	2H	2I
Increase in noise level, LA10,18h	0.1-0.9	Negligible	86	89	132	80	81	103	127	110	76
	1.0-2.9	Minor*	226	229	180	104	211	205	188	164	93
	3-4.9	Moderate*	123	120	111	52	85	109	74	86	36
	5 +	Major*	195	184	194	174	165	153	147	123	146
	Total Perceptible Impacts			544	533	485	330	461	467	409	373
No change	0		18	23	26	20	11	16	22	17	15
Decrease in noise level, LA10,18h	0.1-0.9	Negligible	283	306	302	247	220	238	233	236	225
	1.0-2.9	Minor*	1109	1209	1091	916	603	731	486	595	513
	3-4.9	Moderate*	1544	1485	1157	1614	2120	2080	1746	2354	2115
	5 +	Major*	953	891	1332	1333	1048	905	1506	872	1324
	Total Perceptible Benefits			3606	3585	3580	3863	3771	3716	3738	3821

* minor, moderate or major magnitude of change is determined to be a perceptible noise impact or benefit.

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Table 9.10: Short-term noise change - other sensitive receptors

Short-term - DM 2016 vs DS 2016 - Other Sensitive Receptors											
Change in Noise Level (dB)		Magnitude	2A	2B	2C	2D	2E	2F	2G	2H	2I
Increase in noise level, LA10,18h	0.1-0.9	Negligible	1	1	2	2	-	2	3	44	44
	1.0-2.9	Minor*	43	43	43	43	42	42	84	-	-
	3-4.9	Moderate*	-	-	-	-	-	-	-	-	-
	5 +	Major*	-	-	-	-	-	-	-	-	-
	Total Perceptible impacts			43	43	43	43	42	42	84	-
No change	0		-	-	-	-	1	-	-	-	-
Decrease in noise level, LA10,18h	0.1-0.9	Negligible	3	4	4	4	2	3	6	3	4
	1.0-2.9	Minor*	34	35	31	8	9	11	9	9	6
	3-4.9	Moderate*	77	52	54	80	82	62	42	105	106
	5 +	Major*	17	40	41	38	39	55	83	14	15
	Total Perceptible Benefits			128	127	126	126	130	128	134	128

* minor, moderate or major magnitude of change is determined to be a perceptible noise impact or benefit.

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Table 9.11: Long-term noise change - dwellings

Long-term - DM 2016 vs DS 2031 – Dwellings											
Change in Noise Level (dB)		Magnitude	2A	2B	2C	2D	2E	2F	2G	2H	2I
Increase in noise level, LA10,18h	0.1-2.9	Negligible	408	444	486	344	403	340	390	362	323
	3.0-4.9	Minor*	184	197	149	66	138	191	149	121	60
	5-9.9	Moderate*	165	159	166	119	105	99	103	109	87
	10 +	Major*	75	73	82	84	89	84	87	53	80
	Total Perceptible Impacts			424	429	397	269	332	374	339	283
No change	0		32	37	39	31	36	27	28	35	18
Decrease in noise level, LA10,18h	0.1-2.9	Negligible	1849	1991	1557	1705	1512	1642	1024	1216	1050
	3.0-4.9	Minor*	1404	1379	1291	1480	1853	1948	2135	2367	2262
	5-9.9	Moderate*	317	212	695	645	315	163	551	198	594
	10 +	Major*	103	44	60	66	93	46	62	96	69
	Total Perceptible Benefits			1824	1635	2046	2191	2261	2157	2748	2661

* minor, moderate or major magnitude of change is determined to be a perceptible noise impact or benefit.

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Table 9.12: Long-term noise change - other sensitive receptors

Long-term - DM 2016 vs DS 2031 - Other Sensitive Receptors											
Change in Noise Level (dB)		Magnitude	2A	2B	2C	2D	2E	2F	2G	2H	2I
Increase in noise level, LA10,18h	0.1-2.9	Negligible	4	6	5	48	45	45	89	46	47
	3.0-4.9	Minor*	42	42	43	-	-	-	-	-	-
	5-9.9	Moderate*	-	-	-	-	-	-	-	-	-
	10 +	Major*	-	-	-	-	-	-	-	-	-
	Total Perceptible Impacts			42	42	43	-	-	-	-	-
No change	0		-	-	-	-	-	-	1	1	-
Decrease in noise level, LA10,18h	0.1-2.9	Negligible	78	78	74	12	16	18	15	12	11
	3.0-4.9	Minor*	41	42	40	108	105	106	106	110	110
	5-9.9	Moderate*	6	5	10	4	6	4	13	3	4
	10 +	Major*	4	2	3	3	3	2	3	3	3
	Total Perceptible Benefits			51	49	53	115	114	112	122	116

* minor, moderate or major magnitude of change is determined to be a perceptible noise impact or benefit.

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Table 9.13: Long-term noise change - dwellings (night time)

Long-term - DM 2016 vs DS 2031 - Dwellings (Night Time)											
Change in Noise Level (dB)		Magnitude	2A	2B	2C	2D	2E	2F	2G	2H	2I
Increase in noise level, LA10,18h	0.1-2.9	Negligible	2	2	4	2	2	2	2	2	4
	3.0-4.9	Minor*	3	3	1	1	2	3	3	3	1
	5-9.9	Moderate*	1	-	-	-	1	-	-	-	-
	10 +	Major*	-	-	-	-	-	-	-	-	-
	Total Perceptible Impacts			4	3	1	1	3	3	3	3
No change	0		-	-	-	-	-	-	-	-	-
Decrease in noise level, LA10,18h	0.1-2.9	Negligible	5	5	5	5	4	4	4	4	4
	3.0-4.9	Minor*	56	56	51	62	57	61	48	64	58
	5-9.9	Moderate*	9	13	17	4	8	8	20	1	10
	10 +	Major*	4	2	1	1	5	3	2	3	2
	Total Perceptible Benefits			69	71	69	67	70	72	70	68

* minor, moderate or major magnitude of change is determined to be a perceptible noise impact or benefit.

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Option 2A

Short-term Impacts

- 9.7.4 In the short-term, a total of 544 dwellings and 43 other sensitive receptors are expected to experience perceptible noise increases (1dB and above), whilst 3,606 dwellings and 128 other sensitive receptors are expected to experience perceptible noise benefits.
- 9.7.5 Of the perceptible noise increases, 195 dwellings are expected to experience a major adverse impact, with 123 experiencing a moderate adverse impact. Conversely, 953 dwellings are expected to see a major noise benefit, whilst 1,544 are expected to see a moderate benefit.
- 9.7.6 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst 17 other sensitive receptors are expected to see a major beneficial impact and 77 are expected to experience a moderate beneficial impact.

Long-term Impacts

- 9.7.7 In the long-term day-time situation, a total of 424 dwellings and 42 other sensitive receptors are expected to experience perceptible noise increases (3dB and above), whilst 1,824 dwellings and 51 other sensitive receptors are expected to experience perceptible noise benefits.
- 9.7.8 Of the perceptible noise increases, 75 dwellings are expected to experience a major adverse impact, with 165 experiencing a moderate adverse impact. Conversely, 103 dwellings are expected to see a major noise benefit, whilst 317 are expected to see a moderate benefit.
- 9.7.9 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst four other sensitive receptors are expected to see a major beneficial impact and six are expected to experience a moderate beneficial impact.
- 9.7.10 In the long-term night-time situation, a total of four dwellings are expected to experience a perceptible noise increase (3dB and above), whilst 69 dwellings are expected to experience perceptible noise benefits.
- 9.7.11 Of the perceptible noise increases, one dwelling is expected to experience a moderate adverse impact. None are expected to experience a major adverse impact. Conversely, four dwellings are expected to experience a major benefit, with nine experiencing a moderate benefit.

Potential Mitigation

- 9.7.12 Overall, a total of 591 sensitive receptors (including dwelling and other sensitive receptors) are expected to experience perceptible noise increases as a result of Option 2A (in either the short-term or long-term or both), without mitigation. Of these, 320 fall within the moderate or major adverse noise impact category and should be considered as the priority for mitigation.

Option 2B

Short-term Impacts

- 9.7.13 In the short-term, a total of 533 dwellings and 43 other sensitive receptors are expected to experience perceptible noise increases (1dB and above), whilst 3,585 dwellings and 127 other sensitive receptors are expected to experience perceptible noise benefits.

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- 9.7.14 Of the perceptible noise increases, 184 dwellings are expected to experience a major adverse impact, with 120 experiencing a moderate adverse impact. Conversely, 891 dwellings are expected to see a major noise benefit, whilst 1,485 are expected to see a moderate benefit.
- 9.7.15 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst 40 other sensitive receptors are expected to see a major beneficial impact and 52 are expected to experience a moderate beneficial impact.

Long-term Impacts

- 9.7.16 In the long-term day-time situation, a total of 429 dwellings and 42 other sensitive receptors are expected to experience perceptible noise increases (3dB and above), whilst 1,635 dwellings and 49 other sensitive receptors are expected to experience perceptible noise benefits.
- 9.7.17 Of the perceptible noise increases, 73 dwellings are expected to experience a major adverse impact, with 159 experiencing a moderate adverse impact. Conversely, 44 dwellings are expected to see a major noise benefit, whilst 212 are expected to see a moderate benefit.
- 9.7.18 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst two other sensitive receptors are expected to see a major beneficial impact and five are expected to experience a moderate beneficial impact.
- 9.7.19 In the long-term night-time situation, a total of three dwellings are expected to experience a perceptible noise increase (3dB and above), whilst 71 dwellings are expected to experience perceptible noise benefits.
- 9.7.20 Of the perceptible noise increases, no dwellings are expected to experience either a major or moderate adverse impact. Conversely, two dwellings are expected to experience a major benefit, with 13 experiencing a moderate benefit.

Potential Mitigation

- 9.7.21 Overall, a total of 580 sensitive receptors (including dwelling and other sensitive receptors) are expected to experience perceptible noise increases as a result of Option 2B (in either the short-term or long-term or both), without mitigation. Of these, 307 fall within the moderate or major adverse noise impact category and should be considered as the priority for mitigation.

Option 2C

Short-term Impacts

- 9.7.22 In the short-term, a total of 485 dwellings and 43 other sensitive receptors are expected to experience perceptible noise increases (1dB and above), whilst 3,580 dwellings and 126 other sensitive receptors are expected to experience perceptible noise benefits.
- 9.7.23 Of the perceptible noise increases, 194 dwellings are expected to experience a major adverse impact, with 111 experiencing a moderate adverse impact. Conversely, 1,332 dwellings are expected to see a major noise benefit, whilst 1,157 are expected to see a moderate benefit.
- 9.7.24 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst 41 other sensitive receptors are expected to see a major beneficial impact and 54 are expected to experience a moderate beneficial impact.

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Long-term Impacts

- 9.7.25 In the long-term day-time situation, a total of 397 dwellings and 43 other sensitive receptors are expected to experience perceptible noise increases (3dB and above), whilst 2,046 dwellings and 53 other sensitive receptors are expected to experience perceptible noise benefits.
- 9.7.26 Of the perceptible noise increases, 82 dwellings are expected to experience a major adverse impact, with 166 experiencing a moderate adverse impact. Conversely, 60 dwellings are expected to see a major noise benefit, whilst 695 are expected to see a moderate benefit.
- 9.7.27 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst three other sensitive receptors are expected to see a major beneficial impact and 10 are expected to experience a moderate beneficial impact.
- 9.7.28 In the long-term night-time situation, one dwelling is expected to experience a perceptible noise increase (3dB and above), whilst 69 dwellings are expected to experience perceptible noise benefits.
- 9.7.29 Of the perceptible noise increases, no dwellings are expected to experience either a moderate or major adverse impact. Conversely, one dwelling is expected to experience a major benefit, whilst 17 dwellings are expected to experience a moderate benefit.

Potential Mitigation

- 9.7.30 Overall, a total of 544 sensitive receptors (including dwelling and other sensitive receptors) are expected to experience perceptible noise increases as a result of Option 2C (in either the short-term or long-term or both), without mitigation. Of these, 316 fall within the moderate or major adverse noise impact category and should be considered as the priority for mitigation.

Option 2D

Short-term Impacts

- 9.7.31 In the short-term, a total of 330 dwellings and 43 other sensitive receptors are expected to experience perceptible noise increases (1dB and above), whilst 3,863 dwellings and 126 other sensitive receptors are expected to experience perceptible noise benefits.
- 9.7.32 Of the perceptible noise increases, 174 dwellings are expected to experience a major adverse impact, with 52 experiencing a moderate adverse impact. Conversely, 1,333 dwellings are expected to see a major noise benefit, whilst 1,614 are expected to see a moderate benefit.
- 9.7.33 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst 38 other sensitive receptors are expected to see a major beneficial impact and 80 are expected to experience a moderate beneficial impact.

Long-term Impacts

- 9.7.34 In the long-term day-time situation, a total of 269 dwellings are expected to experience perceptible noise increases (3dB and above), whilst 2,191 dwellings and 115 other sensitive receptors are expected to experience perceptible noise benefits.
- 9.7.35 Of the perceptible noise increases, 84 dwellings are expected to experience a major adverse impact, with 119 experiencing a moderate adverse impact. Conversely, 66 dwellings are expected to see a major noise benefit, whilst 645 are expected to see a moderate benefit.

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- 9.7.36 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst three other sensitive receptors are expected to see a major beneficial impact and four are expected to experience a moderate beneficial impact.
- 9.7.37 In the long-term night-time situation, one dwelling is expected to experience a perceptible noise increase (3dB and above), whilst 67 dwellings are expected to experience perceptible noise benefits.
- 9.7.38 No dwellings are expected to experience either a moderate or major adverse impact. Conversely, one dwelling is expected to experience a major benefit, whilst four are expected to experience a moderate benefit.

Potential Mitigation

- 9.7.39 Overall, a total of 385 sensitive receptors (including dwelling and other sensitive receptors) are expected to experience perceptible noise increases as a result of Option 2D (in either the short-term or long-term or both), without mitigation. Of these, 235 fall within the moderate or major adverse noise impact category and should be considered as the priority for mitigation.

Option 2E

Short-term Impacts

- 9.7.40 In the short-term, a total of 461 dwellings and 42 other sensitive receptors are expected to experience perceptible noise increases (1dB and above), whilst 3,771 dwellings and 130 other sensitive receptors are expected to experience perceptible noise benefits.
- 9.7.41 Of the perceptible noise increases, 165 dwellings are expected to experience a major adverse impact, with 85 experiencing a moderate adverse impact. Conversely, 1,048 dwellings are expected to see a major noise benefit, whilst 2,120 are expected to see a moderate benefit.
- 9.7.42 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst 39 other sensitive receptors are expected to see a major beneficial impact and 82 are expected to experience a moderate beneficial impact.

Long-term Impacts

- 9.7.43 In the long-term day-time situation, a total of 332 dwellings are expected to experience perceptible noise increases (3dB and above), whilst 2,261 dwellings and 114 other sensitive receptors are expected to experience perceptible noise benefits.
- 9.7.44 Of the perceptible noise increases, 89 dwellings are expected to experience a major adverse impact, with 105 experiencing a moderate adverse impact. Conversely, 93 dwellings are expected to see a major noise benefit, whilst 315 are expected to see a moderate benefit.
- 9.7.45 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst three other sensitive receptors are expected to see a major beneficial impact and six are expected to experience a moderate beneficial impact.
- 9.7.46 In the long-term night-time situation, a total of three dwellings are expected to experience a perceptible noise increase (3dB and above), whilst 70 dwellings are expected to experience perceptible noise benefits.
- 9.7.47 Of the perceptible noise increases, one dwelling is expected to experience a moderate adverse impact. None are expected to experience a major adverse impact. Conversely, five

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dwellings are expected to experience a major benefit, and eight are expected to experience a moderate benefit.

Potential Mitigation

- 9.7.48 Overall, a total of 505 sensitive receptors (including dwelling and other sensitive receptors) are expected to experience perceptible noise increases as a result of Option 2E (in either the short-term or long-term or both), without mitigation. Of these, 252 fall within the moderate or major adverse noise impact category and should be considered as the priority for mitigation.

Option 2F

Short-term Impacts

- 9.7.49 In the short-term, a total of 467 dwellings and 42 other sensitive receptors are expected to experience perceptible noise increases (1dB and above), whilst 3,716 dwellings and 128 other sensitive receptors are expected to experience perceptible noise benefits.
- 9.7.50 Of the perceptible noise increases, 153 dwellings are expected to experience a major adverse impact, with 109 experiencing a moderate adverse impact. Conversely, 905 dwellings are expected to see a major noise benefit, whilst 2,080 are expected to see a moderate benefit.
- 9.7.51 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst 55 other sensitive receptors are expected to see a major beneficial impact and 62 are expected to experience a moderate beneficial impact.

Long-term Impacts

- 9.7.52 In the long-term day-time situation, a total of 374 dwellings are expected to experience perceptible noise increases (3dB and above), whilst 2,157 dwellings and 112 other sensitive receptors are expected to experience perceptible noise benefits.
- 9.7.53 Of the perceptible noise increases, 84 dwellings are expected to experience a major adverse impact, with 99 experiencing a moderate adverse impact. Conversely, 46 dwellings are expected to see a major noise benefit, whilst 163 are expected to see a moderate benefit.
- 9.7.54 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst two other sensitive receptors are expected to see a major beneficial impact and four are expected to experience a moderate beneficial impact.
- 9.7.55 In the long-term night-time situation, a total of three dwellings are expected to experience a perceptible noise increase (3dB and above), whilst 72 dwellings are expected to experience perceptible noise benefits.
- 9.7.56 Of the perceptible noise increases, no dwellings are expected to experience either a moderate or major adverse impact. Conversely, three dwellings are expected to experience a major benefit, whilst eight are expected to experience a moderate benefit.

Potential Mitigation

- 9.7.57 Overall, a total of 511 sensitive receptors (including dwelling and other sensitive receptors) are expected to experience perceptible noise increases as a result of Option 2F (in either the short-term or long-term or both), without mitigation. Of these, 264 fall within the moderate or major adverse noise impact category and should be considered as the priority for mitigation.

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Option 2G

Short-term Impacts

- 9.7.58 In the short-term, a total of 409 dwellings and 84 other sensitive receptors are expected to experience perceptible noise increases (1dB and above), whilst 3,738 dwellings and 134 other sensitive receptors are expected to experience perceptible noise benefits.
- 9.7.59 Of the perceptible noise increases, 147 dwellings are expected to experience a major adverse impact, with 74 experiencing a moderate adverse impact. Conversely, 1,506 dwellings are expected to see a major noise benefit, whilst 1,746 are expected to see a moderate benefit.
- 9.7.60 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst 83 other sensitive receptors are expected to see a major beneficial impact and 42 are expected to experience a moderate beneficial impact.

Long-term Impacts

- 9.7.61 In the long-term day-time situation, a total of 339 dwellings are expected to experience perceptible noise increases (3dB and above), whilst 2,748 dwellings and 122 other sensitive receptors are expected to experience perceptible noise benefits.
- 9.7.62 Of the perceptible noise increases, 87 dwellings are expected to experience a major adverse impact, with 103 experiencing a moderate adverse impact. Conversely, 62 dwellings are expected to see a major noise benefit, whilst 551 are expected to see a moderate benefit.
- 9.7.63 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst three other sensitive receptors are expected to see a major beneficial impact, and 13 are expected to experience a moderate beneficial impact.
- 9.7.64 In the long-term night-time situation, a total of three dwellings are expected to experience a perceptible noise increase (3dB and above), whilst 70 dwellings are expected to experience perceptible noise benefits.
- 9.7.65 Of the perceptible noise increases, no dwellings are expected to experience either a moderate or major adverse impact. Conversely, two dwellings are expected to experience a major benefit, and 20 are expected to experience a moderate benefit.

Potential Mitigation

- 9.7.66 Overall, a total of 464 sensitive receptors (including dwelling and other sensitive receptors) are expected to experience perceptible noise increases as a result of Option 2G (in either the short-term or long-term or both), without mitigation. Of these, 231 fall within the moderate or major adverse noise impact category and should be considered as the priority for mitigation.

Option 2H

Short-term Impacts

- 9.7.67 In the short-term, a total of 373 dwellings are expected to experience perceptible noise increases (1dB and above), whilst 3,821 dwellings and 128 other sensitive receptors are expected to experience perceptible noise benefits.

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- 9.7.68 Of the perceptible noise increases, 123 dwellings are expected to experience a major adverse impact, with 86 experiencing a moderate adverse impact. Conversely, 872 dwellings are expected to see a major noise benefit, whilst 2,354 are expected to see a moderate benefit.
- 9.7.69 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst 14 other sensitive receptors are expected to see a major beneficial impact and 105 are expected to experience a moderate beneficial impact.

Long-term Impacts

- 9.7.70 In the long-term day-time situation, a total of 283 dwellings are expected to experience perceptible noise increases (3dB and above), whilst 2,661 dwellings and 116 other sensitive receptors are expected to experience perceptible noise benefits.
- 9.7.71 Of the perceptible noise increases, 53 dwellings are expected to experience a major adverse impact, with 109 experiencing a moderate adverse impact. Conversely, 96 dwellings are expected to see a major noise benefit, whilst 198 are expected to see a moderate benefit.
- 9.7.72 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst three other sensitive receptors are expected to see a major beneficial impact and three are expected to experience a moderate beneficial impact.
- 9.7.73 In the long-term night-time situation, a total of three dwellings are expected to experience a perceptible noise increase (3dB and above), whilst 68 dwellings are expected to experience perceptible noise benefits.
- 9.7.74 Of the perceptible noise increases, no dwellings are expected to experience either a moderate or major adverse impact. Conversely, three dwellings are expected to experience a major benefit, and one is expected to experience a moderate benefit.

Potential Mitigation

- 9.7.75 Overall, a total of 375 sensitive receptors (including dwelling and other sensitive receptors) are expected to experience perceptible noise increases as a result of Option 2H (in either the short-term or long-term or both), without mitigation. Of these, 212 fall within the moderate or major adverse noise impact category and should be considered as the priority for mitigation.

Option 2I

Short-term Impacts

- 9.7.76 In the short-term, a total of 275 dwellings are expected to experience perceptible noise increases (1dB and above), whilst 3,952 dwellings and 127 other sensitive receptors are expected to experience perceptible noise benefits.
- 9.7.77 Of the perceptible noise increases, 146 dwellings are expected to experience a major adverse impact, with 36 experiencing a moderate adverse impact. Conversely, 1,324 dwellings are expected to see a major noise benefit, whilst 2,115 are expected to see a moderate benefit.
- 9.7.78 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst 15 other sensitive receptors are expected to see a major beneficial impact and 106 are expected to experience a moderate beneficial impact.

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Long-term Impacts

- 9.7.79 In the long-term day-time situation, a total of 227 dwellings are expected to experience perceptible noise increases (3dB and above), whilst 2,925 dwellings and 117 other sensitive receptors are expected to experience perceptible noise benefits.
- 9.7.80 Of the perceptible noise increases, 80 dwellings are expected to experience a major adverse impact, with 87 experiencing a moderate adverse impact. Conversely, 69 dwellings are expected to see a major noise benefit, whilst 594 are expected to see a moderate benefit.
- 9.7.81 No other sensitive receptors are expected to experience either moderate or major adverse noise impacts, whilst three other sensitive receptors are expected to see a major beneficial impact and four are expected to experience a moderate beneficial impact.
- 9.7.82 In the long-term night-time situation, one dwelling is expected to experience a perceptible noise increase (3dB and above), whilst 70 dwellings are expected to experience perceptible noise benefits.
- 9.7.83 No dwellings are expected to experience either a moderate or major adverse impact. Conversely, two dwellings are expected to experience a major benefit, and ten are expected to experience a moderate benefit.

Potential Mitigation

- 9.7.84 Overall, a total of 286 sensitive receptors (including dwelling and other sensitive receptors) are expected to experience perceptible noise increases as a result of Option 2I (in either the short-term or long-term or both), without mitigation. Of these, 192 fall within the moderate or major adverse noise impact category and should be considered as the priority for mitigation.

9.8 Compliance with Policies and Plans

- 9.8.1 An assessment of the compliance of the route options in relation to the policies and plans mentioned in Section 9.3 (Policies and Plans) is presented below. As the overall impacts identified are similar for both sections, Inverness to Gollanfield and the Nairn Bypass, they are reported collectively.
- 9.8.2 For all of the route options a number of sensitive receptors are expected to experience a moderate or major adverse noise impact (in either the short-term, long-term or both). All the route options therefore have the potential to conflict with SPP and Policy 28 (Sustainable Design) and Policy 72 (Pollution) of the HwLDP.
- 9.8.3 However, there is scope to consider that there will be no conflict with Policy 28 (Sustainable Design) of the HwLDP due to the overriding strategic benefit of the proposed development. In relation to the strategic benefits the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme is included in the Strategic Transport Projects Review (STPR) (Transport Scotland, 2008) which identifies a programme of strategic transport interventions necessary to support the future effective operation of Scotland's transport network. The Infrastructure Investment Plan (Scottish Government, 2011a) also identifies investment in Scotland's transport as a key enabler for enhancing productivity and delivering sustainable growth, and has made a commitment to dual the A96 between Inverness and Aberdeen by 2030. The strategic benefits of the route options are also reflected in the HwLDP which states that key transport improvements must be delivered in order to support the development of the A96 corridor. Further assessment on the full extent of the potential noise impacts would be required to conclude whether or not the strategic benefits outweigh the adverse impacts.

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9.8.4 Appropriate measures would therefore be required for all route options to show how noise impacts can be appropriately avoided and if necessary mitigated. Please refer to Section 9.9 (Potential Mitigation) for further details.

9.9 Potential Mitigation

9.9.1 For a DMRB Stage 2 Assessment the design has not been sufficiently developed to allow mitigation to be defined in detail at this stage. The objective of this section is to identify potential mitigation taking into account best practice, legislation and guidance, which would be developed and refined during the DMRB Stage 3 Assessment. As part of DMRB Stage 3, the design of the preferred option would be reviewed and, where possible, the preferred option would be further developed (pre-DMRB Stage 3 Assessment mitigation) to minimise impacts from noise and vibration.

9.9.2 Potential mitigation measures for both the construction and operational phases are discussed below.

Construction

9.9.3 During the construction phase, potential mitigation measures for the route options are likely to include:

- use of 'best practicable means' during all construction activities;
- switching off plant and equipment when it is not in use for longer periods of time;
- establishing agreement with the local authority on appropriate controls for undertaking significantly noisy works or vibration-causing operations close to receptors;
- programming works so that the requirement for working outside normal working hours is minimised;
- use of low noise emission plant where possible;
- where appropriate piling should be bored to protect sensitive sites;
- use of temporary noise screens around particularly noisy activities; and
- regular plant maintenance.

Operation

9.9.4 In general terms, the greater the number of sensitive receptors experiencing perceptible noise increases (and particularly falling within the moderate and major impact categories), the greater extent of noise mitigation is likely to be required.

9.9.5 As noted in paragraph 9.2.21 a LNRS, which would reduce noise levels at all sensitive receptors, should be adopted for the scheme. This mitigation measure has been taken into account in the subsequent identification of potential impacts to provide a robust basis for comparative assessment and selection of a preferred option to be taken forward to DMRB Stage 3 Assessment.

9.9.6 During the operational phase, potential mitigation measures for the route options are likely to include:

- Siting the scheme within cuttings where the surrounding topography and constraints allow. This provides a degree of noise screening and can be an effective noise mitigation measure. During the scheme design, consideration should be given, where feasible, to increasing the extent of the scheme within cutting (or creating false cuttings), particularly where it runs close to sensitive receptors.

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- The use of earth bunding or noise barriers as a form of screening. The relevant heights and extents of screening structures would be determined during the assessment of the preferred option as part of the DMRB Stage 3 Assessment.

9.10 Summary of Route Options

9.10.1 This section provides a summary of the impact assessment for each section. Consideration has been given to the numbers of receptors experiencing perceptible noise changes and also the numbers falling within the two highest impact categories (moderate and major), which would be most impacted, both positively and negatively. Receptors are represented once in the tables, although they may see significant impacts in any or all of the short-term day-time, long-term day-time and long-term night-time scenarios.

9.10.2 Noise mitigation measures would be desirable for sensitive receptors experiencing perceptible noise increases of 1dB on scheme opening or 3dB in the long term. Those sensitive receptors falling within the moderate and major adverse impact categories are predicted to experience the greatest noise increases and are likely to be the initial focus for noise mitigation.

Inverness to Gollanfield

9.10.3 Table 9.14 presents the total numbers of receptors experiencing a perceptible adverse noise increase in either the short or long-term, and the total number of receptors experiencing a moderate or major adverse noise impact in either the short or long-term.

Table 9.14 Summary of adverse noise impacts (Inverness to Gollanfield)

No. of sensitive receptors experiencing...	Option							
	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
A short-term or long-term perceptible adverse noise increase.	27	27	56	66	153	153	125	124
A short-term or long-term moderate or major adverse noise increase.	20	20	11	14	33	35	25	22

9.10.4 Table 9.14 shows that Options 1A, 1A (MV), 1B and 1B (MV) result in far fewer sensitive receptors experiencing perceptible noise increases, and also fewer receptors falling within the moderate or major adverse noise impact categories. Options 1C and 1C (MV) result in the highest number of receptors experiencing perceptible noise increases along with the most in the moderate and major adverse noise impact categories.

9.10.5 Table 9.15 presents the total number of receptors experiencing perceptible noise benefits in either the short or long-term, and the total number of receptors experiencing a moderate or major beneficial noise impact in either the short or long-term.

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Table 9.15: Summary of beneficial noise impacts (Inverness to Gollanfield)

No. of sensitive receptors experiencing...	Option							
	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
A short-term or long-term perceptible beneficial noise decrease.	919	1,326	844	1,210	176	176	179	237
A short-term or long-term moderate or major beneficial noise decrease.	62	82	52	75	57	58	48	48

- 9.10.6 Table 9.15 shows that Options 1A, 1A (MV), 1B and 1B (MV) result in perceptible noise benefits at a far higher number of sensitive receptors than the four other route options. The number of sensitive receptors experiencing a moderate or major beneficial noise impact are broadly comparable between all of the route options, with Options 1A (MV) and 1B (MV) having the most benefits.
- 9.10.7 The information presented in Table 9.14 and 9.15 appears to be consistent with the general layout of each of the route options in comparison to the location of the majority of noise sensitive receptors in the area. The majority of sensitive receptors are located in the residential areas of Smithton, Culloden and Balloch to the south of the existing A96. Options 1A, 1A (MV), 1B and 1B (MV) generally follow the alignment of the existing A96, whilst Options 1C, 1C (MV), 1D and 1D (MV) are all located closer to these residential areas. Therefore, Options 1C, 1C (MV), 1D and 1D (MV) would move road traffic closer to the residential properties in this area, leading to a greater adverse noise increases and fewer noise benefits.
- 9.10.8 In addition, a LNRS has been assumed for the route options and their associated junctions. Where the route options follow the existing A96 the use of a LNRS would appear to lead to overall minor noise benefits (particularly on scheme opening). The benefits of using a LNRS would appear to more than offset the adverse impact of increased traffic flows and speeds as a result of the route options.
- 9.10.9 In overall terms, the number of perceptible noise increases for Options 1A, 1A (MV), 1B and 1B (MV) (27, 27, 56 and 66 respectively) are far outweighed by the numbers of perceptible noise benefits (919, 1,326, 844 and 1,210 respectively). Similarly, the numbers of moderate or major noise impacts (20, 20, 11 and 14 respectively) are again far outweighed by the numbers of moderate or major benefits (62, 82, 52 and 75 respectively).
- 9.10.10 For Options 1C, 1C (MV), 1D and 1D (MV), the overall numbers of perceptible noise increases (153, 153, 125 and 124 respectively) are only slightly outweighed by the overall numbers of perceptible noise benefits (176, 176, 179 and 237 respectively). Similarly, the overall numbers of moderate or major adverse noise impacts (33, 35, 25 and 22 respectively) are only slightly outweighed by the overall numbers of moderate or major benefits (57, 58, 48 and 48 respectively).
- 9.10.11 Overall, Options 1A (MV) and 1B (MV) are considered to be both the most beneficial and least adverse route options from a noise perspective.
- 9.10.12 In relation to compliance with policies and plans, with appropriate mitigation, as detailed in Section 9.9 (Potential Mitigation), it is expected that all the route options could comply with SPP and Policy 28 (Sustainable Design) and Policy 72 (Pollution) of the HwLDP. Furthermore, there is scope to consider that there would be no conflict with Policy 28 (Sustainable Design) of the HwLDP due to the overriding strategic benefits of the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme. However, should further

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assessment identify that significant noise pollution cannot be avoided, and in the absence of suitable mitigation, a conflict with SPP and Policy 72 (Pollution) would be expected. In relation to Policy 28 (Sustainable Design) of the HwLDP, further consideration of whether the strategic benefits outweigh the adverse impacts would be required.

Nairn Bypass

- 9.10.13 Table 9.16 presents the total number of receptors experiencing a perceptible adverse noise increase in either the short or long-term, and the total numbers of receptors experiencing a moderate or major adverse noise impact in either the short or long-term.

Table 9.16: Summary of adverse noise impacts (Nairn Bypass)

No. of sensitive receptors experiencing...	Option								
	2A	2B	2C	2D	2E	2F	2G	2H	2I
A short-term or long-term perceptible adverse noise increase	591	580	544	385	505	511	464	375	286
A short-term or long-term moderate or major adverse noise increase	320	307	316	235	252	264	231	212	192

- 9.10.14 Table 9.16 shows that Option 2I would lead to the fewest number of receptors experiencing perceptible noise increases and also the fewest sensitive receptors falling within the moderate or major adverse impact categories. Options 2D, 2G and 2H result in the next fewest perceptible noise increases and receptors within the moderate or major adverse impact categories. Options 2E and 2F have slightly more perceptible noise increases and receptors within the moderate or major adverse impact categories, with Options 2A, 2B and 2C having the highest numbers of perceptible noise increases and receptors within the moderate or major adverse impact categories.

- 9.10.15 Table 9.17 presents the total number of receptors experiencing a perceptible noise benefits in either the short or long-term, and the total number of receptors experiencing a moderate or major beneficial noise impact in either the short or long-term.

Table 9.17: Summary of beneficial noise impacts (Nairn Bypass)

No. of sensitive receptors experiencing...	Option								
	2A	2B	2C	2D	2E	2F	2G	2H	2I
A short-term or long-term perceptible beneficial noise decrease.	3,734	3,437	3,706	3,989	3,901	3,844	3,865	3,956	4,079
A short-term or long-term moderate or major beneficial noise decrease.	2,591	1,684	2,584	3,065	3,289	3,102	3,372	3,374	3,560

- 9.10.16 Table 9.17 shows that the route options result in a very high number of perceptible noise benefits (particularly on opening). This is to be expected for a bypass scheme of this nature, as road traffic is being relocated from the densely populated town of Nairn (on the existing A96), to the rural areas south of Nairn (where the route options are located). There would also be benefits associated with the use of a LNRS on the route options compared to the current situation.

- 9.10.17 In terms of perceptible benefits and the number of sensitive receptors falling within the moderate and major beneficial impact categories, Options 2G, 2H and 2I are the most

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beneficial options, followed by Options 2D, 2E and 2F. Options 2A and 2C would be the next most beneficial options, with Option 2B the least beneficial.

- 9.10.18 A LNRS has been assumed for the route options and their associated junctions. Where parts of the route options follow the existing A96, the use of a LNRS would appear to lead to overall minor noise benefits (particularly on scheme opening). The benefits of using a LNRS would appear to more than offset the adverse impact of increased traffic flows and speeds as a result of the route options.
- 9.10.19 In overall terms, the number of perceptible noise increases (286 to 591) for all route options is far outweighed by the number of perceptible decreases (3,437 to 4,079), as is the number of moderate or major increases (192 to 320) compared to the number of moderate or major decreases (1,684 to 3,560).
- 9.10.20 Overall, Option 2I is considered to be both the most beneficial and least adverse route option from a noise perspective.
- 9.10.21 In relation to compliance with policies and plans, with appropriate mitigation, as detailed in Section 9.9 (Potential Mitigation), it is expected that all the route options could comply with SPP and Policy 28 (Sustainable Design) and Policy 72 (Pollution) of the HwLDP. Furthermore, there is scope to consider that there would be no conflict with Policy 28 (Sustainable Design) of the HwLDP due to the overriding strategic benefits of the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme. However, should further assessment identify that significant noise pollution cannot be avoided, and in the absence of suitable mitigation, a conflict with SPP and Policy 72 (Pollution) would be expected. In relation to Policy 28 (Sustainable Design) of the HwLDP, further consideration of whether the strategic benefits outweigh the adverse impacts would be required.

9.11 Scope of DMRB Stage 3 Assessment

- 9.11.1 A Detailed Assessment, as defined in HD213/11, should be carried out for the DMRB Stage 3 Assessment. The scope of a Detailed Assessment is similar to that of a Simple Assessment, with a number of additional steps and comparisons made.
- 9.11.2 Baseline noise monitoring should be undertaken at representative noise sensitive receptors close to the preferred option and other roads on which traffic flows are likely to be significantly affected.
- 9.11.3 During DMRB Stage 3, an assessment of the potential impacts arising from construction of the preferred option should be undertaken. This should involve interrogation of the measured baseline noise data to derive anticipated noise limits using BS5228-1 Method 2. Predictions should then be undertaken for the likely worst case phases of construction to estimate the impact at the nearest sensitive receptors to the preferred option, and mitigation measures would be suggested where required.
- 9.11.4 During DMRB Stage 3, consideration should also be given to construction vibration, making reference to the guidance and criteria in BS5228-2 relating to human response to vibration in buildings and damage levels from ground borne vibration in buildings.
- 9.11.5 For the operational assessment, the preferred option should be modelled using computer based modelling software and appropriate noise mitigation measures identified where required.
- 9.11.6 The level of reporting of permanent traffic noise impacts should include the following three comparisons:
- DM scenario in modelled opening year against DM in the future assessment year;

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- DM scenario in the baseline year against DS scenario in the baseline year; and
- DM scenario in baseline year against DS scenario in the future assessment year.

9.11.7 In addition, assessment of both the permanent traffic nuisance impacts and the permanent traffic induced vibration impacts should also be undertaken, and Tables A1.3 and A1.4, as defined in HD 213/11, should be provided.

9.12 References

British Standards Institution (1993). BS 7385-2 Evaluation and Measurement for Vibration in Buildings - Guide to Damage Levels from Groundborne Vibration, British Standards Institution.

British Standards Institution (2009). BS 5228 Noise and Vibration Control on Construction and Open Sites, British Standards Institution.

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Transport Scotland (2008). Strategic Transport Projects Review.

Scottish Government (2011a). Infrastructure and Investment Plan (IIP), December 2011.

Scottish Government (2011b). Planning Advice Note 1/2011: Planning and Noise, March 2011.

Scottish Government (2011c). Technical Advice Note – Assessment of Noise.

Scottish Government (2014a). Scottish Planning Policy, June 2014.

Scottish Government (2014b). Transportation Noise Action Plan. Produced by the Transportation Noise Working Group for the Scottish Government. July 2014.

Scottish Government (undated). Guidance for Possible Measures to Manage Noise from Road and Rail. Available at:

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The Highland Council (2012). Highland-wide Local Development Plan. April 2012.

The Highways Agency, Scottish Government, Welsh Assembly Government, The Department for Regional Development Northern Ireland (2011). Design Manual for Roads and Bridges Volume 11, Section 3, Part 7 Noise and Vibration (HD213/11).

The Highways Agency, Scottish Government, Welsh Assembly Government, The Department for Regional Development Northern Ireland (2008). Design Manual for Roads and Bridges Volume 11, Section 2, Part 5 (HA205/08), Assessment and Management of Environmental Effects.

Transport Research Laboratory (2002). Converting the UK traffic noise index LA10,18hr to EU noise indices for noise mapping.

10 Landscape and Visual

10.1 Introduction

- 10.1.1 This chapter presents the DMRB stage 2 Assessment of the potential impacts of each of the route options on landscape character and the visual amenity and character of views from buildings and outdoor receptors.
- 10.1.2 The assessment includes the following:
- baseline conditions within the study area relating to landscape character and visual amenity;
 - potential impacts of each of the route options with regard to the identified baseline conditions;
 - anticipated mitigation measures that allow subsequent identification of potential residual impacts; and
 - a summary of the route options assessment identifying, where possible, residual impacts taking into account likely mitigation.
- 10.1.3 The assessment is supported by the following appendices which are located in Part 6 (Appendices) of this report:
- A10.1: Landscape Impact Assessment;
 - A10.2: Visual Impact Assessment - Built Receptors; and
 - A10.3: Visual Impact Assessment - Outdoor Receptors.
- 10.1.4 As described in Part 1 (The Scheme), Chapter 3 (Description of Route Options) of this report, the proposed scheme is divided into two sections; Inverness to Gollanfield and the Nairn Bypass. The information presented in Section 10.2 (Approach and Methods), Section 10.3 (Policies and Plans) and Section 10.9 (Potential Mitigation) is appropriate to both sections. The information presented in Section 10.4 (Baseline Conditions), Sections 10.5 to 10.7 (Impact Assessment), Section 10.8 (Compliance with Policies and Plans) and Section 10.10 (Summary of Route Options) is reported for each section and where appropriate under the headings Inverness to Gollanfield and the Nairn Bypass.
- 10.1.5 Section 10.11 provides details on the proposed scope for the DMRB Stage 3 Assessment and Section 10.12 provides a full list of references that are noted within this chapter.

10.2 Approach and Methods

Scope and Guidance

- 10.2.1 This assessment was undertaken with reference to the following:
- DMRB Volume 11, Section 3, Part 5 Landscape Effects (The Highways Agency et al., 1993) (hereafter referred to as DMRB, Landscape Effects).
 - DMRB Interim Advice Note 135/10 Landscape and Visual Effects Assessment (The Highways Agency, 2010) (hereafter referred to as IAN135/10).
 - Guidelines for Landscape and Visual Impact Assessment (The Landscape Institute and the Institute of Environmental Management and Assessment, 2013) (hereafter referred to as GLVIA).
 - Fitting Landscapes: Securing more sustainable landscapes (Transport Scotland, 2014).

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10.2.2 Chapter 9 of DMRB Landscape Effects requires that a landscape and visual impact assessment is undertaken at DMRB Stage 2 and further refined and developed at DMRB Stage 3. This includes an assessment of the significance of impact on the landscape for each of the route options and a statement of the estimated visual impact of the route options on affected receptors and the degree to which their visual amenity might change. This guidance also outlines in paragraph 5.7 that the assessor is required to make “*an overall judgement on the impact of each section of the route, allowing for likely or proposed mitigation*”. The assessment therefore includes an indicative assessment of the residual impacts taking account of the potential for mitigation measures.

10.2.3 It is assumed that there would be no landscape or visual change in a ‘Do-Nothing’ scenario and it has therefore been omitted from this assessment. A more detailed assessment of specific impacts should be carried out at DMRB Stage 3 following the identification of a preferred option.

Study Area

10.2.4 The study area for the landscape and visual assessment was based on a drawn Visual Envelope Map (VEM) which relates to areas that may gain a view of the route options. This was identified through a combination of desk-study and field survey.

10.2.5 The desk-study initially limited the study area to an approximate 3km distance from the route options, as this was considered to be the maximum distance from which elements of the route options could have a discernible visual impact on a receptor. The field survey further defined the study area through identification of landscape elements that reduced visibility, such as woodland and topography. The study area used in this assessment is shown on Figures 10.1 to 10.9 and 10.15 to 10.23.

Baseline Data

10.2.6 Baseline conditions were identified through a combination of desk-based assessments and information obtained during a field survey undertaken in August 2013.

10.2.7 For the desk-based assessment the following sources of information were reviewed:

- Geographical Information Systems data;
- aerial photographs;
- 1:25,000 and 1:50,000 Ordnance Survey (OS) maps;
- Scottish Natural Heritage (SNH): No 101 Moray and Nairn Landscape Character Assessment (Turnbull Jeffrey Partnership, 1998);
- SNH Review: No 114 Inverness District Landscape Character Assessment (Richards, 1999); and
- SNH Review: No 90 Inner Moray Firth Landscape Character Assessment (Fletcher, 1998).

10.2.8 A field survey was completed between 8 and 11 August 2013. The survey was completed by two landscape architects by car and on foot. The survey confirmed the location of the landscape character areas, properties (built receptors) and paths or roads (outdoor receptors) that would be likely to experience a physical or visual change as a result of each route option. Where multiple built receptors are grouped together for the purposes of the assessment they are referred to as receptor groups. Data relating to the receptors were collected using a standardised checklist and photographs were taken from key landscape viewpoints identified during initial baseline assessment.

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Impact Assessment

Landscape Impact Assessment

- 10.2.9 The SNH landscape character assessments listed above in paragraph 10.2.7 were used as the basis for the landscape character assessment. The Landscape Character Types (LCTs) identified in these documents were then divided into Local Landscape Character Areas (LLCAs) in order to provide sufficient detail to allow for differentiation between the route options.

Sensitivity

- 10.2.10 Once the LLCAs were identified, the sensitivity of each area to change was assessed. The GLVIA defines sensitivity through the “*susceptibility to change*” and the “*value of the landscape receptor*”. Susceptibility means the ability of the landscape receptor to accommodate the route options without changing its original situation. GLVIA defines landscape value as “*the relative value that is attached to different landscapes by society*”. A review of existing designations (e.g. National Scenic Area (NSA), Special Landscape Area (SLA)) is usually the starting point in understanding value. However, establishing the value attached to undesignated areas requires examination of individual elements of the landscape such as trees, hedgerows, buildings and features of cultural heritage interest, or areas of importance to the local community. The criteria used to define the overall evaluation of landscape sensitivity are shown in Table 10.1. These criteria represent thresholds on a continuum and where appropriate the intermediate categories of low to medium and medium to high sensitivity were also used in the assessment.

Table 10.1: Landscape sensitivity criteria

Sensitivity	Criteria
High	Landscape or landscape elements of particular distinctive character, highly valued and considered susceptible to relatively small changes.
Medium	Landscape of moderately valued characteristics considered reasonably tolerant of change.
Low	Landscape of generally low valued characteristics considered potentially tolerant of substantial change.

Magnitude of Impact

- 10.2.11 The criteria used to assess the magnitude of the changes to the landscape are shown in Table 10.2. These criteria represent thresholds on a continuum and where appropriate the intermediate categories of low to medium and medium to high magnitude were also used in the assessment.

Table 10.2: Magnitude of landscape change

Magnitude	Criteria
High	Notable change in landscape characteristics over an extensive area ranging to very intensive change over a more limited area.
Medium	Minor changes in landscape characteristics over a wide area ranging to notable changes in a more limited area.
Low	Minor or virtually imperceptible change in any area or landscape components.

- 10.2.12 Consideration has also been given to the duration and reversibility of landscape impacts. Permanent impacts are considered to be of long duration and largely irreversible and therefore have a higher magnitude of impact. Temporary construction phase impacts, for example from site compounds, are considered to be short-term and are often reversible and therefore may have a lower magnitude of impact.

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Significance of Impact

- 10.2.13 The categories of significance described in Table 10.3 (as defined by the IAN135/10) have been used during this assessment.

Table 10.3: Significance of landscape impact

Impact Significance	Description
Substantial	The project would be at complete variance with the character of the landscape (including quality and value), cause the integrity of characteristic features and elements to be lost, and cause a sense of place to be lost.
Moderate/ Substantial	The project would be at considerable variance with the character (including quality and value) of the landscape, degrade or diminish the integrity of a range of characteristic features and elements, and damage a sense of place.
Moderate	The project would conflict with the character (including quality and value) of the landscape, have an adverse impact on characteristic features or elements, and diminish a sense of place.
Slight/ Moderate	The project would not quite fit the character (including quality and value) of the landscape, be at variance with characteristic features and elements, and detract from a sense of place.
Slight	The project would generally fit the character (including quality and value) of the landscape, occasionally be at variance with characteristic features and elements, and slightly reduce from a sense of place.
Negligible	The project would maintain the character (including quality and value) of the landscape, be in variance with characteristic features and elements, and enable a sense of place.

- 10.2.14 For the purposes of this assessment, impacts are considered to be adverse unless otherwise stated. Impacts assessed as being of Moderate or greater significance are considered to represent key landscape changes and mitigation would generally be required to reduce these where possible.

Visual Impact Assessment

- 10.2.15 The visual impact assessment considers both built and outdoor receptors. Outdoor receptors consist of important routes that enable access within the landscape. This includes roads and footpaths and in particular core paths that are designated by the local authority. Although there is a wider network of informal aspirational core paths and local paths, as set out in Chapter 15 (Effects on All Travellers) of this report, these are not considered within this assessment as they are not currently designated by local authorities. The importance of these routes will be reconsidered and assessed if relevant during the DMRB Stage 3 Assessment.
- 10.2.16 The significance of visual impacts was determined through consideration of both the sensitivity of the visual receptor and the predicted magnitude of change as a result of the route options.

Sensitivity

- 10.2.17 The sensitivity of visual receptors to changes in their views, was evaluated in accordance with the criteria shown in Table 10.4 and is based on the following factors:
- nature and context of the viewpoint;
 - expectations of users/receptors; and
 - importance and value of the view to the receptor.

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Table 10.4: Visual sensitivity criteria

Sensitivity	Criteria
High	Receptors where the changed view is of high value and importance and/or where the receptor will notice any change to visual amenity by reason of the nature of use and their expectations. The majority of dwellings have been assessed as being of high sensitivity.
Medium	Receptors where the changed view is incidental but not critical to amenity and/or the nature of the view is not a primary consideration of the users. This includes outdoor receptors where users are likely to spend time outside of participation in their activity looking at the view and industrial receptors that have offices with windows that take advantage of views.
Low	Receptors where the changed view is unimportant/irrelevant and/or users are not sensitive to change. The majority of industrial receptors are considered to be of low sensitivity unless they have a significant number of windows, which may raise their sensitivity to low/medium. Outdoor receptors, where users are unlikely to consider the views an important element of their usage of the site, will also generally be assessed to be of low sensitivity.

10.2.18 These criteria represent thresholds on a continuum and where appropriate the intermediate categories of low to medium and medium to high sensitivity were also used in the assessment.

Magnitude of Impact

10.2.19 The criteria used to evaluate the magnitude of visual change on receptors are shown in Table 10.5. These take into account the following:

- the extent of the receptor's available view potentially impacted by the route option (including separation between the receptor and the route option);
- the angle of view relative to the main activity of the receptor; and
- the level of integration or contrast created by the route option and its associated elements within the view.

Table 10.5: Magnitude of visual change

Magnitude	Criteria
High	Where the route option or elements of the route option will dominate the view and fundamentally change its character and components.
Medium	Where the route option or elements of the route option will be noticeable in the view, affecting its character and altering some of its components and features.
Low	Where the route option or elements of the route option will only be a minor element of the overall view that are likely to be missed by the casual observer and/or scarcely appreciated.

10.2.20 These criteria represent thresholds on a continuum and where appropriate the intermediate categories of low to medium and medium to high magnitude were also used in the assessment.

10.2.21 As with landscape impacts, the magnitude of visual change also takes into consideration the duration and reversibility of the impact, hence short-term, reversible visual impacts from temporary construction operations are generally considered of lower magnitude than long-term, irreversible impacts.

Significance of Impact

10.2.22 The categories of impact significance followed the same approach as described for the landscape assessment as shown in Table 10.3.

Mitigation

10.2.23 Potential mitigation measures to reduce impacts have been considered during this assessment and are discussed in Section 10.9 (Potential Mitigation).

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- 10.2.24 It should be noted that at this stage in the development of the route options it is not possible to design specific or detailed mitigation measures and therefore residual impacts cannot be confirmed. However, it is possible to estimate the potential for mitigation based on the landscape context of the route options, including vegetation cover and topography. Areas which are open in character with few trees are generally likely to have less potential for mitigation through woodland planting, whereas in locations where woodland is more widespread, new woodland planting would be more in keeping with the landscape character and thus mitigation potential is greater. If a particular route option has a high potential to be mitigated there is a greater possibility of significant impacts being reduced.

Limitations to Assessment

- 10.2.25 In relation to this DMRB Stage 2 Assessment no limitations have been identified. Built and outdoor receptors and landscape character areas have been assessed using a combination of site surveys, maps, photographs and aerial photography. This provides sufficient information to undertake full DMRB Stage 2 Assessment according to DMRB, Landscape Effects.

10.3 Policies and Plans

- 10.3.1 The national, regional and local planning policies and guidance relevant to landscape and visual impacts are identified below. An assessment of compliance of the route options in relation to these policies is provided in Section 10.6 (Compliance with Policies and Plans).

National Planning Policy and Guidance

- 10.3.2 National planning policy on a variety of themes is contained within Scottish Planning Policy (SPP) (Scottish Government, 2014) (hereafter referred to as SPP). In terms of the landscape and visual impact of proposals, SPP is focussed on:

- promoting sustainable development;
- improving the natural environment and the sustainable use and enjoyment of it;
- facilitating positive change whilst maintaining and enhancing the distinctive character of the landscape in both the countryside and urban areas;
- ensuring that the siting and design of development is informed by local landscape character; and
- preserving ancient and semi-natural woodland as well as other native and long established woodlands with high nature conservation value.

- 10.3.3 SPP encourages planning authorities to ensure that potential effects on landscapes and the natural environment, including the cumulative effect of incremental changes, are considered when deciding planning applications. Careful planning and design should be used to minimise adverse impacts from development and potential for enhancement should be maximised.

- 10.3.4 Circulars and Planning Advice Notes (PANs) published by the Scottish Government provide further guidance on specific topics. PAN 60: Planning for Natural Heritage (Scottish Executive, 2000) is applicable to landscape and visual impacts and the details of this guidance are summarised in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.

Regional and Local Planning Policy and Guidance

- 10.3.5 The Highland-wide Local Development Plan (HwLDP) (The Highland Council, 2012) (hereafter referred to as HwLDP) is the land-use Plan which will guide the development and

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investment in the region over the next 20 years. The relevant policies in relation to landscape and visual impacts include:

- Policy 28: Sustainable Design;
- Policy 29: Design Quality Place-making;
- Policy 36: Development in the Wider Countryside;
- Policy 51: Trees and Development;
- Policy 52: Principle of Development in Woodland;
- Policy 57: Natural, Built and Cultural Heritage; and
- Policy 61: Landscape.

10.3.6 The HwLDP has supplementary guidance, which provides additional guidance for developers. The following are relevant to the landscape and visual assessment:

- Trees, Woodland and Development Supplementary Guidance (adopted January 2013) (The Highland Council, 2013b)
- Sustainable Design Guide: Supplementary Guidance (adopted January 2013) (The Highland Council, 2013a)

10.3.7 Further details of these policies and guidance are summarised in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.

Review of Planning Policies

10.3.8 The key aspects of the relevant planning policies in relation to landscape and visual impacts relate to impacts on landscape character and the loss of trees and woodland, and these policies are discussed below.

10.3.9 With regard to the landscape, Policy 28 (Sustainable Design) of the HwLDP states that development will be assessed on:

- the extent to which it impacts on the landscape; and
- how it demonstrates sensitive siting and high quality design in keeping with local character.

10.3.10 Developments which are judged to be significantly detrimental in terms of these criteria will not accord with the HwLDP, unless there are no suitable alternatives, if there is an overriding strategic benefit to the development or if satisfactory mitigation is incorporated. All development proposals must demonstrate compatibility with the Sustainable Design Guide: Supplementary Guidance (The Highland Council, 2013a) which requires developments to conserve and enhance the character of the Highland area.

10.3.11 Policy 29 (Design Quality Place-making) of the HwLDP provides that new development should be designed to make a positive contribution to the architectural and visual quality of the place in which it is located, where appropriate. Applicants should demonstrate sensitivity and respect towards the local distinctiveness of the landscape, architecture, design and layouts in their proposals. Proposals should have regard for the historic pattern of development and landscape in the locality.

10.3.12 Policy 36 (Development in the Wider Countryside) of the HwLDP details how development proposals in the countryside will be assessed according to the extent to which they:

- are acceptable in terms of siting and design;
- are sympathetic to existing patterns of development in the area;

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- are compatible with landscape character and capacity; and
 - avoid incremental expansion of one particular development type within a landscape whose distinct character relies on an intrinsic mix/distribution of a range of characteristics.
- 10.3.13 Development proposals may be supported if they are judged to be not significantly detrimental under the terms of this policy.
- 10.3.14 Policy 51 (Trees and Development) of the HwLDP seeks the protection of existing hedges, trees and woodlands on and around development sites. The acceptable developable area of a site is influenced by tree impact, and adequate separation distances will be required between established trees and any new development. The Highland Council will seek to secure additional tree/hedge planting within a tree planting or landscape plan to compensate removal and to enhance the setting of any new development.
- 10.3.15 Policy 52 (Principle of Development in Woodland) of the HwLDP requires applicants to demonstrate that a woodland site has capacity to accommodate any proposed development. There is a strong presumption in favour of protecting woodland resources and development resulting in their loss will only be supported where they offer clear and significant public benefit. Compensatory planting will usually be required where woodland will be removed.
- 10.3.16 Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP states that The Highland Council will allow development that has the potential to impact on features of local/regional importance (including SLAs) if it can be demonstrated that it will not have an unacceptable impact on the natural environment, amenity and heritage resource. For features of national importance (including NSA's and Tree Preservation Orders (TPOs)) development will only be allowed if they can be shown not to compromise the natural environment, amenity and heritage resource. Where there will be significant adverse effects, these must be clearly outweighed by social or economic benefits of national importance.
- 10.3.17 Policy 61 (Landscape) of the HwLDP requires new developments to be designed to reflect the landscape characteristics and special qualities identified in the Landscape Character Assessment of the area in which they are proposed. The Highland Council encourages applicants to include measures to enhance the landscape characteristics of the area, particularly where the condition of the landscape characteristics has deteriorated to such an extent that there has been a loss of landscape quality or distinctive sense of place.

10.4 Baseline Conditions

- 10.4.1 The baseline conditions are similar across the two sections; Inverness to Gollanfield and the Nairn Bypass. The baseline conditions have therefore been reported to represent both sections, and where there are key differences/additional features, this is highlighted.

Regional Context

- 10.4.2 The study area is located between the coastal plain of the Moray Firth to the north and the rising Cairngorm mountain range to the south. The city of Inverness is located to the western end of the study area, while the towns of Nairn and Auldearn sit to the east. Inverness airport is located to the north of the study area and forms an important resource for the wider Highland region. The study area contains high quality farm land, with small clusters of houses spread along its length. More substantial development can be found in closer proximity to Inverness and Nairn, which are currently connected by the existing A96 Aberdeen – Inverness Trunk Road (hereafter referred to as existing A96).

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Historic and Cultural Associations

- 10.4.3 Much of the landscape that is visible today has evolved as a result of long-term human influence and settlement. Further details are provided Chapter 14 (Cultural Heritage) of this report. The first recorded inhabitants of the area were neolithic people who originally settled in the area because of fertile flood plains and light, free-draining soils; evidence of the former population can be seen amongst burial cairns dispersed throughout the area.
- 10.4.4 The population further increased with an influx of Celtic Iron Age settlers who introduced tools to clear woodland and increase settlement; the remains of hill forts from this period are evident, as well as the remains of agricultural crofting systems.
- 10.4.5 A network of military roads created in the early 18th century helped bring the region in touch with the rest of the country. During the second half of the 18th century, the traditional pattern of townships began to disappear, being replaced by a more structured pattern of pastoral and arable fields with associated large farmhouses.
- 10.4.6 By the end of the 19th century, the familiar agricultural landscape of the area had largely formed. The introduction of the Caledonian Canal, a railway system, and extensive improvements to roads greatly increased the number of visitors in the area.
- 10.4.7 During the 20th century there have been a number of new developments in forestry, urban expansion, housing, and industry. Each change has raised important issues regarding the maintenance of the districts distinctive character. One negative aspect of modern development is that much of the natural woodland mix of native oak, pine, ash, birch, and hazel has been replaced with large scale coniferous plantations, reducing the level of plant diversity. However, the most significant change during the 20th century has been the growth in tourism, particularly in the summer months. The study area is critical in this development and contains major rail, road, and flight networks for access to the wider region.

Landform

- 10.4.8 Towards the edge of the Moray Firth, the landscape is flat and predominantly utilised for pastoral and arable farming. To the south the topography forms a shallow valley along the River Nairn, which increases in size and gradient towards the west. The topography continues to rise and the gradient gradually starts to increase towards the Cairngorm mountain range to the south. The rich diversity in landscapes can be attributed to the dramatic change in topography from coastal plain to mountain range. Low wooded ridge lines are visible from Nairn, but the majority of the surrounding area is flat and open, with rolling farmland found further inland. A number of smaller watercourses and water bodies can be found within natural depressions throughout the study area. Further details on the watercourses in the study area can be found in Chapter 13 (Road Drainage and Water Environment) of this report.

Special Landscape Designations

- 10.4.9 The Sutors of Cromarty, Rosemarkie and Fort George SLA has been designated by The Highland Council, and is in close proximity to the study area. A section of this SLA is comprised of the Inner Moray Firth, taking in Fort George and Whiteness Head. The area is protected for the low lying promontories which reach out into the water and mark the entrance to the Inner Moray Firth, as well as the landmark Fort George building, and extensive sand banks between the two stretches. The location of this SLA is shown on Figure 7.2.

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LLCAs

10.4.10 There are eight distinctive LLCAs located within the study area. These are outlined in Table 10.6, along with their associated sensitivities and the section of the study area that they relate to.

Table 10.6: Description of LLCAs

LLCA	Description	Sensitivity	Section
Enclosed Firth	<p>Coastal landscape type with a variety of shorelines; edges of gentle shelving with extensive inter-tidal areas or pronounced sloping coastal edge with a sharper transition between land and sea.</p> <p>Wide panoramic views to the opposite shoreline but with a sense of visual containment.</p> <p>Views towards the Kessock Bridge.</p> <p>Coastal edge made up of complex natural patterns and textures.</p> <p>The experience of a natural edge which can be significantly impacted by built elements such as industrial units and harbours.</p> <p>Perception of surrounding landscape and experience of area greatly affected by changes in weather and light.</p> <p>Small settlements are dispersed and reflect the constraints imposed by the firth landscape either as linear settlements or small clusters of farm holdings.</p>	Medium/ High	Inverness to Gollanfield
Forested Backdrop	<p>Landscape ranges from flat, low-lying, coastal shorelines to smooth, gentle slopes and pronounced valleys and rocky summits.</p> <p>Strong geometric forest forms mask small scale surface irregularities of sand dunes and moorland. Uniform colour and texture contrasts with natural underlying landscapes.</p> <p>Large size of forestry plantations and angles made by geometric patterns are often out of scale with underlying slopes, creating a visually unbalanced landscape.</p> <p>Planting and harvesting cycle can create great visual disruption.</p> <p>Settlements, composed of single, small buildings are located in linear patterns along winding roads.</p> <p>Along valleys, settled buildings, stone dykes, irregular surfaces, scrub and deciduous trees give a highly diverse landscape, especially when viewed in contrast with consistent forest cover.</p>	Medium	Nairn Bypass
Enclosed Farmed Landscapes	<p>Flat to gently undulating lowlands.</p> <p>Consists of Firth and river flood plains.</p> <p>Simple landscape composition of geometric fields enclosed by mature deciduous tree lines.</p> <p>Deciduous trees give a range of colours and textures that change with the seasons.</p> <p>Farm settlements enclosed by mature trees are dispersed throughout the landscape.</p> <p>On flatter land, developments encroach on the field network.</p> <p>The urban architecture forms a contrast to the existing farm and estate buildings.</p>	Medium	Inverness to Gollanfield

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LLCA	Description	Sensitivity	Section
Coastal Lowlands Forest Edge Farming	<p>Generally undulating topography.</p> <p>Strong geometry within landscape due to linear field pattern and strong boundaries.</p> <p>Drystone wall and hedgerow boundaries.</p> <p>Pattern of coniferous forestry dictated by layout of settlement, fields, and narrow roads.</p> <p>Dense forest restricts wider panorama focusing on a more local, detailed view.</p> <p>Small pockets of deciduous trees and scrub vegetation often associated with streams and gorges.</p> <p>Dispersed farm buildings in landscape.</p> <p>Network of narrow access roads.</p> <p>Larger villages have appropriate character due to intimate housing, vernacular architecture, building materials, and mature trees.</p> <p>Larger urban settlements compete with structure of forestry and ignore underlying patterns of landform and land use.</p> <p>Norbord factory has tall visible chimney stacks, particularly evident when producing white plumes of steam.</p>	Medium	Inverness to Gollanfield/ Nairn Bypass
Coastal Lowlands Intensive Farming	<p>Flat to gently undulating landscape with little variation in landform.</p> <p>Wide, horizontal views composed of large, smooth arable fields interspersed with coniferous plantations.</p> <p>Vertical elements emphasised at a local level by horizontal landscape.</p> <p>Lack of structural elements (woodland, trees, walls, buildings) gives landscape an expansive scale.</p> <p>Network of major and minor roads.</p> <p>Little visual diversity for traveller.</p> <p>Clusters of large farm buildings are dispersed throughout the landscape.</p> <p>Small number of 18th century farm steadings.</p> <p>Larger urban settlements more prominent amongst the expansive landscape.</p> <p>Norbord factory which is partially positioned within the LLCA has tall visible chimney stacks, particularly evident when producing white plumes of steam.</p>	Medium	Inverness to Gollanfield/ Nairn Bypass
Inverness Urban Fringe and Culloden	<p>Beyond the town centre to the east there are a variety of neighbourhoods, which include older stone built mansions, more modern suburbs of semi-detached houses and terraced housing estates.</p> <p>Often an abrupt break with the agricultural lands which surrounds the town.</p> <p>Industrial estates, retail and business park development linked by the city's main dual carriageway is also located along this urban edge.</p>	Medium	Inverness to Gollanfield
Nairn	<p>Historic buildings within the town follow a simple linear pattern in close association with underlying landscape form.</p> <p>New housing developments and isolated housing can differ in pattern and are often in contrast to the landscape form and traditional architecture.</p>	Low/ Medium	Nairn Bypass
Auldearn	<p>Historic buildings within the town are focused on the central high street spine of the village. Church, primary school, and shops located along the high street.</p> <p>Modern housing developments located to south and east of village.</p>	Low/ Medium	Nairn Bypass

10.4.11 The LLCAs are shown in relation to the route options and to assessed key viewpoints on Figures 10.1 to 10.9, with Figures 10.10 to 10.14 showing photographs of the LLCAs from the viewpoint locations.

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Historic Conservation Areas

- 10.4.12 The historic conservation areas in close proximity to the Inverness to Gollanfield section of the study area include:
- Culloden Battlefield - protected as a historic landmark, including western edges of the Culloden forest.
 - Inverness Riverside Conservation Area - designates the protection of a section of river running through the centre of the city.
 - Inverness Crown Conservation Area - designates the protection of a predominantly residential area situated on the edge of the city centre. The majority of buildings were built during the Victorian or the Edwardian Era.
 - Inverness Clachnaharry Conservation Area - designates the protection of an area including the start of the Caledonian Canal, two locks, and a number of low residential buildings built during the early 19th century.
 - Culloden House Policies Conservation Area - designates the protection of Culloden House Hotel and its associated estate grounds.
 - Ardersier Conservation Area - designates the protection of a number of Edwardian design houses along Ardersier High Street.
- 10.4.13 The historic conservation areas within or in close proximity to the Nairn Bypass section of the study area include:
- Cawdor Village - designated as an Outstanding Conservation Area because of its distinctive character and unique identity.
 - Fishertown waterfront housing, Nairn - protected as historic housing and for its unique character.
 - Auldearn Battlefield - located within the study area and protected as a historic landmark on the Inventory of Battlefields. Further information on the Auldearn Battlefield is provided in Chapter 14 (Cultural Heritage) of this report.

Vegetation

- 10.4.14 Vegetation cover within the study area and on the surrounding landscape varies to reflect the natural influences of local geology, landform, microclimate, drainage, soil, colonisation and biodiversity, and the influence of man on land use and management.
- 10.4.15 The predominant type of vegetation cover comprises of improved grassland and arable land, coniferous woodland, small amounts of native deciduous woodland, and areas of moor and heath. Further details are provided within Chapter 11 (Habitats and Biodiversity) of this report. Coniferous woodland tends to occur on the higher ground, where the soil is composed of well-draining gravel. Heather moorland can be found interspersed amongst the woodland plantations and field boundaries. Deciduous woodland is established in patches along rivers, around settlements and demarcating field boundaries.
- 10.4.16 Improved grassland and arable land are predominantly positioned within the open, flat, Coastal Lowlands Intensive Farming LLCA. The soil in this location is particularly fertile due to its proximity to the coastal plain and its nutrient sediment. Semi-improved pasture and rougher hill grazing will occur on the uplands to the south. Although hedgerows are not the predominant means of field separation, they are often used.
- 10.4.17 Extensive areas of heathland and gorse are located along the coastal edge, while modest areas of wetland can be identified around a small number of specific inland water bodies (Loch Flemington, Loch of the Clans, Craigswood Loch).

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10.4.18 Two Sites of Special Scientific Interest (SSSI) are located within the study area. The Longman and Castle Stuart Bays SSSI is located within the Inverness to Gollanfield section, and the Kildrummie Kames SSSI is located within both the Inverness to Gollanfield and Nairn Bypass sections. These are protected for their biological and geological characteristics, many of which have a unique variety of plant species and biotopes. Further detail on these sites is provided in Chapter 11 (Habitats and Biodiversity) and Chapter 12 (Geology and Soils) of this report. A further seven SSSIs are located in the wider locale beyond the study area (Whiteness Head, Ardersier Glacial Deposits, Cawdor Wood, Culbin Sands, Culbin Forest and Findhorn Bay, and Dalroy and Clara Landforms).

Tree Preservation Orders

10.4.19 Tree Preservation Orders (TPOs) have been considered during the landscape character assessment.

10.4.20 TPOs within the Inverness to Gollanfield section include:

- HRC17A Culloden Road TPO (Balloch).
- HR61 Feabuie South TPO (Balloch).
- HRC32 Feabuie TPO (Culloden).

10.4.21 TPOs within the Nairn Bypass section include:

- HRC14 Tradespark Wood TPO (Nairn).
- HRC58 Altonburn Road TPO (Nairn).
- HC11 Glen Lyon Lodge Hotel TPO (Nairn).
- HC39 Moss-side Road TPO (Nairn).
- HC44 Alton Burn TPO (Nairn).
- HC48 Rhullan TPO (Nairn).
- HC53 Convalescent Home TPO (Nairn).
- HC79 Newton Hotel TPO (Nairn).
- HC102 Firthside TPO (Nairn).
- HC104 Cothill TPO (Nairn).
- HRC02 Kinstearry TPO (Auldearn); and
- NACC01 Kinstearry Wood TPO (Auldearn)

10.4.22 Trees covered by TPOs are considered to be key features within the landscape and although they are not individually referred to, they have been taken into account in the impact assessment below. Any alteration to them has the potential to result in adverse impact.

Visual

10.4.23 A total of 93 built receptor groups consisting of approximately 382 individual receptors (predominantly residential dwellings and agricultural outbuildings with a small number of industrial units), and 29 outdoor receptors (roads and footpaths) were identified and assessed within the study area.

10.4.24 As the topography rises to the south much of the landscape gains a view over the coastline of the Moray Firth and the Northern Highland mountain range beyond. However few of the receptors that may be affected gain such clear views of the surrounding landscape. Often

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views are screened by hedgerow planting, woodland, shelterbelts, or the rolling intermediate topography.

10.4.25 Many of the views from areas of intensive farming are open and expansive, with little in the way of topography or forest planting to interfere. The Norbord factory (timber product manufacturing) is visible from the surrounding landscape for greater distances as its tall chimney stacks and plumes of steam rise above any surrounding woodland. The linear structure of the fields and the pattern of wood plantations on the southern slopes are also visible.

10.4.26 A number of inland locations also benefit from south facing views, for example the dwellings at the southern edge of Delnies Wood. The view is composed of rolling arable farmland against a backdrop of dense woodland with the Grampian mountain range beyond.

10.5 Impact Assessment: Introduction

10.5.1 This section provides an introduction to the impact assessment of the route options within Section 10.6 (Impact Assessment: Inverness to Gollanfield) and Section 10.7 (Impact Assessment: Nairn Bypass).

10.5.2 The potential impacts detailed in Section 10.6 and 10.7 are reported in line with the following.

- Potential impacts are reported on the landscape character and visual amenity of the study area that could arise in the absence of mitigation. Therefore, potential impacts represent the worst case scenario. Mitigation to reduce these impacts will be developed for the preferred option during the DMRB Stage 3 Assessment.
- It should be noted that although construction would have a potential adverse impact on both the landscape and visual amenity, it is not considered, for the purposes of this DMRB Stage 2 Assessment, to be significant due to the temporary nature of the impacts. Furthermore, details of the construction activities are not currently available at this stage in the development of the route options. The potential landscape and visual impacts associated with construction are summarised in paragraph 10.5.3 and are not considered further within this assessment.
- Only significant impacts (Moderate and above) have been reported below as these are considered to highlight the key impacts and to enable comparison between the route options. Details of the full impact assessment including non-significant impacts (Slight/Moderate and below) are located within Part 6 (Appendices), Appendix A10.1 (Landscape Impact Assessment), Appendix A10.2 (Visual Impact Assessment - Built Receptors) and Appendix A10.3 (Visual Impact Assessment - Outdoor Receptors) of this report. All potential impacts reported are adverse, unless otherwise stated.

Potential Impacts: Construction

10.5.3 Potential impacts on landscape character and visual amenity during construction include:

- vehicles moving machinery and materials to and from the site;
- machinery potentially including heavy excavators, earth moving plant, concrete batching plant, and cranes etc;
- exposed bare earth over the extent of the proposed works;
- structures, earthworks, road surfacing and ancillary works during construction;
- temporary site compound areas including site accommodation and parking;
- temporary soil storage heaps and stockpiles of construction materials;

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- lighting associated with night-time working and site accommodation;
- traffic congestion during work and traffic management measures;
- demolition operations; and
- temporary works associated with bridge construction operations.

Potential Impacts: Operation

10.5.4 Potential impacts on landscape character and visual amenity during operation include:

- alteration to the local character of the landscape due to the loss of existing landscape elements, such as the loss of established woodland, stone built walls and hedgerows, alteration to the existing field pattern, severance of rivers and burns and stripping of groundcover vegetation and topsoil, followed by reinstatement and new planting;
- alteration to the pattern and character of the built environment due to the demolition of existing houses and loss of private land;
- introduction of infrastructure elements, including new structures, junctions and associated earthworks;
- alteration of pedestrian access due to paths being severed or disconnected;
- potential increase in light pollution due to the introduction of lighting;
- alteration of the landform due to the construction of embankments and cuttings; and
- potential increases in noise, air pollution and visual impact on the surrounding landscape, properties and settlements as the traffic flow is increased.

10.6 Impact Assessment: Inverness to Gollanfield

10.6.1 This section describes the potential impacts of Moderate and above significance that are specific to the Inverness to Gollanfield section. Impacts common to all route options are set out below, followed by potential impacts which are additional to those common to all impacts, for each route option.

Impacts Common to all Route Options

10.6.2 This section provides details on the potential impacts of Moderate and above significance which are common to all route options.

10.6.3 During operation, all of the route options would have a potential impact of Moderate significance on the Coastal Lowlands Intensive Farming LLCA due to the introduction of the route option alignment (including associated infrastructure and earthworks).

10.6.4 For the other LLCAs, although there are individual impacts that are common to all, the overall assessment of each LLCA is based on an assessment of all individual impacts combined. In relation to this, there are no other LLCAs where the combined impacts are the same for all route options.

10.6.5 The potential impacts on built and outdoor receptors that are common to all route options are shown in Table 10.7.

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Table 10.7: Potential impacts on built and outdoor receptors - common to all route options

No/Visual Receptor	Sensitivity	Magnitude	Significance
Built Receptor Groups			
4 - Allanfearn	High	High	Substantial
20 - Tornagrain	High	High	Substantial
28 - Brackley	High	High	Substantial
29 - Laurel Cottage	High	High	Substantial
Outdoor Receptors			
O12 - B9006 (East)	Low	High	Moderate/Substantial
O13 - B9090 (West)	Low	High	Moderate

Option 1A

10.6.6 This section presents the potential impacts of Moderate and above significance specific for Option 1A and which are additional to those which are reported as common to all route options (refer to paragraphs 10.6.2 to 10.6.5).

10.6.7 The following aspects of Option 1A would have the greatest impact on landscape character and visual amenity:

- Introduction of the Smithton Junction, Mid Coul Junction A (landscape character only), Newton Junction A and the Brackley Junction (landscape character and visual amenity). The majority of effects would be the result of earthworks, structures, and the infrastructure associated with the junctions.
- Introduction of local roads on embankment and associated overbridges, which would interrupt the existing open agricultural landscape and alter its character.
- Introduction of the route option alignment at Lower Cullernie into open agricultural landscape.
- Introduction of the route option alignment to the east of Culblair, which further to being in close proximity to receptors particularly at Culblair and Polfalden, would result in a loss of agricultural land and causes disruption to existing field patterns.

Landscape

10.6.8 In addition to impacts common to all route options, the potential impacts for Option 1A on landscape character are as shown in Table 10.8. All impacts are direct and are due to physical changes to the landscape, with the exception of those within the Inverness Urban Fringe and Culloden LLCA. These are indirect and related to changes to the view from this LLCA.

Table 10.8: Potential impacts on landscape character - additional for Option 1A

LLCA	Sensitivity	Magnitude	Significance
Enclosed Farmed Landscapes	Medium	Medium	Moderate
Inverness Urban Fringe and Culloden	Medium	Medium	Moderate
Enclosed Firth	Medium/High	Medium	Moderate
Coastal Lowlands Forest Edge Farming	Medium	Medium	Moderate

Visual

10.6.9 In addition to impacts common to all route options, Option 1A would have a potential impact of Moderate or above significance on a further 15 built receptor groups (approximately 46 built receptors).

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10.6.10 Of these, seven receptor groups would be affected by Substantial potential impacts (13 built receptors), five by Moderate/Substantial potential impacts (27 built receptors) and three by potential Moderate impacts (6 built receptors).

10.6.11 The potential impacts on outdoor receptors that are additional for Option 1A are shown in Table 10.9.

Table 10.9: Potential impacts on outdoor receptors - additional for Option 1A

No/Visual Receptor	Sensitivity	Magnitude	Significance
O7 – Barn Church Road (East)	Low	Medium	Moderate
O8 - Core path IN08.32	High	Medium	Moderate
O10 - Airport Access Road	Low	High	Moderate

10.6.12 The location of each receptor group and its associated impact significance in relation to Option 1A is shown on Figure 10.15.

Option 1A (MV)

10.6.13 This section presents the potential impacts of Moderate and above significance specific for Option 1A (MV) and which are additional to those which are reported as common to all route options (refer to paragraphs 10.6.2 to 10.6.5).

10.6.14 The aspects of Option 1A (MV) that would have the greatest impact on landscape character and visual amenity would be the same as for Option 1A (see paragraph 10.6.7) except at the following locations:

- Introduction of Newton Junction C (as opposed to Newton Junction A) into open, high quality, rolling agricultural landscape.
- The route option alignment south of Morayston Farm, which would interrupt the high grade, rolling agricultural landscape.

Landscape

10.6.15 In addition to impacts common to all route options, the potential impacts of Option 1A (MV) on landscape character are as shown in Table 10.10. All impacts are direct and are due to physical changes to the landscape, with the exception of those within the Inverness Urban Fringe and Culloden LLCA. These are indirect and related to changes to the view from this LLCA.

Table 10.10: Potential impacts on landscape character - additional for Option 1A (MV)

LLCA	Sensitivity	Magnitude	Significance
Coastal Lowlands Forest Edge Farming	Medium	Medium/High	Moderate/Substantial
Enclosed Farmed Landscapes	Medium	Medium	Moderate
Inverness Urban Fringe and Culloden	Medium	Medium	Moderate
Enclosed Firth	Medium/High	Medium	Moderate

Visual

10.6.16 In addition to impacts common to all route options, Option 1A (MV) would have a potential impact of Moderate or above significance on a further 14 built receptor groups (approximately 45 built receptors).

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- 10.6.17 Of these, eight receptor groups would be affected by Substantial potential impacts (17 built receptors), three by Moderate/Substantial impacts (13 built receptors) and three by Moderate impacts (15 built receptors).
- 10.6.18 Option 1A (MV) would have a potential impact of Moderate significance on an additional outdoor receptor; O10 (Airport Access Road).
- 10.6.19 The location of each receptor group and its associated impact significance in relation to Option 1A (MV) is shown on Figure 10.15.

Option 1B

- 10.6.20 This section presents the potential impacts of Moderate and above significance specific for Option 1B and which are additional to those which are reported as common to all route options (refer to paragraphs 10.6.2 to 10.6.5).
- 10.6.21 The following aspects of Option 1B would have the greatest impact on landscape character and visual amenity:
- Introduction of the following junctions into the landscape: Smithton Junction, Mid Coul Junction B (landscape character only), Newton Junction A and the Brackley Junction (landscape character and visual amenity). The majority of these effects would be the result of earthworks, structures, and the infrastructure associated with the junctions. A property at Mid Coul cottages may have to be demolished to enable construction of Mid Coul Junction B.
 - Introduction of local roads on embankment and associated overbridges, which would interrupt the existing open agricultural landscape character.
 - Introduction of the route option alignment at Lower Cullernie into open agricultural landscape.

Landscape

- 10.6.22 In addition to impacts common to all route options, the potential impacts for Option 1B on landscape character are as shown in Table 10.11. All impacts are direct and are due to physical changes to the landscape, with the exception of those within the Inverness Urban Fringe and Culloden LLCA. These are indirect and related to changes to the view from this LLCA.

Table 10.11: Potential impacts on landscape character - additional for Option 1B

LLCA	Sensitivity	Magnitude	Significance
Enclosed Farmed Landscapes	Medium	Medium	Moderate
Inverness Urban Fringe and Culloden	Medium	Medium	Moderate
Enclosed Firth	Medium/High	Medium	Moderate

Visual

- 10.6.23 In addition to impacts common to all route options, Option 1B would have a potential impact of Moderate or above significance on a further 15 built receptor groups (approximately 45 built receptors).
- 10.6.24 Of these, five receptor groups would be affected by Substantial potential impacts (10 built receptors), seven by Moderate/Substantial potential impacts (31 built receptors) and three by Moderate potential impacts (4 built receptors).

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10.6.25 The potential impacts on outdoor receptors that are additional for Option 1B are shown in Table 10.12.

Table 10.12: Potential impacts on outdoor receptors - additional for Option 1B

No/Visual Receptor	Sensitivity	Magnitude	Significance
O7 – Barn Church Road (East)	Low	Medium	Moderate
O8 - Core path IN08.32	High	Medium	Moderate

10.6.26 The location of each receptor group and its associated impact significance in relation to Option 1B is shown on Figure 10.16.

Option 1B (MV)

10.6.27 This section presents the potential impacts of Moderate and above significance specific for Option 1B (MV) and which are additional to those which are reported as common to all route options (refer to paragraphs 10.6.2 to 10.6.5).

10.6.28 The aspects of Option 1B (MV) that would have the greatest impact on landscape character and visual amenity would be the same as for Option 1B (refer paragraph 10.6.21), except for in the following locations:

- Introduction of Newton Junction C (as opposed to Newton Junction A) into open, high quality, rolling agricultural landscape.
- The route option alignment south of Morayston Farm, which would interrupt the high grade, rolling agricultural landscape.

Landscape

10.6.29 In addition to impacts common to all route options, the potential impacts of Option 1B (MV) on landscape character are as shown in Table 10.13. All impacts are direct and are due to physical changes to the landscape, with the exception of those within the Inverness Urban Fringe and Culloden LLCA. These are indirect and related to changes to the view from this LLCA.

Table 10.13: Potential impacts on landscape character - additional for Option 1B (MV)

LLCA	Sensitivity	Magnitude	Significance
Coastal Lowlands Forest Edge Farming	Medium	Medium	Moderate/Substantial
Enclosed Farmed Landscapes	Medium	Medium	Moderate
Inverness Urban Fringe and Culloden	Medium	Medium	Moderate
Enclosed Firth	Medium/High	Medium	Moderate

Visual

10.6.30 In addition to impacts common to all route options, Option 1B (MV) would have a potential impact of Moderate or above significance on an additional 14 built receptor groups (approximately 44 built receptors).

10.6.31 Of these, six receptor groups would be affected by Substantial potential impacts (14 built receptors), four by Moderate/Substantial impacts (13 built receptors) and four by Moderate impacts (17 built receptors).

10.6.32 There are no additional potential impacts on outdoor receptors associated with Option 1B (MV).

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10.6.33 The location of each receptor group and its associated impact significance in relation to Option 1B (MV) is shown on Figure 10.16.

Option 1C

10.6.34 This section presents the potential impacts of Moderate and above significance specific for Option 1C and which are additional to those which are reported as common to all route options (refer to paragraphs 10.6.2 to 10.6.5).

10.6.35 The following aspects of Option 1C would have the greatest impact on landscape character and visual amenity:

- Introduction of the following junctions into the landscape: Smithton Junction, Mid Coul Junction A (landscape character only), Newton Junction B and the Brackley Junction (landscape character and visual amenity). The majority of these impacts would be the result of earthworks, structures, and the infrastructure associated with the junctions being introduced into an open agricultural landscape.
- Introduction of local roads on embankment and associated overbridges, which would interrupt the existing open agricultural landscape altering its character.
- Introduction of the route option alignment north of Culloden, which would cut through open, high grade farmland and is visible from a large number of receptors.
- Introduction of the route option alignment to the east of Culblair, which further to being in close proximity to receptors particularly at Culblair and Polfalden, results in a loss of agricultural land and causes disruption to existing field patterns.

Landscape

10.6.36 In addition to impacts common to all route options, the potential impacts of Option 1C on landscape character are as shown in Table 10.14. All impacts are direct and are due to physical changes to the landscape, with the exception of those within the Inverness Urban Fringe and Culloden LLCA. These are indirect and related to changes to the view from this LLCA.

Table 10.14: Potential impacts on landscape character - additional for Option 1C

LLCA	Sensitivity	Magnitude	Significance
Enclosed Farmed Landscapes	Medium	Medium/High	Moderate/Substantial
Inverness Urban Fringe and Culloden	Medium	Medium/High	Moderate/Substantial
Coastal Lowlands Forest Edge Farming	Medium	Medium	Moderate

Visual

10.6.37 In addition to impacts common to all route options, Option 1C would have a potential impact of Moderate or above significance on a further 16 built receptor groups (approximately 73 built receptors).

10.6.38 Of these, seven receptor groups would be affected by Substantial potential impacts (43 built receptors), four by Moderate/Substantial impacts (20 built receptors) and five by Moderate impacts (10 built receptors).

10.6.39 The potential impacts on outdoor receptors which are additional for Option 1C are shown in Table 10.15.

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Table 10.15 Potential impacts on outdoor receptors - additional for Option 1C

No/Visual Receptor	Sensitivity	Magnitude	Significance
O5 - Core path IN08.03 and IN08.15.	Medium/High	High	Moderate/Substantial
O6 - Core path IN08.16 and IN08.21.	Medium/High	High	Substantial
O7 – Barn Church Road (East)	Low	Medium	Moderate
O8 - Core path IN08.32	High	Medium/High	Moderate/Substantial
O10 - Airport Access Road	Low	High	Moderate

10.6.40 The location of each receptor group and its associated impact significance in relation to Option 1C is shown on Figure 10.17.

Option 1C (MV)

10.6.41 This section presents the potential impacts of Moderate and above significance specific for Option 1C (MV) and which are additional to those which are reported as common to all route options (refer to paragraphs 10.6.2 to 10.6.5).

10.6.42 The aspects of Option 1C (MV) that would have the greatest impact on landscape character and visual amenity are the same as for Option 1C (refer to paragraph 10.6.35) except for in the following location:

- The route option alignment south of Morayston Farm, which would interrupt the high grade, rolling agricultural landscape.

Landscape

10.6.43 In addition to impacts common to all route options, the potential impacts of Option 1C (MV) on landscape character are as shown in Table 10.16. All impacts are direct and are due to physical changes to the landscape, with the exception of those within the Inverness Urban Fringe and Culloden LLCA. These are indirect and related to changes to the view from this LLCA.

Table 10.16: Potential impacts on landscape character - additional for Option 1C (MV)

LLCA	Sensitivity	Magnitude	Significance
Enclosed Farmed Landscapes	Medium	Medium/High	Moderate/Substantial
Inverness Urban Fringe and Culloden	Medium	Medium/High	Moderate/Substantial
Coastal Lowlands Forest Edge Farming	Medium	Medium/High	Moderate

Visual

10.6.44 In addition to impacts common to all route options, Option 1C (MV) would have a potential impact of Moderate or above significance on an additional 16 built receptor groups (approximately 73 built receptors).

10.6.45 Of these, seven receptor groups would be affected by Substantial potential impacts (43 built receptors), two by Moderate/Substantial impacts (10 built receptors) and seven by Moderate impacts (20 built receptors).

10.6.46 The potential impacts on outdoor receptors that are additional for Option 1C (MV) are shown in Table 10.17.

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Table 10.17: Potential impacts on outdoor receptors - additional for Option 1C (MV)

No/Visual Receptor	Sensitivity	Magnitude	Significance
O5 - Core path IN08.03 and IN08.15	Medium/ High	High	Moderate/Substantial
O6 - Core path IN08.16 and IN08.21	Medium/ High	High	Substantial
O8 - Core path IN08.32	High	Medium/High	Moderate/Substantial
O7 – Barn Church Road (East)	Low	Medium	Moderate
O9 - B9039 (section south of railway bridge)	Low	Medium	Moderate
O10 - Airport Access Road	Low	High	Moderate

10.6.47 The location of each receptor group and its associated impact significance in relation to Option 1C (MV) is shown on Figure 10.17.

Option 1D

10.6.48 This section presents the potential impacts of Moderate and above significance specific for Option 1D and which are additional to those which are reported as common to all route options (refer to paragraphs 10.6.2 to 10.6.5).

10.6.49 The following aspects of Option 1D would have the greatest impact on landscape character and visual amenity:

- Introduction of the following junctions into the landscape: Smithton Junction, Mid Coul Junction B (landscape character only), Newton Junction B and the Brackley Junction (landscape character and visual amenity). The majority of these impacts would be the result of earthworks, structures, and the infrastructure associated with the junctions being introduced into an open agricultural landscape. A property at Mid Coul cottages may have to be demolished to enable construction of Mid Coul Junction B.
- Introduction of the route option alignment north of Culloden, which would cut through open, high grade farmland and would be visible from a large number of receptors.
- Introduction of local roads on embankment and associated overbridges, which would interrupt the existing open agricultural landscape and alter its character.

Landscape

10.6.50 In addition to impacts common to all route options, the potential impacts of Option 1D on landscape character are as shown in Table 10.18. All impacts are direct and are due to physical changes to the landscape, with the exception of those within the Inverness Urban Fringe and Culloden LLCA. These are indirect and related to changes to the view from this LLCA.

Table 10.18: Potential impacts on landscape character - additional for Option 1D

LLCA	Sensitivity	Magnitude	Significance
Enclosed Farmed Landscapes	Medium	Medium/High	Moderate/Substantial
Inverness Urban Fringe and Culloden	Medium	Medium/High	Moderate/Substantial

Visual

10.6.51 In addition to the impacts common to all route options, Option 1D would have a potential impact of Moderate or above significance on an additional 16 built receptor groups (approximately 72 built receptors).

10.6.52 Of these, five receptor groups would be affected by Substantial potential impacts (40 built receptors), six by Moderate/Substantial impacts (24 built receptors) and five by Moderate impacts (8 built receptors).

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10.6.53 The potential impacts on outdoor receptors that are additional for Option 1D are shown in Table 10.19.

Table 10.19: Potential impacts on outdoor receptors - additional for Option 1D

No/Visual Receptor	Sensitivity	Magnitude	Significance
O5 - Core path IN08.03 and IN08.15.	Medium/High	High	Moderate/Substantial
O6 - Core path IN08.16 and IN08.21.	Medium/High	High	Substantial
O8 - Core path IN08.32	High	Medium/High	Moderate/Substantial
O7 – Barn Church Road (East)	Low	Medium	Moderate

10.6.54 The location of each receptor group and its associated impact significance in relation to Option 1D is shown on Figure 10.18.

Option 1D (MV)

10.6.55 This section presents the potential impacts of Moderate and above significance specific for Option 1D (MV) and which are additional to those which are reported as common to all route options (refer to paragraphs 10.6.2 to 10.6.5).

10.6.56 The aspects of Option 1D (MV) that would have the greatest impact on landscape character and visual amenity are the same as for Option 1D (see paragraph 10.6.49) apart from in the following location:

- The route option alignment south of Morayston Farm, which would interrupt the high grade, rolling agricultural landscape and field patterns.

Landscape

10.6.57 In addition to impacts common to all route options, the potential impacts of Option 1D (MV) on landscape character are as shown in Table 10.20. All impacts are direct and are due to physical changes to the landscape, with the exception of those within the Inverness Urban Fringe and Culloden LLCA. These are indirect and related to changes to the view from this LLCA.

Table 10.20: Potential impacts on landscape character - additional for Option 1D (MV)

LLCA	Sensitivity	Magnitude	Significance
Enclosed Farmed Landscapes	Medium	Medium/High	Moderate/Substantial
Inverness Urban Fringe and Culloden	Medium	Medium/High	Moderate/Substantial
Coastal Lowlands Forest Edge Farming	Medium	Medium	Moderate

Visual

10.6.58 In addition to the impacts common to all route options, Option 1D (MV) would have a potential impact of Moderate or above significance on an additional 16 built receptor groups (approximately 72 built receptors).

10.6.59 Of these, five receptor groups would be affected by Substantial potential impacts (40 built receptors), three by Moderate/Substantial impacts (10 built receptors) and eight by Moderate impacts (22 built receptors).

10.6.60 The potential impacts on outdoor receptors that are additional for Option 1D (MV) are shown in Table 10.21.

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Table 10.21: Potential impacts on outdoor receptors - additional for Option 1D (MV)

No/Visual Receptor	Sensitivity	Magnitude	Significance
O5 - Core path IN08.03 and IN08.15.	Medium/High	High	Moderate/Substantial
O6 - Core path IN08.16 and IN08.21.	Medium/High	High	Substantial
O8 - Core path IN08.32	High	Medium/High	Moderate/Substantial
O7 – Barn Church Road (East)	Low	Medium	Moderate
O9 - B9039 (section south of railway bridge)	Low	Medium	Moderate

10.6.61 The location of each receptor group and its associated impact significance in relation to Option 1D (MV) is shown on Figure 10.18.

10.7 Impact Assessment: Nairn Bypass

10.7.1 This section describes the potential impacts of Moderate and above significance specific to the Nairn Bypass section. Impacts common to all route options are set out below, followed by potential impacts additional to those reported as common to all, for each route option.

Impacts Common to all Route Options

10.7.2 This section provides details on the potential impacts of Moderate and above significance which are common to all route options.

10.7.3 Although there are landscape impacts that are common to all route options, the assessment is based on overall impacts for each LLCA. There are no LLCAs where the combined impacts are common to all route options.

10.7.4 The potential impacts for built and outdoor receptors that are common to all route options are shown in Table 10.22.

Table 10.22: Potential impacts on built and outdoor receptors - common to all route options

No/Visual Receptor	Sensitivity	Magnitude	Significance
Built Receptors			
44 - Moss-side	High	High	Substantial
87 – Gallows Hill/Courage Cottage	Medium/High	High	Substantial
89 - Courage	High	High	Substantial
Outdoor Receptors			
O18 - Core Path NA04.03	High	Medium	Moderate/Substantial
O19 - National Cycle Route 1 (East)	Low	Medium	Moderate

Option 2A

10.7.5 This section presents the potential impacts of Moderate and above significance specific for Option 2A and which are additional to those which are reported as common to all route options (refer to paragraphs 10.7.2 to 10.7.4).

10.7.6 The following aspects of Option 2A would have the greatest impact on landscape character and visual amenity:

- Introduction of Nairn West Junction A which would lead to a loss of woodland at Delnies Wood.
- Introduction of the route option alignment on embankment east of Moss-side which is situated in open farmland and would sever a mature shelterbelt. Many of the houses at Moss-side have elevated views over this area.

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- Introduction of the route option alignment at Blackpark, which would interrupt the existing field structure.
- Introduction of Nairn East Junction A into open, high grade agricultural landscape. The main impacts would be from the infrastructure, earthworks, roundabouts and local roads associated with the junction.
- Introduction of the route option alignment in cutting to the north and north-east of Auldearn, which would interrupt field pattern and alters the open agricultural landscape.
- Introduction of local roads on embankment and associated overbridges, which would often contrast with the existing flat landscape.

Landscape

10.7.7 The potential impacts of Option 2A on landscape character are as shown in Table 10.23.

Table 10.23: Potential impacts on landscape character - additional for Option 2A

LLCA	Sensitivity	Magnitude	Significance
Coastal Lowlands Intensive Farming	Medium	Medium	Moderate
Coastal Lowlands Forest Edge Farming	Medium	Medium	Moderate

Visual

10.7.8 Option 2A would have a potential impact of Moderate or above significance on 20 additional built receptor groups (approximately 46 built receptors).

10.7.9 Of these, seven receptor groups would be affected by Substantial potential impacts (17 built receptors), five by Moderate/Substantial impacts (10 built receptors) and eight by Moderate impacts (19 built receptors).

10.7.10 The potential impacts on outdoor receptors that are additional for Option 2A are shown in Table 10.24.

Table 10.24: Potential impacts on outdoor receptors - additional for Option 2A

No/Visual Receptor	Sensitivity	Magnitude	Significance
O15 - Core path NA04.13	High	High	Substantial
O23 - B9111 and core path NA04.07.	Medium	High	Substantial
O27 - A96 (East)	Low	Medium/High	Moderate
O14 - Moss-side Road and core path NA04.11.	Low	Medium/High	Moderate

10.7.11 The location of each receptor group and its associated impact significance in relation to Option 2A is shown on Figure 10.19.

Option 2B

10.7.12 This section presents the potential impacts of Moderate and above significance specific for Option 2B and which are additional to those which are reported as common to all route options (refer to paragraphs 10.7.2 to 10.7.4).

10.7.13 The aspects of Option 2B that would have the greatest impact on landscape character and visual amenity are the same as for Option 2A (refer to paragraph 10.7.6), except for at the east of Auldearn where the route option alignment for Option 2B would run alongside the existing A96.

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Landscape

10.7.14 Option 2B would have a potential Moderate impact on the Coastal Lowlands Forest Edge Farming LLCA.

Visual

10.7.15 Option 2B would have a potential impact of Moderate or above significance on an additional 17 built receptor groups (approximately 61 built receptors).

10.7.16 Of these, six receptor groups would be affected by Substantial potential impacts (21 built receptors), four by Moderate/Substantial impacts (16 built receptors) and seven by Moderate impacts (24 built receptors).

10.7.17 The impacts on outdoor receptors which are additional for Option 2B are shown in Table 10.25.

Table 10.25: Potential impacts on outdoor receptors - additional for Option 2B

No/Visual Receptor	Sensitivity	Magnitude	Significance
O15 - Core path NA04.13	High	High	Substantial
O23 - B9111 and core path NA04.07.	Medium	High	Substantial
O14 - Moss-side Road and core path NA04.11.	Low	Medium/High	Moderate
O22 - A96 (East)	Low	Medium/High	Moderate
O29 - Core path NA01.02	Medium	Medium/High	Moderate/Substantial

10.7.18 The location of each receptor group and its associated impact significance in relation to Option 2B is shown on Figure 10.20.

Option 2C

10.7.19 This section presents the potential impacts of Moderate and above significance specific for Option 2C and which are additional to those which are reported as common to all route options (refer to paragraphs 10.7.2 to 10.7.4).

10.7.20 The following aspects of Option 2C would have the greatest impact on landscape character and visual amenity:

- Introduction of Nairn West Junction A would lead to loss of woodland at Delnies Wood.
- Introduction of the route option alignment on embankment east of Moss-side, which is situated in open farmland and would sever a mature shelterbelt. Many of the receptors at Moss-side have elevated views over this area.
- Introduction of A939 Junction A and associated earthworks, local road and overbridge, which would lead to a loss of mature coniferous woodland, alter the agricultural field pattern and the junction would be in close proximity to visual receptors. Loss of woodland would alter and open up views.
- Introduction of Nairn East Junction D into an open, high grade agricultural landscape. There would be loss of mature deciduous trees at Roundall Wood, altering views for receptors at Cairnfield and The Meadows.
- Introduction of the route option alignment north of Kinsteary House, which would interrupt well maintained estate grounds, and sever the mature deciduous shelter belts.

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- Introduction of local roads on embankment and associated overbridges, which would often contrast with the existing flat landscape. Shelterbelts would also be severed at Newmill and Kinsteary House.

Landscape

- 10.7.21 Option 2C would have a Moderate/Substantial potential impact on the Coastal Lowlands Forest Edge Farming LLCA.

Visual

- 10.7.22 Option 2C would have a potential impact of Moderate or above significance on an additional 22 built receptor groups (approximately 75 built receptors).
- 10.7.23 Of these, 11 receptor groups would be affected by Substantial potential impacts (31 built receptors), three by Moderate/Substantial impacts (17 built receptors) and eight by Moderate impacts (27 built receptors).
- 10.7.24 The potential impacts on outdoor receptors which are additional to Option 2C are shown in Table 10.26.

Table 10.26: Potential impacts on outdoor receptors - additional for Option 2C

No/Visual Receptor	Sensitivity	Magnitude	Significance
O15 - Core path NA04.13	High	High	Substantial
O20 - A939	Low	High	Moderate/Substantial
O14 - Moss-side Road and core path NA04.11.	Low	Medium/High	Moderate
O21 - B9101 (West)	Low	Medium/High	Moderate
O28 - Moyness Road	Low	Medium/High	Moderate

- 10.7.25 The location of each receptor group and its associated impact significance in relation to Option 2C is shown on Figure 10.20.

Option 2D

- 10.7.26 This section presents the potential impacts of Moderate and above significance specific for Option 2D and which are additional to those which are reported as common to all route options (refer to paragraphs 10.7.2 to 10.7.4).
- 10.7.27 The following aspects of Option 2D would have the greatest impact on landscape character and visual amenity:
- Introduction of Nairn West Junction A would lead to loss of woodland at Delnies Wood.
 - Introduction of the route option alignment on embankment east of Moss-side which is situated in open farmland and would lead to a loss of a mature shelterbelt. Many of the houses at Moss-side have elevated views over this area.
 - Introduction of A939 Junction B and associated earthworks, local roads and underbridge into open agricultural landscape and within close proximity to visual receptors.
 - Introduction of the route option alignment east of Bognafuaran, which would interrupt the existing field pattern.
 - Introduction of Nairn East Junction D into open, high grade agricultural landscape and loss of mature deciduous trees at Roundall Woodland. This would alter views for receptors at Cairnfield and The Meadows.

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- Introduction of local roads on embankment and associated overbridges, which would often contrast with the existing flat landscape. Shelterbelts would be severed at Newmill and Kinstearry House.

Landscape

- 10.7.28 Option 2D would have a Substantial potential impact on the Coastal Lowlands Forest Edge Farming LLCA.

Visual

- 10.7.29 Option 2D would have a potential impact of Moderate or above significance on an additional 22 built receptor groups (approximately 101 built receptors).
- 10.7.30 Of these, nine receptor groups would be affected by Substantial potential impacts (38 built receptors), eight by Moderate/Substantial impacts (42 built receptors) and five by Moderate impacts (21 built receptors).
- 10.7.31 The potential impacts on outdoor receptors that are additional for Option 2D are shown in Table 10.27.

Table 10.27: Potential impacts on outdoor receptors - additional for Option 2D

No/Visual Receptor	Sensitivity	Magnitude	Significance
O15 - Core path NA04.13	High	High	Substantial
O16 - B9091 and core path NA04.20.	Low	High	Moderate/Substantial
O17 - B9090 (East)	Low	High	Moderate/Substantial
O20 - A939	Low	High	Moderate/Substantial
O21 - B9101 (West)	Low	High	Moderate/Substantial
O24 - Lethen Road	Low	High	Moderate/Substantial
O25 - Core path NA01.01	Medium	High	Moderate/Substantial
O14 - Moss-side Road and core path NA04.11	Low	Medium/High	Moderate
O28 - Moyness Road	Low	Medium/High	Moderate

- 10.7.32 The location of each receptor group and its associated impact significance in relation to Option 2D is shown on Figures 10.21.

Option 2E

- 10.7.33 This section presents the potential impacts of Moderate and above significance specific for Option 2E and which are additional to those which are reported as common to all route options (refer to paragraphs 10.7.2 to 10.7.4).
- 10.7.34 The following aspects of Option 2E would have the greatest impact on landscape character and visual amenity:
- Introduction of Nairn West Junction B would lead to loss of woodland surrounding Blackcastle Quarry and to the edge of Delnies Wood.
 - Introduction of the route option alignment south of Moss-side, which would cut through an expansive, high grade agricultural landscape. The route option alignment would lead to the loss of a mature shelterbelts. Many houses at Moss-side have elevated views over this area.
 - Introduction of the route option alignment at Blackpark, which would interrupt the existing field structure.

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- Introduction of Nairn East Junction A into open, high grade agricultural landscape, which would be visible from a number of surrounding receptors.
- Introduction of the route option alignment in cutting to the north and north-east of Auldearn, which would greatly interrupt the field pattern and alter the open agricultural landscape, especially for visual receptors within close proximity.
- Introduction of local roads on embankment and associated overbridges which would often contrast existing flat landscape.

Landscape

- 10.7.35 In addition to impacts common to all route options, the potential impacts of Option 2E on landscape character are as shown in Table 10.28.

Table 10.28: Potential impacts on landscape character - Option 2E

LLCA	Sensitivity	Magnitude	Significance
Coastal Lowlands Forest Edge Farming	Medium	Medium/ High	Moderate/Substantial
Coastal Lowlands Intensive Farming	Medium	Medium	Moderate

Visual

- 10.7.36 In addition to impacts common to all route options, Option 2E would have a potential impact of Moderate or above significance on an additional 26 built receptor groups (approximately 75 built receptors).
- 10.7.37 Of these, 13 receptor groups would be affected by Substantial potential impacts (43 built receptors), seven by Moderate/Substantial impacts (14 built receptors) and six by Moderate impact (18 built receptors).
- 10.7.38 The potential impacts on outdoor receptors that are additional for Option 2E are shown in Table 10.29.

Table 10.29: Potential impacts on outdoor receptors - additional for Option 2E

No/Visual Receptor	Sensitivity	Magnitude	Significance
O23 - B9111 and core path NA04.07	Medium	High	Substantial
O16 - B9091 and core path NA04.20	Low	High	Moderate/Substantial
O17 - B9090 (East)	Low	Medium	Moderate
O27 – A96 (East)	Low	Medium/High	Moderate

- 10.7.39 The location of each receptor group and its associated impact significance in relation to Option 2E is shown on Figure 10.21.

Option 2F

- 10.7.40 This section presents the potential impacts of Moderate and above significance specific for Option 2F and which are additional to those which are reported as common to all route options (refer to paragraphs 10.7.2 to 10.7.4).
- 10.7.41 The aspects of Option 2F that have the greatest potential impact on landscape character and visual amenity will be the same as for Option 2E (see paragraph 10.7.34), except for at the east of Auldearn where the route option alignment for Option 2F would run alongside the existing A96.

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Landscape

10.7.42 In addition to impacts common to all route options, Option 2F would have a potential Moderate/Substantial impact on the Coastal Lowlands Forest Edge Farming LLCA.

Visual

10.7.43 Option 2F would have a potential impact of Moderate or above significance on an additional 23 built receptor groups (approximately 90 built receptors).

10.7.44 Of these, 12 receptor groups would be affected by Substantial potential impacts (47 built receptors), six by Moderate/Substantial impacts (20 built receptors) and five by Moderate impacts (23 built receptors).

10.7.45 The potential impacts on outdoor receptors that are additional for Option 2F are shown in Table 10.30.

Table 10.30: Potential impacts on outdoor receptors - additional for Option 2F

No/Visual Receptor	Sensitivity	Magnitude	Significance
O23 - B9111 and core path NA04.07.	Medium	High	Substantial
O16 - B9091 and core path NA04.20.	Low	High	Moderate/Substantial
O17 - B9090 (East)	Low	Medium	Moderate
O22 - A96 (East)	Low	Medium/High	Moderate
O29 – Core path NA01.02.	Medium	Medium/High	Moderate/Substantial

10.7.46 The location of each receptor group and its associated impact significance in relation to Option 2F is shown on Figure 10.22.

Option 2G

10.7.47 This section presents the potential impacts of Moderate and above significance specific for Option 2G and which are additional to those which are reported as common to all route options (refer to paragraphs 10.7.2 to 10.7.4).

10.7.48 The following aspects of Option 2G would have the greatest impact on landscape character and visual amenity:

- Introduction of Nairn West Junction B would lead to a loss of woodland surrounding Blackcastle Quarry and to the edge of Delnies Wood.
- Introduction of the route option alignment south of Moss-side, which would cut through an expansive, high grade agricultural landscape. The route option alignment would lead to the loss of a mature shelterbelt. Many houses at Moss-side would have elevated views over this area.
- Introduction of A939 Junction A, which would interrupt the field pattern and lead to a loss of mature coniferous woodland.
- Introduction of Nairn East Junction D into an open, high grade agricultural landscape. There would be loss of mature deciduous trees at Roundall Wood, altering views for receptors at Cairnfield and The Meadows.
- Introduction of the route option alignment north of Kinstearry House, which would interrupt well maintained estate grounds.
- Introduction of local roads on embankment and associated overbridges, which would often contrast with the existing flat landscape. Shelterbelts would be severed at Newmill and Kinstearry House.

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Landscape

10.7.49 In addition to impacts common to all route options, Option 2G would have a potentially Moderate/Substantial impact on the Coastal Lowlands Forest Edge Farming LLCA.

Visual

10.7.50 In addition to the impacts common to all route options, Option 2G would have a potential impact of Moderate or above significance on an additional 28 built receptor groups (approximately 104 built receptors).

10.7.51 Of these, 17 receptor groups would be affected by Substantial potential impacts (57 built receptors), five by Moderate/Substantial impacts (21 built receptors) and six by Moderate impacts (26 built receptors).

10.7.52 The potential impacts on outdoor receptors that are additional for Option 2G are shown in Table 10.31.

Table 10.31: Potential impacts on outdoor receptors - additional for Option 2G

No/Visual Receptor	Sensitivity	Magnitude	Significance
O20 - A939	Low	High	Moderate/Substantial
O16 - B9091 and core path NA04.20.	Low	High	Moderate/Substantial
O17 - B9090 (East)	Low	Medium	Moderate
O21 - B9101 (West)	Low	Medium/High	Moderate
O28 - Moyness Road	Low	Medium/High	Moderate

10.7.53 The location of each receptor group and its associated impact significance in relation to Option 2G is shown on Figure 10.22.

Option 2H

10.7.54 This section presents the potential impacts of Moderate and above significance specific for Option 2H and which are additional to those which are reported as common to all route options (refer to paragraphs 10.7.2 to 10.7.4).

10.7.55 The following aspects of Option 2H would have the greatest impact on landscape character and visual amenity:

- Introduction of Nairn West Junction B, which would lead to a loss of woodland surrounding Blackcastle Quarry and to the edge of Delnies Wood.
- Introduction of the route option alignment south of Moss-side, which would cut through an expansive, high grade agricultural landscape. The route option alignment would lead to the loss of a mature shelterbelt. Many houses at Moss-side have elevated views over this area.
- Introduction of Nairn East Junction C Junction into open, high grade agricultural landscape.
- Introduction of the route option alignment in cutting to the north and north-east of Auldearn, which would greatly interrupt field pattern and alter the open agricultural landscape.
- Introduction of local roads on embankment and associated overbridges, which would often contrast with the existing flat landscape.

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Landscape

10.7.56 In addition to impacts common to all route options, the potential impacts of Option 2H on landscape character are as shown in Table 10.32.

Table 10.32: Potential impacts on landscape character - Option 2H

LLCA	Sensitivity	Magnitude	Significance
Coastal Lowlands Forest Edge Farming	Medium	High	Substantial
Coastal Lowlands Intensive Farming	Medium	Medium	Moderate

Visual

10.7.57 In addition to impacts common to all route options, Option 2H would have a potential impact of Moderate or above significance on an additional 29 built receptor groups (approximately 101 built receptors).

10.7.58 Of these, 11 receptor groups would be affected by Substantial potential impacts (47 built receptors), 10 by Moderate/Substantial impacts (34 built receptors) and eight by Moderate impacts (20 built receptors).

10.7.59 The potential impacts on outdoor receptors that are additional for Option 2H are shown in Table 10.33.

Table 10.33: Potential impacts on outdoor receptors - additional for Option 2H

No/Visual Receptor	Sensitivity	Magnitude	Significance
O23 - B9111 and core path NA04.07.	Medium	High	Substantial
O17 - B9090 (East)	Low	High	Moderate/Substantial
O16 - B9091 and core path NA04.20.	Low	High	Moderate/Substantial
O20 - A939	Low	Medium/High	Moderate
O21 - B9101 (West)	Low	Medium/High	Moderate
O27 - A96 (East)	Low	Medium/High	Moderate

10.7.60 The location of each receptor group and its associated impact significance in relation to Option 2H is shown on Figures 10.23.

Option 2I

10.7.61 This section presents the potential impacts of Moderate and above significance specific for Option 2I and which are additional to those which are reported as common to all route options (refer to paragraphs 10.7.2 to 10.7.4).

10.7.62 The following aspects of Option 2I would have the greatest impact on landscape character and visual amenity:

- Introduction of Nairn West Junction B would lead to a loss of woodland surrounding Blackcastle Quarry and to the edge of Delnies Wood.
- Introduction of the route option alignment south of Moss-side, which would cut through an expansive, high grade agricultural landscape. The route option alignment would lead to the loss of a mature shelterbelt. Many houses at Moss-side have elevated views over this area.
- Introduction of A939 Junction B and associated earthworks, local roads and underbridge into open agricultural landscape and within close proximity to visual receptors.

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- Introduction of the route option alignment east of Bognafuaran, which would interrupt the existing field pattern.
- Introduction of Nairn East Junction D into an open, high grade agricultural landscape. There would be loss of mature deciduous trees at Roundall Wood, altering views for receptors at Cairnfield and The Meadows.
- Introduction of local roads on embankment and associated overbridges, which would often contrast with the existing flat landscape. Shelterbelts would be severed at Newmill and Kinstearry House.

Landscape

- 10.7.63 In addition to impacts common to all route options, Option 2I would have a potential Substantial impact on the Coastal Lowlands Forest Edge Farming LLCA.

Visual

- 10.7.64 In addition to the impacts common to all route options, Option 2I would have a potential impact of Moderate or above significance on an additional 27 built receptor groups (approximately 122 built receptors).
- 10.7.65 Of these, 15 receptor groups would be affected by Substantial potential impacts (64 built receptors), nine by Moderate/Substantial impacts (38 built receptors) and three by Moderate impacts (20 built receptors).
- 10.7.66 Potential impacts on outdoor receptors that are additional for Option 2I are shown in Table 10.34.

Table 10.34: Potential impacts on outdoor receptors - additional for Option 2I

No/Visual Receptor	Sensitivity	Magnitude	Significance
O17 - B9090 (East)	Low	High	Moderate/Substantial
O20 - A939	Low	High	Moderate/Substantial
O21 - B9101 (West)	Low	High	Moderate/Substantial
O24 - Lethen Road	Low	High	Moderate/Substantial
O25 - Core path NA01.01	Medium	High	Moderate/Substantial
O16 - B9091 and core path NA04.20.	Low	High	Moderate/Substantial
O28 - Moyness Road	Low	Medium/High	Moderate

- 10.7.67 The location of each receptor group and its associated impact significance in relation to Option 2I is shown on Figure 10.23.

10.8 Compliance with Policies and Plans

- 10.8.1 An assessment of the compliance of the route options in relation to the policies and plans mentioned in Section 10.3 (Policies and Plans) is presented below. Where impacts are the same for both sections this is identified and reported collectively.

Landscape Character

- 10.8.2 The compliance with policies and plans in relation to landscape character is the same for both sections; Inverness to Gollanfield and the Nairn Bypass. The text below therefore represents these impacts collectively.
- 10.8.3 All of the route options are likely to impact the landscape character of the area and therefore have the potential to conflict with SPP and Policy 28 (Sustainable Design), Policy 29 (Design

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and Quality Place-making), Policy 36 (Development in the Wider Countryside) and Policy 61 (Landscape) of the HwLDP.

- 10.8.4 However, there is scope to consider that there would be no conflict with Policy 28 (Sustainable Design) of the HwLDP due to the potential overriding strategic benefit of the proposed scheme. In relation to its strategic benefits, the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme is included in the Strategic Transport Projects Review (STPR) (Transport Scotland, 2008) which identifies a programme of strategic transport interventions necessary to support the future effective operation of Scotland's transport network. The Infrastructure Investment Plan (Scottish Government, 2011) also identifies investment in Scotland's transport as a key enabler for enhancing productivity and delivering sustainable growth, and has made a commitment to dual the A96 between Inverness and Aberdeen by 2030. The strategic benefits of the route options are also reflected in the HwLDP which states that key transport improvements must be delivered in order to support the development of the A96 corridor. Further assessment on the full extent of the potential landscape impacts would be required to conclude whether or not the strategic benefits outweigh the adverse impacts.

Loss of Trees and Woodland

Inverness to Gollanfield

- 10.8.5 There is potential for all the route options to result in the loss of established woodland. All of the route options therefore have the potential to conflict with Policy 51 (Trees and Development) and Policy 52 (Principles of Development in Woodland) of the HwLDP which seek to protect existing hedges, trees and woodland.
- 10.8.6 None of the route options are likely to affect any NSA, SLAs or TPOs and therefore comply with Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP in this regard.
- 10.8.7 As the route options are expected to offer clear and significant public benefits (refer to paragraph 10.8.4), the route options also have the potential to comply with Policy 52 (Principle of Development in Woodland) of the HwLDP, provided compensatory planting is provided.
- 10.8.8 Policy 51 (Trees and Development) would also require a tree planting or landscape plan to secure additional tree/hedge planting in order to compensate for tree removal as well as to enhance the setting of the new development.

Nairn Bypass

- 10.8.9 The potential impacts for the Nairn Bypass section are the same as for Inverness to Gollanfield (refer to paragraphs 10.8.5 to 10.8.8), with the addition of potential conflicts with Policy 57 (Natural, Built and Cultural Heritage) for Options 2C, 2D, 2G and 2I. Options 2D and 2I are expected to affect two TPOs and Options 2C and 2G and expected to affect one TPO. TPOs are considered to be of national importance in the HwLDP and as such, significant adverse impacts to these features must be clearly outweighed by social or economic benefits of national importance. The national importance of the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme is outline in paragraph 10.8.4. Further assessment on the full extent of the potential impacts on these TPOs would be required to conclude whether or not the strategic benefits of national importance outweigh the adverse impacts.

10.9 Potential Mitigation

- 10.9.1 The objectives of the mitigation measures outlined in this section are to prevent, reduce or offset the potential impacts described above. This section aims to identify potential

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mitigation taking into account best practice, legislation and guidance. As part of DMRB Stage 3, the design of the preferred option would be reviewed and, where possible, the preferred option would be further developed (pre-DMRB Stage 3 Assessment mitigation) to minimise impacts on landscape and visual.

- 10.9.2 Details of specific potential mitigation measures for each route option can be found in Part 6 (Appendices), Appendix A10.1 (Landscape Impact Assessment), A10.2 (Visual Impact Assessment - Built Receptors) and A10.3 (Visual Impact Assessment - Outdoor Receptors) of this report. Potential mitigation measures for both construction and operational phases are described below.

Construction

- 10.9.3 During the construction phase, landscape and visual mitigation for the route options could potentially include:

- protection of vegetation and avoidance of damage to private ground;
- sensitive location of site compounds, plant and materials storage areas to minimise their landscape and visual impact. Where possible, compounds should be located where existing features such as trees can be used to screen them from sensitive visual receptors;
- programming of works to reduce disruption, including keeping the construction programme to the minimum practicable time and clearing areas for construction as close as possible to works commencing;
- careful selection of plant and machinery;
- efficient traffic management and pedestrian diversions;
- avoidance of night-time working where possible. Where necessary, directed lighting should be used to minimise light pollution/glare; and
- construction sites to be kept tidy (e.g. free of litter and debris).

Operation

- 10.9.4 During the operational phase, landscape and visual mitigation for the route options could potentially include:

- retention of original stone walls where possible and reinstatement of stone boundary walls to match existing form and material to retain the existing character;
- avoidance of the loss or damage to landscape features such as water features, field systems, existing trees and vegetation;
- earthwork proposals designed to minimise the impact of cuttings and embankment slopes and to enable integration with the surrounding landscape;
- SuDS detention basins that are required as part of the road drainage system to be sited within naturally low areas and designed to look as natural as possible;
- enhancement of biodiversity through use of predominantly native species which are established in the area and adapted to local conditions; and
- planting to replace trees lost during the construction phase at junctions and bridges to; help assimilate the new structures into the surrounding landscape; provide screening; reduce visual impacts of the road, structures and lighting; and reinforce the character of the existing landscape, including individual trees, tree lines, hedgerows and areas of woodland (e.g. scrub, riparian, broadleaved, mixed).

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10.10 Summary of Route Options

10.10.1 This section provides a summary of the impact assessment for each section. The summary includes potential significant (Moderate or above) impacts which are common to all route options and those that vary between the route options.

10.10.2 A discussion of the potential residual impacts is then presented taking into account the potential mitigation measures outlined in Section 10.9 (Potential Mitigation).

Inverness to Gollanfield

Landscape

10.10.3 A summary of the impacts that are Moderate or above are shown in Table 10.35.

10.10.4 All LLCAs would be affected by direct impacts from the route options, due to physical changes to the landscape, with the exception of the Inverness Urban Fringe and Culloden LLCA. This LLCA would not be physically affected but would be affected through changes to views.

Table 10.35: Potential impacts on landscape character (Moderate or above significance)

Option/LLCA	Enclosed Farmed Landscapes	Inverness Urban Fringe and Culloden*	Enclosed Firth	Coastal Lowlands Intensive Farming	Coastal Lowlands Forest Edge Farming
Option 1A	Moderate	Moderate	Moderate	Moderate	Moderate
Option 1A (MV)	Moderate	Moderate	Moderate	Moderate	Moderate/ Substantial
Option 1B	Moderate	Moderate	Moderate	Moderate	-
Option 1B (MV)	Moderate	Moderate	Moderate	Moderate	Moderate/ Substantial
Option 1C	Moderate/ Substantial	Moderate/ Substantial	-	Moderate	Moderate
Option 1C (MV)	Moderate/ Substantial	Moderate/ Substantial	-	Moderate	Moderate
Option 1D	Moderate/ Substantial	Moderate/ Substantial	-	Moderate	-
Option 1D (MV)	Moderate/ Substantial	Moderate/ Substantial	-	Moderate	Moderate

* changes relate to views rather than physical changes to the LLCA.

10.10.5 Options 1C, 1C (MV), 1D and 1D (MV) would have a potential Moderate/Substantial direct impact on the Enclosed Farm Landscapes LLCA, due to the introduction of the Smithton Junction and the route option alignment north of Culloden, which would be introduced into open agricultural landscape. Options 1A, 1A (MV), 1B and 1B (MV) would have a potential Moderate impact on this LLCA as a result of the introduction of Smithton Junction, as the route option alignment generally follows that of the existing A96 when passing through this LLCA.

10.10.6 The above mentioned features of the route options would also alter views from the Inverness Urban Fringe and Culloden LLCA. Options 1C, 1C (MV), 1D and 1D (MV) would have a potential Moderate/Substantial impact and Options 1A, 1A (MV), 1B and 1B (MV) are expected to have a potential Moderate impact. All route options would also affect this LLCA through altering the views towards the Moray Firth and the relationship between the agricultural landscape and the coastline.

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- 10.10.7 Options 1A, 1A (MV), 1B and 1B (MV) would have a potential Moderate impact on Enclosed Firth LLCA as a result of the local road severing the existing rectilinear field pattern near Blackhill. Options 1C, 1C (MV), 1D and 1D (MV) would have no significant impacts on this LLCA.
- 10.10.8 All route options would have a potential Moderate impact on the Coastal Lowlands Intensive Farming LLCA through the introduction of the Newton Junctions, the Brackley Junction and the route option alignment across the agricultural landscape. Options 1A, 1A (MV), 1C and 1C (MV) would have an increased impact in a number of locations due to the introduction of Mid Coul Junction A and the route option alignment east of Culblair. However this would not alter the overall impact on the Coastal Lowlands Intensive Farming LLCA.
- 10.10.9 Options 1A (MV) and 1B (MV) would have the greatest potential impact on the Coastal Lowlands Forest Edge Farming LLCA (Moderate/Substantial) due to the introduction of Newton Junction C. Options 1A (MV), 1B (MV), 1C (MV) and 1D (MV) would have a greater impact on this LLCA south of Morayston due to route option alignment through the open agricultural landscape in this location.
- 10.10.10 Overall, Options 1C, 1C (MV) and 1D (MV) would have the most significant impact on landscape character. This is mainly due to the introduction of the route option alignment north of Culloden being introduced into open agricultural landscape, the route option alignment south of Morayston Farm (Options 1C (MV) and 1D (MV)) and the introduction of Mid Coul Junction A (Options 1C and 1C (MV)). Option 1B would have the lowest significance of impacts on landscape character as this mainly follows the alignment of the existing A96.

Visual

- 10.10.11 In total, 154 individual built receptors (making up 31 receptor groups) and 13 outdoor receptors will be potentially impacted by the route options. Table 10.36 provides a summary of the number of significant visual impacts (Moderate or above).

Table 10.36: Potential impacts on built (B) and outdoor (O) receptors (Moderate or above)

Significance	Option															
	1A		1A (MV)		1B		1B (MV)		1C		1C (MV)		1D		1D (MV)	
	B	O	B	O	B	O	B	O	B	O	B	O	B	O	B	O
Substantial	30	0	34	0	27	0	31	0	60	1	60	1	57	1	57	1
Moderate/ Substantial	27	1	13	1	31	1	13	1	20	3	10	3	24	3	10	3
Moderate	6	4	15	2	4	3	17	1	10	3	20	4	8	2	22	3
Total	63	5	62	3	62	4	61	2	90	7	90	8	89	6	89	7
	68		65		66		63		97		98		95		96	

- 10.10.12 The most significant visual impacts experienced by receptors would be as result of one or more of the introduced infrastructure elements detailed below:
- Introduction of the Options 1C, 1C (MV), 1D and 1D (MV) in close proximity to receptors that currently gain open views with limited or no visibility of the existing A96. These route options travel through agricultural land in open view of receptors within Culloden and on its outskirts.
 - Introduction of Options 1A, 1A (MV), 1C and 1C (MV) alongside the airport, in close proximity to Culblair and Milton of Gollanfield.

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- Introduction of the route option alignment in a highly visible open and elevated location, with connecting junctions and structures south of Morayston for Options 1A (MV), 1B (MV), 1C (MV) and 1D (MV).
- 10.10.13 On balance, Options 1C, 1C (MV), 1D and 1D (MV) would have the most significant potential impact on visual amenity, with a larger number of visual receptors affected by potential significant impacts when compared to the other route options.
- 10.10.14 Option 1B (MV) would have the least significant impact on visual amenity. Option 1B (MV) mainly follows the existing A96, reducing the magnitude of change and the level of impact significance experienced by surrounding receptors.
- 10.10.15 Although the receptor locations that would potentially experience significant impacts from the remaining routes (Options 1A, 1A (MV) and 1B) vary, the overall significance of impacts from introduction of these route options is assessed to be broadly similar.

Mitigation Potential

- 10.10.16 At this stage it is possible to assess mitigation potential for each of the route options given the surrounding vegetation and topography.
- 10.10.17 The Smithton Junction, Mid Coul Junction A and Brackley Junction all have a high potential for planting mitigation due to the presence of surrounding woodland. The Smithton and Brackley Junctions are present in all route options, while the Mid Coul Junction A is present in Options 1A, 1A (MV), 1C and 1C (MV).
- 10.10.18 The mitigation potential differs for the route option alignments near to Morayston Farm. Options 1A, 1B, 1C and 1D would have high mitigation potential due to alignments in close proximity to that of existing A96 allowing for high potential to tie in with existing mitigation planting and earthworks, whereas Options 1A (MV), 1B (MV), 1C (MV) and 1D (MV) have a lower mitigation potential due to the route option alignment through open agricultural fields south of Morayston.
- 10.10.19 Options 1C, 1C (MV), 1D, 1D (MV) have a low mitigation potential due to the route option alignment north of Culloden through open agricultural fields, severing the existing field pattern. Options 1A, 1A (MV), 1C and 1C (MV) have a low mitigation potential due to route option alignment east of Culblair for similar reasons.
- 10.10.20 Overall, Option 1B has the greatest mitigation potential as it generally follows that of existing A96 allowing for high potential to tie in with existing mitigation planting and earthworks. Option 1C (MV) has the lowest mitigation potential of all the route options due to the route option alignment through open landscape north of Culloden, south of Morayston and east of Culblair.

Compliance with Policies and Plans

- 10.10.21 In relation to compliance with planning policies, without mitigation all of the route options have the potential to conflict with SSP and the following policies of the HwLDP:
- Policy 28 (Sustainable Design);
 - Policy 29: Design and Quality Place-making
 - Policy 36: Development in the Wider Countryside
 - Policy 51: Trees and Development
 - Policy 52: Principle of Development in Woodland; and
 - Policy 61: Landscape

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- 10.10.22 There is scope to consider that as the route options are likely to deliver strategic benefits that they would comply with Policy 28 (Sustainable Design) of the HwLDP in respect of impacts on the landscape. Further assessment on the full extent of the potential impacts would be required to conclude whether or not the strategic benefits outweigh the adverse impacts.
- 10.10.23 With regard to impacts on landscape character, with appropriate mitigation in keeping with the local character to integrate the route options into the landscape (as outlined in Section 10.9 (Mitigation Potential), the potential for conflict with SPP, Policy 29 (Design and Quality Place-making), Policy 36 (Development in the Wider Countryside) and Policy 61 (Landscape) of the HwLDP is reduced. However, although appropriate mitigation is available to reduce potential impacts, at this stage in the design it is expected that there would be some conflict with these policies.
- 10.10.24 In terms of potential impacts on trees and woodland in general, with appropriate mitigation in the form of compensatory planting and the potential significant benefits to the public, it is expected that all the route options would comply with Policy 51 (Trees and Development) and Policy 52 (Principle of Development in Woodland).

Summary of Potential Impacts

- 10.10.25 Overall, with mitigation Option 1C (MV) would have the greatest significance of potential impacts in relation to both landscape and visual, followed by Options 1C, 1D and 1D (MV).
- 10.10.26 Overall, with mitigation, Option 1B would have the least significant potential impact in relation to both landscape and visual, closely followed by Option 1B (MV).

Nairn Bypass

Landscape

- 10.10.27 The route options for the Nairn Bypass would have a direct impact on two local landscape character areas. A summary of the significant landscape impacts associated with each route option is shown in Table 10.37.

Table 10.37: Potential impacts on landscape character (Moderate or above)

Option/LLCA	Coastal Lowlands Intensive Farming	Coastal Lowlands Forest Edge Farming
Option 2A	Moderate	Moderate
Option 2B	-	Moderate
Option 2C	-	Moderate/Substantial
Option 2D	-	Substantial
Option 2E	Moderate	Moderate/Substantial
Option 2F	-	Moderate/Substantial
Option 2G	-	Moderate/Substantial
Option 2H	Moderate	Substantial
Option 2I	-	Substantial

- 10.10.28 There are no potential significant landscape impacts on Auldearn LLCA and Nairn LLCA.
- 10.10.29 Options 2A, 2E and 2H would have an overall Moderate potential impact on Coastal Lowlands Intensive Farming LLCA. This is primarily due to the route option alignment cutting through an open agricultural landscape and severing the existing field pattern to the north-east of Auldearn. No other route options would have a significant potential impact on this LLCA.

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- 10.10.30 Options 2D, 2H and 2I would have a Substantial potential impact on the Coastal Lowlands Forest Edge Farming LLCA. This is mainly due to the introduction of River Nairn crossing near to Howford, which is a particularly sensitive landscape.
- 10.10.31 Options 2C, 2E, 2F and 2G would have an overall Moderate/Substantial potential impact on the Coastal Lowlands Forest Edge Farming LLCA for various reasons. These include the route option alignment through sensitive landscape and loss of woodland at Kinsteary House, the introduction of A939 Junction A resulting in loss of woodland, and the introduction of Nairn East Junction D into open agricultural landscape (Options 2C and 2G), the route option alignment through open landscape south of Moss-side (Options 2E, 2F and 2G) and the route option alignment at Blackpark and the introduction of Nairn East Junction A and Nairn East Junction B (Options 2E and 2F).
- 10.10.32 Options 2A and 2B would have the lowest impacts on Coastal Lowlands Forest Edge Farming LLCA with an overall potential impact of Moderate due to the minimal number of junctions and the partially screened route option alignment east of Moss-side.
- 10.10.33 Overall, Option 2H would have the greatest significance of potential impacts on the landscape, followed by Options 2D and 2I. Option 2B would have the lowest significance of potential impacts on landscape character.

Visual

- 10.10.34 In total, 229 individual built receptors (making up 62 receptor groups) and 16 outdoor receptors would be potentially affected by the route options. Table 10.38 provides a summary of the number of significant visual impacts.

Table 10.38: Potential impacts on built (B) and outdoor (O) receptors (Moderate or above)

Significance	Option																	
	2A		2B		2C		2D		2E		2F		2G		2H		2I	
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O
Substantial	35	2	39	2	49	1	56	1	61	1	65	1	75	-	65	1	82	-
Moderate/ Substantial	10	1	16	2	17	2	42	7	14	2	20	3	21	3	34	3	38	7
Moderate	19	3	24	3	27	4	21	3	18	3	23	3	26	4	20	4	20	2
Total	64	6	79	7	93	7	119	11	93	6	108	7	122	7	119	8	140	9
	70		86		100		130		99		115		129		127		149	

- 10.10.35 The most significant impacts experienced by receptors would result from one or more of the introduced infrastructure elements detailed below:
- Introduction of the route option alignment in close proximity to receptors that currently gain open views with limited or no visibility of the existing A96. This applies to Options 2E, 2F, 2G, 2H and 2I away from the existing A96 to the south of Moss-side, Options 2A, 2B, 2C and 2D close to Moss-side, and Options 2A, 2E and 2H to the north of Auldearn.
 - Introduction of the route option alignment located to the east of the River Nairn and to the west and south-west of Auldearn. These would be most significant for options further to the south; namely Options 2D and 2I.
 - Introduction of junctions on embankment or in cutting in close proximity to receptors, including Nairn East Junction D on Options 2C, 2D, 2G and 2I to the east of Auldearn, A939 Junction A on Options 2C and 2G at Blackpark and A939 Junction B on Options 2D and 2I at Foynesfield.
- 10.10.36 Options 2D and 2I would have the most significant potential impact on visual amenity.

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- 10.10.37 Options 2A and 2B would have the least significant potential impact on visual amenity. Of these, Option 2B most closely follows the route of the existing A96 and would benefit most from the screening provided by existing established woodlands along its route.
- 10.10.38 Although the receptor locations experiencing significant potential impacts from the remaining routes (Options 2C, 2E, 2F, 2G, 2H) vary, the overall significance of potential impacts from introduction of these options is assessed to be broadly similar.

Mitigation Potential

- 10.10.39 At this stage it is possible to assess the mitigation potential for each route options given the surrounding vegetation and topography. As key impacts are similar on both the landscape and visual amenity, mitigation to reduce impacts will be inclusive of both issues.
- 10.10.40 Nairn West Junction A (Options 2A, 2B, 2C and 2D) has the greatest mitigation potential of the junctions due to the dense surrounding plantation woodland. Nairn West Junction B (Options 2E, 2F, 2G, 2H and 2I) also have a relatively high mitigation potential for the same reasons, although the surrounding woodland is more sparsely planted than that surrounding the Nairn West Junction A. All other junctions have relatively low mitigation potential as they are located in an open landscape character.
- 10.10.41 The route option alignment south of Moss-side (Options 2E, 2F, 2G, 2H and 2I), at Blackpark (Options 2A, 2B, 2E and 2F), and north-east of Auldearn (Options 2A, 2E and 2H) all have a particularly low mitigation potential due to their siting in open landscape.
- 10.10.42 The route option alignment in close proximity to Kinsteary House (Option 2C, 2D, 2G, and 2I) has a low mitigation potential as a result of the particularly sensitive and distinctive estate landscape.
- 10.10.43 The proposed River Nairn crossing at Howford (Options 2D, 2H and 2I) would have a Substantial impact. Although there is potential for mitigation due to surrounding mature woodland and the close proximity to existing field boundaries, the sensitive nature of this context makes implementing mitigation proposals more challenging.
- 10.10.44 Overall, Option 2B has the highest mitigation potential due to the route option alignment being screened within Delnies Wood in the west and following a route option alignment adjacent and in close proximity to that of the existing A96 in the east. Options 2D, 2E, 2H and 2I have the lowest mitigation potential due to route option alignments either through particularly open landscape (south of Moss-side and north-east of Auldearn) and/or sensitive landscape (Howford Bridge and Kinsteary House).

Compliance with Policies and Plans

- 10.10.45 In relation to compliance with policies and plans, the information provided for the Inverness to Gollanfield section is also relevant here. Please refer to paragraphs 10.10.21 to 10.10.24 for further details.
- 10.10.46 In addition there is the potential to conflict with Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP in relation to potential impacts on TPOs. It is expected that Options 2D and 2I would affect two TPOs and Options 2C and 2G would affect one TPO. However, there is scope to consider that as the route options are likely to deliver strategic benefits of national importance that they would comply with Policy 57 (Natural, Built and Cultural Heritage). Further assessment on the full extent of the potential impacts would be required to conclude whether or not the strategic benefits of national importance outweigh the adverse impacts.

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Summary of Potential Impacts

- 10.10.47 With mitigation, Option 2H is expected to have the most significant landscape impacts, followed by Options 2I and 2D.
- 10.10.48 With mitigation, Option 2B is expected to have the least significant landscape impacts.
- 10.10.49 With mitigation, Options 2H, 2I and 2D are expected to have the most significant visual impacts, followed by Options 2C, 2G, 2F and 2E.
- 10.10.50 With mitigation, Option 2B is expected to have the least significant visual impacts, followed by Option 2A.

10.11 Scope of DMRB Stage 3 Assessment

- 10.11.1 The DMRB Stage 3 assessment should be based on the following tasks as set out in DMRB Landscape Effects:
- update the baseline landscape assessment, if necessary;
 - identify detailed mitigation and compulsory purchase order land required, incorporating agricultural, surface water, ecological and noise mitigation; and
 - update the impact assessment to take account of detailed mitigation proposals.
- 10.11.2 In addition, photomontages should be prepared in consultation with SNH.

10.12 References

Fletcher, S (1998). SNH Review: No 90 Inner Moray Firth Landscape Character Assessment.

The Highways Agency (2010). Interim Advice Note 135/10 Landscape and Visual Effects Assessment. November 2010.

The Highways Agency, Scottish Executive Development Department, The National Assembly for Wales and The Department of Regional Development Northern Ireland (1993) Design Manual for Roads and Bridges, Volume 11, Section 3, Part 5 'Landscape Effects'. June 1993.

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The Highland Council (2012). Highland-wide Local Development Plan. April 2012.

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The Highland Council (2013a). Sustainable Design Guide: Supplementary Guidance. January, 2013.

The Highland Council (2013b). Trees, Woodland and Development Supplementary Guidance. January, 2013.

Transport Scotland (2008). Strategic Transport Projects Review.

Transport Scotland (2014). Fitting Landscape: Securing More Sustainable Landscapes

Turnbull Jeffrey Partnership (1998). SNH Review; No 101 Moray and Nairn Landscape Character Assessment.

11 Habitats and Biodiversity

11.1 Introduction

- 11.1.1 This chapter presents the results of the habitats and biodiversity assessment for the DMRB Stage 2 Assessment for the route options.
- 11.1.2 This assessment was undertaken based on the guidance provided in DMRB Volume 11, Section 3 Part 4, Ecology and Nature Conservation (The Highways Agency et al., 1993) (hereafter referred to as DMRB Ecology and Nature Conservation) and DMRB Interim Advice Note 130/10, Ecology and Nature Conservation: Criteria for Impact Assessment (The Highways Agency, 2010) (hereafter referred to as IAN130/10). The assessment considers the impacts of the route options on habitats and biodiversity including designated sites, terrestrial habitats and plants, terrestrial species and freshwater habitat and species.
- 11.1.3 The assessment is supported by the following appendices:
- Appendix A11.1: Legislation and Conservation Status.
 - Appendix A11.2: Extended Phase 1 Habitat Survey - Target Notes.
 - Appendix A11.3: Impact assessment Tables (confidential): Badger and Otter.
 - Appendix A11.4: Impact assessment Tables (non-confidential).
 - Appendix A11.5: Estimated Habitat Loss.
- 11.1.4 As described in Part 1 (The Scheme), Chapter 3 (Description of Route Options) of this report, the proposed scheme is divided into two sections; Inverness to Gollanfield and the Nairn Bypass. The information presented in Section 11.2 (Approach and Methods), Section 11.3 (Policies and Plans) and Section 11.9 (Potential Mitigation) is appropriate to both sections. The information presented in Section 11.4 (Baseline Conditions), Sections 11.5 to 11.7 (Impact Assessment), Section 11.8 (Compliance with Policies and Plans) and Section 11.10 (Summary of Route Options) is reported for each section and where appropriate under the headings Inverness to Gollanfield and the Nairn Bypass
- 11.1.5 Section 11.11 provides details on the proposed scope for the DMRB Stage 3 Assessment and Section 11.12 provides a full list of references that are noted within this chapter.

11.2 Approach and Methods

Scope and Guidance

- 11.2.1 This assessment was undertaken based on guidance provided in DMRB Ecology and Nature Conservation and IAN130/10. In addition to DMRB guidance, other policy documents and published guidance taken into account in the preparation of this chapter include:
- Scottish Transport Appraisal Guidance (STAG) (Scottish Government, 2008);
 - best practice guidance for ecological assessment, including the Guidelines for Ecological Impact Assessment in the United Kingdom (Institute of Ecology and Environmental Management (IEEM), 2006); and
 - Scottish Natural Heritage (SNH) guidance on Environmental Impact Assessment (EIA) (SNH, 2013a).

Study Area

- 11.2.2 For the purposes of this assessment a study area extending to 500m from the outermost edge of all of the route options was defined. The study area is shown on Figure 11.1.

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Baseline Data

- 11.2.3 An extended Phase 1 habitat survey was undertaken to inform the nature conservation element of DMRB Stage 2 Assessment. The extended Phase 1 habitat survey comprised a desk-study and field surveys of the study area.
- 11.2.4 Consultation was also undertaken with SNH, Scottish Environmental Protection Agency (SEPA) and other local ecology groups (e.g. Scottish Badgers) to obtain relevant baseline data. Further information on the consultation process is provided in Chapter 7 (Overview of Environmental Assessment) of this report.

Desk-study

- 11.2.5 A desk-study was undertaken prior to the field surveys to review any existing relevant literature and to identify any statutory and non-statutory designated sites of nature conservation interest that may be of relevance to the surveys, and to obtain information on the occurrence of protected species and/or species of conservation interest. In addition, information on the quality (condition assessment) of watercourses and information on habitats in the intertidal zone was collated for locations within the study areas.
- 11.2.6 Information for the desk-study was obtained from the following online resources:
- Highland Biodiversity website (Highland Biodiversity Partnership, 2013);
 - The Highland Council planning search tool (ePlanning) (The Highland Council, 2013a);
 - Joint Nature Conservation Committee (JNCC) website (JNCC, 2013a);
 - National Biodiversity Network (NBN) gateway website (NBN, 2013);
 - Multi-Agency Geographical Information for the Countryside website, Coastal and Marine Resource Atlas (MAGIC) (MAGIC, 2013);
 - SEPA River Basin Management Plans Interactive Map (SEPA, 2013a);
 - SNH Information Service (SNH, 2013b); and
 - Scottish Biodiversity List (SBL) (22 April 2013 version) (Scottish Government, 2013a).
- 11.2.7 A search of online resources was supplemented by a review of the following reports:
- DMRB Stage 2 Assessment A96 Dualling to Inverness Airport (Atkins, 2008).
 - Stratton Environmental Statement. Planning Application for urban expansion including a new town centre (WSP Energy and Environment, 2009).
 - DMRB Stage 2 Assessment of the A96 Inshes to Nairn Trunk Road (Jacobs, 2010).
 - Lochdu, Nairn - Ecology Surveys (RSK Environmental Ltd, 2010).
 - Tornagrain, A Planned Town for The Highlands. Environmental Statement Additional Information: Technical Annex 4. Ecology, October 2011 (Applied Ecology, 2011a).
 - Tornagrain, A Planned Town for The Highlands. Environmental Statement Additional Information: Technical Annex 2 (ES Annex 4). Ecology Update Report, October 2011 (Applied Ecology, 2011b).

Field Surveys

- 11.2.8 An extended Phase 1 habitat survey of the study area was undertaken by qualified Jacobs ecologists between 8 July 2013 and 5 September 2013. All habitats encountered were identified and coded according to the survey methods outlined in the Handbook for Phase 1 Habitat Survey - A Technique for Environmental Audit (JNCC, 2010).

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- 11.2.9 This information was combined with that collected between 4 October 2010 and 26 November 2010 undertaken for the DMRB Stage 2 Assessment of the A96 Inshes to Nairn Trunk Road (Jacobs 2010). These 2010 surveys covered the majority of the study area.
- 11.2.10 In addition to the identification of habitats, the field surveys also recorded evidence of faunal species. This included bats, badger (*Meles meles*), red squirrel (*Sciurus vulgaris*), otter (*Lutra lutra*), water vole (*Arvicola amphibius*), birds, and herpetofauna (collective term used to describe amphibians and reptiles). The survey was undertaken in cognisance of relevant best practice survey guidelines, including Hundt (2012) (bats), Harris et al. (1989) (badger), Chanin (2003) (otter), Vincent Wildlife Trust (2010) (pine marten, *Martes martes*), Gurnell et al. (2009) (red squirrel), Strachan & Moorhouse (2006) (water vole), Oldham et al. (2000) (amphibians) and The Highways Agency et al. (1993) (reptiles).
- 11.2.11 Target notes were made, where applicable, to record key habitat features and other features of ecological interest such as evidence or incidental sightings of protected species. Botanical names (common and scientific) follow guidance provided by Stace (2010).

Impact Assessment

Value to Nature Conservation Features

- 11.2.12 The evaluation of nature conservation features (or assessment of values) was undertaken taking into consideration professional judgement and advice provided by IAN130/10, and taking cognisance of guidance published by IEEM (2006). The criteria to assess the value of nature conservation features are set out in Table 11.1.

Table 11.1: Criteria used to evaluate ecological receptors

Ecological Importance	Attributes of Ecological Receptor
International European	<p>Habitats: An internationally designated site or candidate site (i.e. Special Protection Area (SPA), provisional SPA (pSPA), Special Area of Conservation (SAC), candidate SAC (cSAC), Ramsar site, Biogenetic/Biosphere Reserve, World Heritage Site or an area which meets the published selection criteria for such designation).</p> <p>A viable area of a habitat type listed in Annex I of the Habitats Directive (1992), or smaller areas of such habitat that are essential to maintain the viability of a larger whole.</p> <p>Any river classified as excellent A1 (SEPA), not at significant risk– 2.a and 2.b in the Water Framework Directive (WFD) and known to support a substantial salmonid population.</p> <p>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 (categories S3 on the SBL) or of uncertain conservation status or of having an international obligation category S2 on the SBL).</p> <p>A regularly occurring, nationally significant population/number of any internationally important species.</p>
National Scottish	<p>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)).</p> <p>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.</p> <p>Any river classified as excellent A1 (SEPA), not at significant risk– 2.a and 2.b (WFD) and likely to support a substantial salmonid population.</p> <p>Habitat of high value based on its ecological function.</p> <p>Species: A regularly occurring, regionally or county significant population/number of an internationally/nationally important species.</p> <p>Any regularly occurring population of a nationally important species which is threatened or rare in the region or county (see Local Biodiversity Action Plan (LBAP)).</p> <p>A species listed as occurring in <6 10km squares on the SBL.</p> <p>A species listed on 1994 or 2001 International Union for the Conservation of Nature (IUCN) criteria as at least 'Near Threatened' or at least 'Rare' on the Red List based on pre-1994 IUCN guidelines; species listed as Nationally Scarce, Nationally Notable A or Notable B (rare and scarce species not based on IUCN criteria).</p>

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Ecological Importance	Attributes of Ecological Receptor
Regional	<p>Habitats: Sites which exceed the county-level designations but fall short of SSSI selection criteria.</p> <p>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.</p> <p>Viable areas of key habitat identified as being of regional value in the appropriate SNH Natural Heritage Future area profile.</p> <p>Any river classified as excellent A1 or good A2 (SEPA), not at significant risk– 2.a and 2.b (WFD) and capable of supporting salmonid population.</p> <p>Habitat of medium to high value based on its ecological function.</p> <p>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 or relevant SNH Natural Heritage Future area on account of its regional rarity or localisation.</p> <p>A regularly occurring, locally significant population/number of a regionally important species.</p> <p>Sites maintaining populations of internationally/nationally important species that are not threatened or rare in the region or county.</p> <p>Species listed as 'indeterminate' or 'insufficiently known' on the Red Listing pre-1994 IUCN guidelines or species listed on the 1994 IUCN guidelines as data deficient or species listed on the 2001 Red Listing as 'lower risk – least concern'.</p>
Authority area Highland Council	<p>Habitats: Sites that are recognised by local authorities (e.g. Sites of Interest for Nature Conservation (SINC) and District Wildlife Sites (DWS)).</p> <p>County/district sites that the designating Authority has determined meet the published ecological selection criteria for designation, including Local Nature Reserves (LNR).</p> <p>A viable area of habitat identified in county/district BAP or in the relevant SNH Natural Heritage Future area profile.</p> <p>A diverse and/or ecologically valuable hedgerow network.</p> <p>Semi-natural ancient woodland greater than 0.25ha.</p> <p>Habitat of at least medium value.</p> <p>Species: Any regularly occurring, locally significant population of a species that is listed in a county/district BAP on account of its regional rarity or localisation.</p> <p>A regularly occurring, locally significant population of a county/district important species (particularly during a critical phase of its life cycle).</p> <p>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.</p>
Local e.g. Nairn	<p>Habitats: Areas of habitat considered to appreciably enrich the habitat resource e.g. species-rich hedgerows, ponds etc.</p> <p>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. Semi-natural ancient woodland smaller than 0.25ha.</p> <p>Any river classified as fair B or poor C (SEPA), not at significant risk– 2.a and 2.b (WFD) and unlikely to support coarse fishery.</p> <p>Habitat of low to medium value based on its ecological function.</p> <p>Species: Populations/assemblages of species that appreciably enrich the biodiversity resource within the local context.</p> <p>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.</p>
Less than Local Limited ecological value	<p>Habitats: Sites that retain habitats and/or species that are of limited ecological importance owing to their size, species composition or other factors.</p> <p>Any river classified as impoverished D (SEPA), not at significant risk– 2.a and 2.b (WFD).</p> <p>Habitat of low to medium value.</p>

Identification of Impacts

- 11.2.13 Knowledge and assessment of construction methods and operational activities, together with professional judgment by experienced ecologists, were used to identify the potential impacts on ecological receptors.

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Magnitude of Impact

- 11.2.14 For the purposes of this assessment, the term 'impact magnitude' is taken to represent the overall characterisation of positive or negative impacts in accordance with IEEM (2006), including:
- impact extent/scale;
 - direct or indirect impact;
 - reversibility of impact;
 - frequency of impact;
 - duration of impact; and
 - likelihood of occurrence.
- 11.2.15 Impact magnitude was identified as shown in Table 11.2 as negligible, low, medium or high; taking into account the above impact characterisation approach.

Table 11.2: Impact characterisation translated into impact magnitude

Impact Characterisation	Impact Magnitude
A permanent or long-term effect on the distribution and/or abundance of a habitat, species assemblage/community or population. If negative this would have implications for the integrity of the receptor and its conservation status, and if positive would result in an improvement to the conservation status of the receptor.	High
A permanent or long-term effect on the distribution and/or abundance of a habitat, species assemblage/community or population. If negative this would have negligible implications for the integrity of the receptor or its conservation status and if positive would not alter the conservation status of the receptor.	Medium
A short-term reversible effect on the distribution and/or abundance of a habitat, species assemblage/community or population and within normal fluctuations observed within the ecology of the receptor.	Low
A short-term reversible effect on the distribution and/or abundance of a habitat, species assemblage/community or population unlikely to be detectable by monitoring.	Negligible

Significance of Impact

- 11.2.16 Once potential impacts were understood and receptor value determined, professional judgement was used to focus the assessment on impacts that would require mitigation. For example, an area of amenity grassland would be evaluated as of less than local ecological value and would not progress through the assessment process. However, an impact on a SSSI valued at a national level would progress through the assessment process.
- 11.2.17 In accordance with IEEM (2006), a significant impact is an impact (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats and species. Knowledge and assessment of construction methods and operational activities, together with professional judgment by experienced ecologists with experience of similar large-scale infrastructure projects, has been used to identify the potential impacts of the proposed scheme on ecological receptors.
- 11.2.18 Taken together the above information is applied to a matrix to determine the significance of an impact (refer to Table 11.3). Impacts can be adverse or beneficial, either decreasing or improving the health, ecological status or viability of a population, species or habitat.

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Table 11.3: Impact significance

Magnitude \ Importance	Magnitude			
	High	Medium	Low	Negligible
International	Major	Major	Moderate	Negligible
National	Major	Major	Moderate	Negligible
Regional	Major	Moderate	Minor	Negligible
Authority Area	Moderate	Moderate	Minor	Negligible
Local	Minor	Minor	Minor	Negligible
Less than local	Minor	Negligible	Negligible	Negligible

Mitigation

- 11.2.19 Potential mitigation to reduce the impacts has been considered during this assessment and these are discussed in Section 11.9 (Potential Mitigation).
- 11.2.20 All potential significant impacts would require mitigation, and many of these impacts would be mitigated through the use of generic mitigation such as through the implementation of best practice guidance. Additional mitigation (e.g. specific mitigation) would be developed where generic mitigation would be inappropriate, ineffective or insufficient.

Limitations

- 11.2.21 The main limitations to this DMRB Stage 2 Assessment relate to the extended Phase 1 habitat survey and include the following:
- Land access was not available to the entire study area. As a result the following areas were not surveyed; gardens and grounds of private houses; a quarry/gravel pit to the north of Kildrummie Kames (grid reference: NH 837 544) and restricted access associated with Inverness Airport.
 - Due to the extremely dry conditions encountered during 2013, many drainage ditches and small burns that had been surveyed in 2010 were dry and consequently were not re-surveyed in 2013.
 - Only those receptors which were included in the extended Phase 1 habitat surveys are reported within this assessment chapter. As a result, aquatic invertebrates and macrophytes, for example, are not reported.

11.3 Policies and Plans

- 11.3.1 The national, regional and local planning policies and guidance relevant to habitats and biodiversity are identified below. An overview of relevant legislation is provided in Part 6 (Appendices), Appendix A11.1 (Legislation and Conservation Status) of this report. An assessment of the compliance of the route options in relation to these policies is provided in Section 11.8 (Compliance with Policies and Plans).

National Planning Policy and Guidance

- 11.3.2 National planning policy on a variety of themes is contained within Scottish Planning Policy (SPP) (Scottish Government, 2014) (hereafter referred to as SPP). In terms of the impact of proposals on habitats and biodiversity, SPP is focussed on:
- conserving and enhancing protected sites and species, taking into account the need to maintain healthy ecosystems and work with the natural processes which provide important services to communities;

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- protecting and enhancing ancient semi-natural woodland as an important and irreplaceable resource, together with other native or long-established woods;
 - seeking benefits for biodiversity from new development where possible, including the restoration of degraded habitats and the avoidance of further fragmentation or isolation of habitats; and
 - supporting opportunities for enjoying and learning about the natural environment.
- 11.3.3 Circulars and Planning Advice Notes (PANs) published by the Scottish Government provide further guidance on specific topics. PAN 60: Planning for Natural Heritage (Scottish Executive, 2000) is of relevance to habitats and biodiversity and is summarised in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.

Regional and Local Planning Policy and Guidance

- 11.3.4 The Highland-wide Local Development Plan (HwLDP) (The Highland Council, 2012) (hereafter referred to as HwLDP) is the land-use Plan which will guide the development and investment in the region over the next 20 years. The relevant policies in relation to habitats and biodiversity assets include:
- Policy 28: Sustainable Design;
 - Policy 30: Physical Constraints;
 - Policy 51: Trees and Development;
 - Policy 52: Principle of Development in Woodland;
 - Policy 57: Natural, Built and Cultural Heritage;
 - Policy 58: Protected Species;
 - Policy 59: Other Important Species;
 - Policy 60: Other Important Habitats and Article 10 Features; and
 - Policy 74: Green Networks.
- 11.3.5 The HwLDP has a number of supporting supplementary guidance notes, and those of relevance to habitats and biodiversity include:
- Green Networks Supplementary Guidance (adopted January 2013) (The Highland Council, 2013b);
 - Highland's Statutorily Protected Species Supplementary Guidance (adopted March 2013) (The Highland Council, 2013c);
 - Physical Constraints Supplementary Guidance (adopted March 2013) (The Highland Council, 2013d);
 - Sustainable Design Guide: Supplementary Guidance (adopted January 2013) (The Highland Council, 2013e); and
 - Trees, Woodlands and Development Supplementary Guidance (adopted January 2013) (The Highland Council, 2013f).

Review of Planning Policies

- 11.3.6 The key aspects of the relevant planning policies are discussed below in relation to their relevance to habitats and biodiversity.
- 11.3.7 Policy 28 (Sustainable Design) of the HwLDP requires development to be designed with sustainability in mind. As such, developments will be assessed on a number of criteria including the extent to which they impact on habitats, freshwater systems and species.

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Developments which are judged to be significantly detrimental in terms of these criteria will not accord with the HwLDP and will only be supported if no reasonable alternative exists, if there is demonstrable overriding strategic benefit or if satisfactory overall mitigation measures are incorporated.

- 11.3.8 SPP and the HwLDP also contain a number of policies relating specifically to designated sites, protected species and habitats, and other habitats and species, and these are discussed below.

Designated Sites

- 11.3.9 In line with SPP, developments likely to have a significant effect on a site of international importance such as SPA, SAC or Ramsar sites, either alone or in combination with other projects, and which are not directly connected with or necessary to the management of the site, should be subject to an appropriate assessment (in line with the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)). Development which could have a significant effect on an internationally designated site can only be permitted where the appropriate assessment has demonstrated that it will not adversely affect the integrity of the site, or there are no alternative solutions and there are imperative reasons of overriding public interest. This is also reflected in Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP.
- 11.3.10 In addition, Policy 30 (Physical Constraints) of the HwLDP refers to the Physical Constraints Supplementary Guidance (The Highland Council, 2013d) which identifies a list of constraints to development in Highland. Where a proposed development is affected by any of the constraints detailed in the guidance, the development must demonstrate compatibility with the constraint or outline appropriate mitigation measures. One of the constraints identified is waters within 15m that are identified on the SEPA Register of Protected Areas including areas designated for the protection of habitats and species (comprising the aquatic part of Natura 2000 sites designated under the Birds Directive (79/409/EEC) and the Habitats Directive (92/43/EEC)).
- 11.3.11 Where a development affects a nationally designated site, such as a SSSI or a NNR, SPP states that it should not be permitted unless it will not adversely affect the integrity of the area or the qualities for which the site has been designated, or any adverse effects are clearly outweighed by social, environmental or economic benefits of national importance. Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP supports SPP in this regard and specifically mentions Inventoried Ancient Woodland (Category 1) and Long-established Woodland of Semi-natural Origin (Category 2a) as a nationally important sites. In relation to ancient and semi-natural woodland, SPP also highlights that this is an important and irreplaceable national resource that should be protected and enhanced, as should other native and long established woodlands with high nature conservation value.
- 11.3.12 In line with the requirements of SPP, the HwLDP also identifies local designations for protection. Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP allows development that has the potential to impact on features of local/regional importance if it can be demonstrated that it will not have an unacceptable impact on the natural environment. Features of local/regional importance include Category 2b (Long-established Woodlands of Plantation Origin) and Category 3 (Other Woodland) on the Ancient Woodland Inventory (AWI) and local nature conservation sites.

Protected Species

- 11.3.13 SPP states that planning permission will only be granted for development likely to have an adverse effect on a European protected species if there is no satisfactory alternative and the development is required for preserving public health, safety or another imperative reason of overriding public interest. No development will be approved which would be detrimental to the maintenance of a population of a European protected species at a favourable

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conservation status in its natural range. Policy 58 (Protected Species) of the HwLDP reflects the policies set out in SPP with regard to European protected species.

- 11.3.14 Policy 58 (Protected Species) of the HwLDP also provides protection for the following species:
- Other protected plants and animals (species listed in Schedule 5 and Schedule 8 of the Wildlife and Countryside Act 1981 (as amended)). Development proposals likely to have an adverse effect on other protected plants and animals will only be permitted where the development is required for preserving public health or safety.
 - Protected bird species (species listed in Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), Annex I of the EC Birds Directive and regularly occurring migratory species listed in Annex II of the EC Birds Directive). Development that is likely to have an adverse effect on protected bird species will only be permitted where there is no other satisfactory solution and the development is required in the interest of public health or safety.
 - Development proposals should avoid adverse disturbance to badgers and their setts in line with the requirements of the Protection of Badgers Act 1992 (as amended by the Nature Conservation (Scotland) Act 2004).

Other Habitats and Species

- 11.3.15 SPP indicates that planning authorities should adopt a broad approach to natural heritage other than just conserving designated or protected sites and species by also taking into account ecosystems and natural processes in their area. Policy 59 (Other Important Species) and Policy 60 (Other Important Habitats and Article 10 Features) of the HwLDP reflect this, and seek to avoid detrimental impacts to species and habitats if they are not already protected by other legislation or nature conservation site designations.
- 11.3.16 Policy 59 (Other Important Species) looks to protect species listed in Annex II and V of the EC Habitats Directive, priority species listed in the UK and Local BAPs and species included on the SBL. The Highland Council will use conditions and agreements to ensure detrimental effects on these species are avoided.
- 11.3.17 Policy 60 (Other Important Habitats and Article 10 Features) looks to protect habitats listed in Annex I of the Habitats Directive, priority habitats listed in the UK and Local BAPs and habitats included on the SBL. The policy seeks to safeguard the integrity of features which are of major importance because of their linear and continuous structure or combination as habitat 'stepping stones' for the movement of wild fauna and flora. The Highland Council will use conditions and agreements to ensure that significant harm to the ecological function and integrity of these habitats is avoided. Where it is judged that the development outweighs the desirability of retaining those important habitats, the Council will seek to put in place mitigation measures, including compensatory habitat creation.
- 11.3.18 The route options are located within an area identified for the creation of a green network known as the A96 Corridor Green Network. SPP emphasises the benefits for both people and nature as a result of linking green spaces through green networks. Policy 74 (Green Networks) of the HwLDP seeks the protection and enhancement of green networks, and development in areas identified for the creation of green networks should seek to avoid the fragmentation of the network and, where appropriate, take steps to improve connectivity. The supplementary guidance (The Highland Council, 2013b) highlights the need to mitigate for the fatalities of protected species on roads, and notes the incorporation of specially designed tunnels, ducts or bridges to allow for the presence and movement of such species.
- 11.3.19 SPP also requires any development that results in the severing or impairment of connectivity between important woodland habitats to identify and implement workable mitigation measures. Woodland, trees and hedgerows are also identified as important habitats in the

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HwLDP and Policy 51 (Trees and Development) seeks the protection of existing hedges, trees and woodlands on and around development sites. The Highland Council will seek to secure additional tree/hedge planting within a tree planting or landscape plan to compensate removal.

- 11.3.20 Policy 52 (Principle of Development in Woodland) of the HwLDP requires applicants to demonstrate that a woodland site has capacity to accommodate any proposed development. There is a strong presumption in favour of protecting woodland resources, and this is stronger where the development affects inventoried woodland. Development resulting in their loss will only be supported where they offer clear and significant public benefit. Compensatory planting will usually be required where woodland will be removed.

11.4 Baseline Conditions

- 11.4.1 The baseline conditions described in this section have been determined through a combination of desk-study, review of historical biological data sources, consultation and through field surveys. The information is set out as it relates to the Inverness to Gollanfield and Nairn Bypass sections separately.

Inverness to Gollanfield: Desk-study

Statutory Designated Sites

- 11.4.2 Six statutory designated sites lie within the study area (please refer to Table 11.4 and Figure 7.2), all of which have been designated for their biological interest, these comprise:

- Inner Moray Firth SPA;
- Inner Moray Firth Ramsar site;
- Moray Firth SAC;
- Loch Flemington SPA;
- Kildrummie Kames SSSI; and
- Longman and Castle Stuart Bays SSSI.

- 11.4.3 Longman and Castle Stuart Bays SSSI forms part of the Inner Moray Firth SPA/Ramsar site and only parts of these sites fall within the study area. Loch Flemington SPA falls within the Kildrummie Kames SSSI and only a portion of both these sites falls within the study area. The Inner Moray Firth SPA and Ramsar site are coincident and both are designated for supporting important populations of seabirds. The Ramsar site is additionally designated for supporting a variety of important wetland habitats.

Table 11.4 Statutory designated sites (Inverness to Gollanfield)

Inner Moray Firth SPA and Ramsar site (UK9001624, UK13025)			
Grid Reference	Size (ha)	Designation	Further information
NH 672 528, 580 480, 800 590, 705 473, 730 500	2,339	Cited for their breeding and non-breeding bird interest, and littoral and supralittoral habitats.	This site comprises the Beaully Firth and Inverness Firth. It contains extensive intertidal flats and smaller areas of saltmarsh. The rich invertebrate fauna of the intertidal flats, with beds of eelgrass <i>Zostera</i> spp., glasswort <i>Salicornia</i> spp., and <i>Enteromorpha</i> algae, provide important food sources for large numbers of wintering and migrating waterbirds (geese, ducks and waders). The boundary of the SPA follows those of the Beaully Firth SSSI, Munloch Bay SSSI, Longman and Castle Stuart Bays SSSI and Whiteness Head SSSI (JNCC, 2013b; SNH, 1999).

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Moray Firth SAC (UK0019808)			
Grid Reference	Size (ha)	Designation	Further information
NH 976 821	151,347	Cited for its population of bottlenose dolphins (<i>Tursiops truncatus</i>) and for subtidal sandbanks.	The Moray Firth SAC is a marine site with subtidal sandbanks (JNCC, 2013c).
Loch Flemington SPA (UK9001691)			
Grid Reference	Size (ha)	Designation	Further information
NH 810 520	21	Cited for its aggregation of breeding Slavonian grebe (<i>Podiceps auritus</i>).	Loch Flemington SPA is a small, shallow, eutrophic loch formed in a kettlehole situated among a suite of fluvioglacial landforms. The loch has a limited exchange of water with no obvious outlet, and supports a largely undisturbed aquatic plant community associated with eutrophic conditions, including diverse submerged and emergent vegetation and sedge fen. The loch used to support an important and highly productive breeding population of Slavonian grebe (JNCC, 2013d). However, management aimed at enabling the site to reach all its conservation targets, including Slavonian grebe habitat quality, has been carried out. This is continuing to bring the site back into good condition.
Kildrummie Kames SSSI (site code 845)			
Grid Reference	Size (ha)	Designation	Further information
NH 830 530	643	Notified for: open water transition fen, eutrophic lochs and juniper (<i>Juniperus communis</i>) scrub. One of the eutrophic lochs referred to in the citation Loch of the Clans, falls outside the study area.	This site is important for its glacial landforms and biological features. Loch Flemington, which is located within the boundary of the SSSI, is a good example of a shallow, nutrient rich water body and the Loch of the Clans demonstrates the transition between shallow open water to sedge swamp to willow carr. In addition, the site supports good stands of juniper scrub with plants up to 5m high forming a thick cover on the south-west ridges of the site (SNH, 2009).
Longman and Castle Stuart Bays SSSI (site code 1675)			
Grid Reference	Size (ha)	Designation	Further information
NH 715 496	424	Notified for mudflats, saltmarshes, eelgrass beds and wintering waterfowl and waders.	This site includes extensive areas of intertidal mudflats which provide rich feeding grounds for wintering wildfowl and waders and an important roosting area for these birds. There are approximately 6ha of ungrazed saltmarsh in a sheltered bay 2km east of Alturlie Point, and there are substantial areas of pioneer plant species typical of northern firths, such as the nationally scarce dwarf eelgrass (<i>Zostera angustifolia</i>) and narrow-leaved eelgrass (<i>Zostera noltii</i>) (SNH, 2008a).

Non-Statutory Designated Sites

11.4.4 There are a number of non-statutory designated sites located within the study area, including sites on the AWI and a site classed as an Important Bird Area (IBA) (Moray Basin Firths and Bays IBA).

11.4.5 The Moray Basin, Firths and Bays IBA was assessed in 2007 and covers an area of 16,262ha (BirdLife International, 2013). The site is a complex area of coastline and estuary, including Loch Fleet, Dornoch Firth, Loch Eye, Cromarty Firth, Beaully Firth and Moray Firth (south shore including Burghead and Spey Bay), stretching from Helmsdale south to Spey Bay. The areas form an integral unit that is important for populations of wintering and passage wildfowl and for breeding cormorant (*Phalacrocorax carbo*). The Inner Moray Firth SPA and Ramsar site falls entirely within the IBA.

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- 11.4.6 Eight contiguous areas of AWI woodland were identified within the study area (SNH, 2008b). All had been identified as Long-established Woodlands of Plantation Origin (Category 2b). A description of these woodlands is provided in Table 11.5, and their locations are shown on Figure 11.1 (as per AWI reference).

Table 11.5: AWI woodlands (Inverness to Gollanfield)

Reference	Description
AWI 01	Broad-leaved woodland.
AWI 02	Coniferous plantation woodland.
AWI 03	Tornagrain/Kerrowaird Wood. Coniferous plantation woodland dominated by Scots pine.
AWI 04	Mature Scots pine plantation woodland partly severed by airport road.
AWI 05	Mature Scots pine plantation woodland.
AWI 06	Coniferous plantation woodland.
AWI 07	Area of felled Scots pine plantation, some small broad-leaved species remaining.
AWI 08	Coniferous plantation woodland dominated by Scots pine.

- 11.4.7 Local nature conservation sites have been designated by The Highland Council, but at the time of writing (August 2014) these are still being mapped and refined. Consequently, no information is available.

SEPA Water Environment Condition Assessments

- 11.4.8 There are a number of watercourses within the study area and for consistency of this assessment with Chapter 13 (Road Drainage and the Water Environment) of this report, these are referenced as Surface Water Features (SWFs). Further information on these SWFs and their location is provided in Chapter 13 of this report and on Figures 13.1 to 13.4.
- 11.4.9 Of the SWFs in the study area, three are monitored by SEPA for water quality which is an important factor in determining the likelihood of a watercourse supporting ecological features. The SWFs that are monitored by SEPA along with their classification (SEPA, 2010a, 2010b, 2010c and 2010d) are detailed in Table 11.6.

Table 11.6 SEPA Classification of SWFs (Inverness to Gollanfield)

SWF	Overall Ecological Status (SEPA Classification)	Notes
SWF 03: Cairnlaw Burn	Moderate	-
SWF 12: Rough Burn	Good	-
SWF 16: Tributary of Ardersier Burn	Moderate	Upstream of the A96
	Bad	Downstream of the A96

Intertidal Habitats

- 11.4.10 The Coastal and Marine Resource Atlas (MAGIC, 2013) indicated that the intertidal areas within the study area consisted of sand and gravel, and mud and gravel.

Protected Species

- 11.4.11 A search of NBN gateway was conducted for protected species using a short list of priority species identified with reference to the Inverness and Nairn LBAP (Inverness and Nairn Biodiversity Group, 2004). The search identified the presence of the following protected species both within the study area and in a radius of up to 10km from the study area; bats (various species), badger, otter, pine marten, red squirrel, Scottish wildcat (*Felis silvestris*); and great crested newt (*Triturus cristatus*).

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11.4.12 Historical field and desk-based surveys also identified the presence of a number of protected species within the study areas that were defined for their assessments. These included bats, badger, great crested newt, otter, pine marten and red squirrel (Atkins, 2008; WSP Energy and Environment, 2009; Jacobs, 2010 and Applied Ecology, 2011a and 2011b).

11.4.13 A summary of these historical records for each of these species within or near to the boundary of the study area is provided in Table 11.7.

Table 11.7: Summary of historical records for protected species

Protected Species	Historical Data	Historical Records
Bats	NBN	There are a small number of NBN records for the presence of bats within the study area. Brown long-eared bat (<i>Plecotus auritus</i>) has been recorded north of Tornagrain and Natterer's bat (<i>Myotis nattereri</i>) has been recorded near Gollanfield. Just outside of the study area, Common pipistrelle (<i>Pipistrellus pipistrellus</i>) and soprano pipistrelle (<i>P. pygmaeus</i>) have been recorded in the Raigmore Interchange area of Inverness.
	Atkins (2008)	During great crested newt surveys at Redhill Farm water retention pond north of the A96 and at Culbair water retention pond east of Tornagrain Wood, incidental sightings of Daubenton's bats (<i>Myotis daubentonii</i>) were made.
	WSP Energy and Environment (2009)	Common and soprano pipistrelle bats were recorded foraging and commuting in the Stratton area north of Smithton. Four non-breeding roost sites in buildings were also recorded (specific location information not available).
	Applied Ecology (2011a and 2011b)	Common and soprano pipistrelle bats were recorded at Mid Coul near Tornagrain, with a small roost identified in the farmhouse. A small maternity brown long-eared bat roost was recorded in the warehouse/workshop at the same location.
Badger	-	Please refer to Part 6 (Appendices), Appendix A11.3 (Impact Assessment Tables (confidential) of this report, for results of the desk study for badger.
Great crested newt	NBN	Three records of great crested newt were found within the study area. One near Redhill Farm and two at Loch Flemington.
	Atkins (2008)	Great crested newts were confirmed to be present in Redhill Farm water retention pond north of the A96. This is the same location as indicated by the NBN records.
	SNH (2014)	Through consultation, SNH indicated that great crested newts have been recorded at Loch Flemington.
Otter	-	Please refer to Part 6 (Appendices), Appendix A11.3 (Impact Assessment Tables (confidential) of this report, for results of the desk study for otter.
Pine marten	NBN	NBN records indicate pine marten have been recorded near Brackley and just outside of the study area near the Raigmore Interchange, both of which are road traffic accidents (RTAs).
	Atkins (2008)	A potential pine marten scat was identified in Tornagrain wood. Despite the difficulty in distinguishing pine marten scat from that of other mammals there was a high level of confidence in the findings.
Red squirrel	NBN	Red squirrels have been recorded in woodland at Balloch, in Tornagrain Wood and in woodland at Brackley. They have also been recorded just outside of the study area near the Raigmore Interchange.
	Atkins (2008)	Evidence indicating the presence of red squirrel was identified in Tornagrain Wood.
Scottish wildcat	NBN	No records for Scottish wildcat within the study area. The nearest record for this species dated from 1994 and was approximately 3km to the south of the study area near Dalroy.

Other Species of Interest

11.4.14 The vascular plant species annual knawel (*Scleranthus annuus*) and corn spurrey (*Spergula arvensis*) were recorded in the Tornagrain area in 2006 (Applied Ecology, 2011a and

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2011b). Annual knawel is a SBL species and is classified as endangered (Cheffings & Farrell, 2005); corn spurrey is classed as vulnerable. Surveys in 2011 confirmed the presence of corn spurrey, indicating an increase, but annual knawel was not found (Applied Ecology 2011a and 2011b).

- 11.4.15 Information received by Jacobs (2010) identified the presence of three species of butterfly and moth of conservation interest in the area. These include green-brindled crescent (*Allophyes oxyacanthae*), knot grass (*Acronicta rumicis*) and small blue (*Cupido minimus*). All three species are on the SBL although conservation action has not been identified as necessary. The small blue is also a LBAP species.

Local Biodiversity Action Plan (LBAP)

- 11.4.16 The study area for the route options is covered by the regional Highland Biodiversity Action Plan (Highland Biodiversity Partnership, 2010). This contains a number of local plans for each of The Highland Council's administrative areas of which the Inverness and Nairn LBAP is relevant to the study area (Inverness and Nairn Biodiversity Group, 2004).
- 11.4.17 A full list of local priority habitats and species from the Inverness and Nairn LBAP can be found in Part 6 (Appendices), Appendix A11.1 (Legislation and Conservation Status) of this report. It includes 34 habitats in six broad groups, 26 plants (vascular plants, bryophytes and lichens), 21 mammals, 62 birds and 14 species of fish.

Inverness to Gollanfield: Field Survey

- 11.4.18 The results of the extended Phase 1 habitat survey are presented below and are shown on Figure 11.1. Target notes can be found in Part 6 (Appendices), Appendix A11.2 (Extended Phase 1 Habitat Survey – Target Notes) of this report. This includes data collected during the 2010 and 2013 extended Phase 1 habitat surveys (refer to paragraphs 11.2.8 and 11.2.9).

Statutory Designated Sites

Loch Flemington SPA

- 11.4.19 Terrestrial habitats associated with the SPA that fall within the study area consisted mainly of poor semi-improved grassland and scrub, with small areas of marshy grassland. Small areas of emergent vegetation (large sedge species, *Carex* spp.) were evident.

Kildrummie Kames SSSI

- 11.4.20 Apart from the standing water that also forms Loch Flemington SPA, the area of Kildrummie Kames SSSI within the study area consisted mainly of improved grassland, poor semi-improved grassland, marshy grassland and arable land. There were also areas of dense scrub and plantation woodland.
- 11.4.21 All the dense scrub surveyed consisted largely of gorse (*Ulex europaeus*). No juniper (one of the designated features of the SSSI) was identified within the surveyed areas.

Terrestrial Habitats

- 11.4.22 The majority of the study area is utilised as agricultural land comprising arable fields, improved grassland and poor semi-improved grassland. Grassland was mainly for grazing, for sheep and cattle, although some areas were horse grazed or kept for pigs.
- 11.4.23 Areas of marshy grassland and swamp were present within the study area, mainly adjacent to the airport. They were generally dominated by soft-rush (*Juncus effusus*).

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- 11.4.24 There were a number of areas of distinct woodland within the study area comprising coniferous, mixed or broad-leaved plantation or coniferous or broad-leaved semi-natural woodland. Coniferous plantation woodlands were dominated by mature Scots pine (*Pinus sylvestris*), although some areas were dominated by non-native species, for example, Sitka spruce (*Picea sitchensis*). Broad-leaved woodland areas contained a variety of species, although sycamore (*Acer pseudoplatanus*) was generally common throughout.
- 11.4.25 The majority of the field boundaries throughout the study area consisted of post and wire fences. No hedgerows were identified, although lines of scrub, mainly gorse were present along some boundaries. Standard trees, mainly sycamore, ash (*Fraxinus excelsior*) and oak (*Quercus* sp.), were also occasionally recorded.

Freshwater Habitats

- 11.4.26 Within the study area there were a number of watercourses and water bodies and many of these have the potential to maintain fish populations. There were also a number of small ponds, and one loch (Loch Flemington) which only partially lies within the study area.
- 11.4.27 Four ponds were identified at Redhill (Target Note 15), one pond west of Newton of Petty (Target Note 16) and one pond at Tornagrain Wood (Target Note 21).

Plants of Conservation Interest

- 11.4.28 No plants classed as rare or scarce were recorded during the survey. Two species identified as local priority species in the Inverness and Nairn LBAP (Inverness and Nairn Biodiversity Group, 2004) were recorded within the study area; aspen (*Populus tremula*) and bluebell (*Hyacinthoides non-scripta*). Bluebell was recorded within the grounds of a derelict hotel west of Culloden (Target Note 9).

Invasive Non-native Plant Species (INNS)

- 11.4.29 A number of INNS plant species were recorded within the study area. A single stand of Japanese knotweed (*Fallopia japonica*) was recorded at Milton near the shore line (Target Note 10). Himalayan balsam (*Impatiens glandulifera*) was prevalent on watercourses throughout the study area, including SWF 02 (Scretan Burn) and SWF 03 (Cairnlaw Burn) and many of the smaller watercourses (Target Notes 3, 6, 7, 9, 10, 11 and 13). Giant hogweed (*Heracleum mantegazzianum*) was recorded in woodland east of Milton, on the south side of the A96 (Target Note 14).

Protected Species

- 11.4.30 Field signs indicating the presence of protected species were recorded at a number of locations throughout the study area. Details of these observations are provided in Table 11.8.

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Table 11.8: Summary of observations from field surveys for protected species (Inverness to Gollanfield)

Protected Species	Historical Records	Target Note Reference
Bats	No evidence of bats was found during the surveys. However, a large number of mature trees across the study area were identified as having some potential for roosting bats, particularly at a derelict hotel near Culloden.	Target Note 1, 2, 8, 9, 14 and 16.
Badger	Please refer to Part 6 (Appendices), Appendix A11.3 (Impact Assessment Tables (confidential) of this report, for results of the field surveys for badger.	-
Great crested newt	No evidence of great crested newt was recorded during the field surveys. However, a number of water bodies were recorded across the study area, some of which might have potential as great crested newt breeding sites. This included Loch Flemington.	Target Note 15 and 16.
Otter	Please refer to Part 6 (Appendices), Appendix A11.3 (Impact Assessment Tables (confidential) of this report, for results of the field surveys for otter.	-
Pine marten	A male pine marten was recorded dead on the road on the A96 at Seafield. No further evidence of this species was recorded.	Target Note 4.
Red squirrel	No evidence of red squirrels was recorded during the field surveys.	-
Scottish wildcat	No observations of Scottish wildcat were made during the field surveys.	-

Birds

- 11.4.31 Sand martin (*Riparia riparia*) has been recorded as nesting at a disused quarry east of Tornagraim (Target Note 24).
- 11.4.32 During the 2010 survey, flocks of birds were recorded roosting, foraging or loafing on the Moray Firth and in fields adjacent to the A96. Birds recorded on the Moray Firth included Eurasian curlew (*Numenius arquata*), oystercatcher (*Haematopus ostralegus*), redshank (*Tringa totanus*) and wigeon (*Anas penelope*). These species are qualifying features of the Inner Moray Firth SPA. Other species observed included mallard (*Anas platyrhynchos*), pintail (*Anas acuta*) and American wigeon (*Anas americana*). Two Inner Moray Firth SPA qualifying species (greylag geese (*Anser Anser*) and oystercatcher) were recorded in fields adjacent to the A96 as well as unidentified gull species and northern lapwing (*Vanellus vanellus*) (Jacobs, 2010).

Other Species of Interest

- 11.4.33 During the 2013 survey, signs of mink (*Neovison vison*) (spraints and prints) were identified on SWF 02 (Scretan Burn) (Target Note 5) and on the SWF 03 (Cairnlaw Burn) (Target Note 12).
- 11.4.34 Also during the 2010 surveys, a brown hare (*Lepus europaeus*) was recorded in coniferous plantation woodland near Inverness Airport (Target Note 25).

Nairn Bypass: Desk-study

Statutory Designations

- 11.4.35 One statutory designated site lies within the study area; the Kildrummie Kames SSSI. However, for five other designated sites within close proximity to the study area, it was determined that there was the potential for impacts to occur through an assessment of possible effects pathways. These include:

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- Inner Moray Firth SPA;
- Inner Moray Firth Ramsar site;
- Moray and Nairn Coast SPA;
- Moray and Nairn Coast Ramsar site; and
- Moray Firth SAC.

11.4.36 Details of the Kildrummie Kames SSSI, Inner Moray Firth SPA/Ramsar and Inner Moray Firth SAC are provided above within the Inverness to Gollanfield baseline section (refer to Table 11.4). The Moray and Nairn Coast SPA and Ramsar are designated for providing foraging grounds for breeding osprey. It also supports an internationally important wintering population of bar-tailed godwit, greylag goose and redshank and an assemblage of over 20,000 waterfowl. The Ramsar site also supports a variety of important wetland features.

Non-statutory Designations

11.4.37 Non-statutory designated sites located within the study area comprised of sites on the AWI.

11.4.38 Fifteen contiguous areas of AWI woodland were identified within the study area (SNH, 2008b). Of these, one area is identified as Long-established Woodlands of Semi Natural Origin (Category 2a), 11 areas are identified as Long-established Woodlands of Plantation Origin (Category 2b) and two (along the River Nairn and at Boath House Hotel) are classed as 'Other woodland' (Category 3). A description of these woodlands is provided in Table 11.9, and their locations are shown on Figure 11.1.

Table 11.9: AWI woodlands (Nairn Bypass)

Reference	Description	AWI Category
AWI 09	Delnies Wood - scots pine plantation woodland, with small pockets of larch (<i>Larix decidua</i>) and sycamore. Large area now an operating gravel pit.	2b
AWI 10	Mature broad-leaved/coniferous semi-natural/plantation woodland.	2a
AWI 11	Mature broad-leaved semi-natural woodland.	3
AWI 12	Crook Plantation - coniferous plantation woodland dominated by Scots pine.	2b
AWI 13	Coniferous plantation woodland dominated by Scots pine.	2b
AWI 14	Bognafauran Wood - coniferous plantation woodland dominated by Scots pine.	2b
AWI 15	Russell's Wood - coniferous plantation woodland. Some areas dominated by Sitka spruce and other areas by Scots pine. Partly felled.	2b
AWI 16	Craig's Wood - coniferous and broad-leaved plantation woodland.	2b
AWI 17	Newmill Belts and adjacent woodland - mainly felled woodland, some broad-leaved species left. Partly built on.	2b
AWI 18	Boath House Hotel - broad-leaved woodland.	3
AWI 19	Knockoudie Wood - coniferous plantation woodland.	2b
AWI 20	Policy Belts, Kinsteary House - mature broad-leaved/coniferous semi-natural/plantation woodland.	2b
AWI 21	Brae of Brightmony - mixed plantation woodland.	2b
AWI 22	Wester Hardmuir Wood - mature broad-leaved/coniferous semi-natural/plantation woodland. Some felled areas with scrub.	2b
AWI 23	Hardmuir Wood - coniferous plantation woodland dominated by Scots pine.	2b

11.4.39 Local nature conservation sites have been designated by The Highland Council, but at the time of writing (August 2014) these are still being mapped and refined. Consequently, no information is available.

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SEPA Water Environment Condition Assessments

- 11.4.40 There are a number of watercourses within the study area and for consistency of this assessment with Chapter 13 (Road Drainage and the Water Environment) of this report, these are referenced as Surface Water Features (SWFs). Further information on these SWFs and their location is provided in Chapter 13 of this report and on Figures 13.5 to 13.9.
- 11.4.41 Of the SWFs in the study area, three are monitored by SEPA for water quality (SEPA, 2010e, 2010f and 2010g). Details of these SWFs are provided in Table 11.10.

Table 11.10: SEPA classification of watercourses (Nairn Bypass)

Watercourse	Current Classification Status	Notes
SWF 19: Balnagowan Burn	Bad	-
SWF 23: River Nairn	Good	Classed as a salmonid river
SWF 26: Auldearn Burn	Moderate	Classed as a salmonid river

Protected Species

- 11.4.42 A search of NBN gateway and historical reports was conducted for protected species using a short list of priority species that were identified with reference to the Inverness and Nairn LBAP (Inverness and Nairn Biodiversity Group, 2004). The search identified the presence of the following protected species within the study area and in a 10km radius of the study area; bats (various species), otter, pine marten, red squirrel, Scottish wildcat, and great crested newt.
- 11.4.43 A historical record was also identified for watervole (dating from 1969) located within the 10km grid square (NH85) that covers the Nairn area.
- 11.4.44 A summary of the results of the desk-based survey of each of these species within or near to the boundary of the study area is provided in Table 11.11.

Table 11.11: Summary of historical records for protected species

Protected Species	Historical Data	Historical Records
Bats	NBN	No NBN records for bats within the study area. However, there was one record of brown long-eared bat in the 1km square just south of the study area north-west of Piperhill.
	(RSK Environmental Ltd, 2010).	Bat activity (common pipistrelle and Daubenton's bat) was recorded along the River Nairn. Common pipistrelles were also recorded commuting along woodland edges between Cawdor Road and Balblair Road in the direction of the River Nairn.
Badger	-	Please refer to Part 6 (Appendices), Appendix A11.3 (Impact Assessment Tables (confidential) of this report, for results of the desk study for badger.
Great crested newt	NBN	One record of great crested newt was found within the study area at Meikle Kildrummie.
Otter	-	Please refer to Part 6 (Appendices), Appendix A11.3 (Impact Assessment Tables (confidential) of this report, for results of the desk study for otter.
Pine marten	NBN	NBN records indicate pine marten have been recorded at Howford Bridge over the River Nairn and at Auldearn, both of which are RTAs.
Red squirrel	NBN	Extensive records of red squirrel in and around Nairn. NBN identified records of red squirrels in Delnies Wood, Moss-side, Howford along the River Nairn, Firhall, Russell's Wood, Auldearn, Newmill and Gallows Hill.
Scottish wildcat	NBN	No records for Scottish wildcat within the study area. The nearest record for this species was over 6km to the east of the study area near Forres.

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Other Species of Interest

- 11.4.45 Atlantic salmon (*Salmo salar*), brown trout (*Salmo trutta*), European eel (*Anguilla anguilla*), and brook lamprey (*Lampetra planeri*) have been recorded within the Nairn catchment (Laughton, 2011). Sea lamprey (*Petromyzon marinus*) and river lamprey (*Lampetra fluviatilis*) may also be present.
- 11.4.46 Salmon catches have generally been low in the River Nairn, but have increased in recent years whilst trout catches have declined (Laughton, 2010).
- 11.4.47 It should also be noted that the INNS North American signal crayfish (*Pacifastacus leniusculus*) has been recorded in a tributary of the River Nairn (SNH, 2014).

Local Biodiversity Action Plan (LBAP)

- 11.4.48 The study area for the route options is covered by the regional Highland Biodiversity Action Plan (Highland Biodiversity Partnership, 2010). Within that there are a number of local plans for each of The Highland Council's administrative areas, of which the Inverness and Nairn LBAP is pertinent to the study area (Inverness and Nairn Biodiversity Group, 2004).
- 11.4.49 A full list of local priority habitats and species from the Inverness and Nairn LBAP can be found in Part 6 (Appendices), Appendix A11.1 (Legislation and Conservation Status) of this report. It includes 34 habitats in six broad groups, 26 plants (vascular plants, bryophytes and lichens), 21 mammals, 62 birds and 14 species of fish.

Nairn Bypass: Fields Survey

- 11.4.50 The results of the extended Phase 1 habitat survey are presented on Figure 11.1. Target notes can be found in Part 6 (Appendices), Appendix A11.2 (Extended Phase 1 Habitat Survey – Target Notes) of this report. This includes data collected during the 2010 and 2013 extended Phase 1 habitat surveys (refer to paragraphs 11.2.8 and 11.2.9).

Statutory Designated Sites

- 11.4.51 The area of Kildrummie Kames SSSI that is within the study area consisted mainly of improved grassland, poor semi-improved grassland, marshy grassland and arable land. There were also areas of dense scrub, wet woodland and swamp habitat. In addition, two ponds were identified. All the dense scrub surveyed consisted largely of gorse. No juniper (one of the designated features of the SSSI) was identified within the surveyed areas.

Terrestrial Habitats

- 11.4.52 The study area is utilised as agricultural land comprising arable fields, improved grassland and poor semi-improved grassland.
- 11.4.53 Marshy areas within the Kildrummie Kames SSSI were richer, containing a wider variety of species, including large sedge (*Carex* spp.) and cottongrass species (*Eriophorum* spp.), than other marshy grassland areas.
- 11.4.54 In addition, two areas of wet heath (*Sphagnum*) bog were identified (Target Note 28) adjacent to the Kildrummie Kames SSSI and the railway line. Heather (*Calluna vulgaris*) and cross-leaved heath (*Erica tetralix*) were common, and together with bog-moss (*Sphagnum* species), were dominant in some areas. Cottongrass species, bog asphodel (*Narthecium ossifragum*) and round-leaved sundew (*Drosera rotundifolia*) were also present.
- 11.4.55 There were a number of woodland areas within the study area comprising coniferous, mixed or broad-leaved plantation or coniferous or broad-leaved semi-natural woodland.

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Freshwater Habitats

- 11.4.56 A number of watercourses and water bodies were recorded in the study area and many of these have the potential to maintain fish populations. There were also a number of small ponds within the study area; within Kildrummie Kames SSSI (Target Note 29), within community woodland adjacent to the A96 (Target Note 32), within marshy grassland south of Delnies Wood (Target Note 36), at Newton of Park (Target Note 64), fishing ponds at Newmill (Target Note 65), at Kinnudie Farm (Target Note 67), at Kinstearly House (Target Note 81 and 83) and at Garblies (Target Note 87).

Plants of Conservation Interest

- 11.4.57 No plants classed as rare or scarce were recorded during the field surveys. The nationally uncommon orchid creeping Lady's-tresses (*Goodyera repens*) was recorded in woodland at Blar nam Fiadh (Target Note 28) and in an area of coniferous plantation woodland (Target Note 48).
- 11.4.58 Three species identified as local priority species in the Inverness and Nairn LBAP (Inverness and Nairn Biodiversity Group, 2004) were recorded within the study area including bluebell, whitebeam (*Sorbus aria*) and juniper. Bluebell was recorded in woodland along the River Nairn (Target Note 44), at Newton of Park (Target Note 64), in woodland at Auldearn (Target Note 71), in woodland around Kinstearly House (Target Note 80 and 82) and in Roundall Wood (Target Note 86). Whitebeam was recorded in Wester Hardmuir Wood (Target Note 88) and juniper was recorded in Hardmuir Wood (Target Note 91).

Invasive Non-native Plant Species (INNS)

- 11.4.59 A number of INNS plant species were recorded within the study area. Japanese knotweed, Himalayan balsam and giant hogweed were all recorded on the banks of the River Nairn (Target Notes 37, 38, 39, 41, 43, 44 and 45). Giant hogweed was recorded at Park Farm Cottage (Target Note 57), near Househill (Target Note 59) and at Broombank (Target Note 84). Himalayan balsam and giant hogweed was recorded along the Auldearn Burn (Target Notes 66, 68, 69, 70, 72, 74, 76, 78 and 79). There was also Japanese knotweed recorded around a pond at Kinstearly House (Target Note 81).

Protected Species

- 11.4.60 Field signs indicating the presence of protected species were recorded at a number of locations throughout the study area during the field surveys. Details of these observations are provided in Table 11.12.

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Table 11.12: Summary of observations from field surveys for protected species (Nairn Bypass)

Protected Species	Historical Records	Target Note Reference
Bats	No evidence of bats was found during the field surveys. However, a large number of mature trees across the study area were identified as having some potential for roosting bats, particularly around Kinstearly House and north of Auldearn. In addition, the Kinstearly House landowner indicated that bats (species unknown) had been found inside the property.	Target Note 44, 46, 71, 77, 81, 82 and 86.
Badger	Please refer to Part 6 (Appendices), Appendix A11.3 (Impact Assessment Tables (confidential) of this report, for results of the field study on badger.	-
Great crested newt	No evidence of great crested newt was recorded during the field surveys. However, a number of water bodies were recorded across the study area, some of which might have potential as great crested newt breeding sites.	-
Otter	Please refer to Part 6 (Appendices), Appendix A11.3 (Impact Assessment Tables (confidential) of this report for results of the field study on otter.	-
Pine marten	A possible pine marten scat was recorded in Scots pine woodland south of Nairn at Crook.	Target Note 48.
Red Squirrel	During surveys in 2010, one chewed cone was found in coniferous plantation woodland adjacent to the A96 near Delnies. Feeding sites were recorded in coniferous plantation woodlands to the south-east of Nairn. In addition, a sighting of a red squirrel was made in coniferous plantation woodland to the south-east of Nairn.	Target Note 34, 48, 50, 52, 54, 61, 64, 67 and 81.
Scottish wildcat	None within the study area.	-

Birds

- 11.4.61 Over 500 herring gulls (*Larus argentatus*) were recorded in a field at Wester Delnies Farm (Target Note 33).
- 11.4.62 Three male reed buntings (*Emberiza schoeniclus*) and two male skylarks (*Alauda arvensis*) were recorded singing near Moss-side (Target Note 36). Yellow hammers (*Emberiza citrinella*) were heard singing throughout agricultural areas.
- 11.4.63 Common sandpiper (*Actitis hypoleucos*), a spotted flycatcher (*Muscicapa striata*) and willow warbler (*Phylloscopus trochilus*) were recorded along the banks of the River Nairn (Target Note 37 and 44).
- 11.4.64 A buzzard (*Buteo buteo*) nest was recorded in woodland at Drumalan (Target Note 47) and in Hardmuir Wood (Target Note 91). A pair of buzzards and their nest were recorded in Russell's Wood (Target Note 60).
- 11.4.65 A rookery was recorded at Auldearn (Target Note 92). Also, a song thrush (*Turdus philomelos*), linnet (*Carduelis cannabina*), spotted flycatcher and little grebes (*Tachybaptus ruficollis*) were recorded south of Auldearn within the grounds of Kinstearly House (Target Note 81).
- 11.4.66 A treecreeper (*Certhia familiaris*) and great spotted woodpecker (*Dendrocopos major*) were recorded in Wester Hardmuir Wood (Target Note 88).

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11.4.67 In 2010, snipe (*Gallinago gallinago*) were recorded in marshy grassland habitat within Kildrummie Kames SSSI and to the south of Delnies Wood (Target Note 36).

11.4.68 In 2013, a barn owl (*Tyto alba*) was also seen flying over Auldearn village.

Other Species of Interest

11.4.69 A mink raft was recorded on a tributary of the River Nairn (Target Note 37) and also on a pond at Garblies (Target Note 87).

11.4.70 During surveys in 2010 mink prints and scat were observed adjacent to the Howford Bridge on the River Nairn (Target Note 40).

11.5 Impact Assessment: Introduction

11.5.1 This section provides an introduction to the impact assessment of the route options within Section 11.6 (Impact Assessment: Inverness to Gollanfield) and Section 11.7 (Impact Assessment: Nairn Bypass).

11.5.2 The potential impacts detailed in Sections 11.6 and 11.7 are reported in line with the following:

- Potential impacts represent those which could result from the construction or operation of the route options.
- Potential impacts are described without mitigation, and therefore represent a worst-case scenario. Potential mitigation measures are considered in Section 11.9 (Potential Mitigation). Mitigation to reduce these impacts will be developed for the preferred option during the DMRB Stage 3 Assessment.
- The assessment of impacts includes those that are common to all and those that vary between the route options. The potential impacts that are common to all have been based on the level of significance for a given receptor in a specific location.
- For each route option, the estimated amount of habitat lost as a result of the operation of the route options is provided. This includes areas which are predicted to be permanently lost as a result of the operation of a route option, but not necessarily under the actual footprint of the route option. It does not include areas (temporary loss) that may be required to facilitate construction, such as locations of compounds, storage area, borrow pits, etc. which cannot at this stage be predicted.
- Due to the number of ecological receptors potentially impacted by each of the route options, only impacts of Moderate or above significance have been reported in the assessment tables below. This has been done to highlight the key impacts of the route options. Full details of the impact assessment are included within Part 6 (Appendices), Appendix A11.3 (Impact Assessment Tables (confidential): Badger and Otter) and A11.4 (Impact Assessment Tables (non-confidential)) of this report.

11.5.3 The Kildrummie Kames SSSI is designated for its biological and geological features. However, in the vicinity of the route options, only the geological features are present (SNH, pers comm. meeting 8 October 2013 (SNH, 2013c)). As a result, no impacts on the cited biological features are predicted. Potential impacts on the geological features of the site are assessed in Chapter 12 (Geology and Soils) of this report and are not discussed further in this chapter.

11.5.4 To provide context to the impact assessment, an overview of the potential impacts during the construction and operation of road schemes in relation to terrestrial and freshwater ecological receptors are provided in Table 11.13.

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Table 11.13: Potential impacts on terrestrial and freshwater ecological receptors

Potential Impact	Activity/Cause
Direct loss of habitat	Land-take. Water pollution. Dust and air pollution. Change to hydrology.
Direct mortality	Land-take. Collision with traffic. Alien species transfer*. Disease transfer (e.g. red leg disease in amphibians). Water pollution.
Habitat Fragmentation	Land-take. Noise and vibration. Effects of temporary construction lighting.
Loss of diversity	Alien species transfer (botanical)*. Dust and air pollution. Effects of road spray. Water pollution. Changes to hydrology.
Disturbance	Noise and vibration. Effects of temporary construction lighting. Land-take.

*Alien species are those not native to the UK and have an invasive nature that reduces ecological diversity of habitats. Examples of alien faunal species include American mink (*Neovison vison*) and North American signal crayfish. Examples of floral species include Japanese knotweed, Himalayan balsam, giant hogweed and should not to be confused with injurious weeds (Weeds Act, 1959) that are invasive, but native to the UK (e.g. spear thistle (*Cirsium vulgare*), creeping or field thistle (*Cirsium arvense*), ragwort (*Senecio jacobaea*)).

- 11.5.5 It is important to recognise that potential impacts may interact (e.g. habitat loss during construction could potentially result in disturbance and habitat fragmentation) and the resulting combination of impacts may, through synergistic effects, increase the overall adverse impact (Luell et al., 2003).

11.6 Impact Assessment: Inverness to Gollanfield

- 11.6.1 This section describes the impacts of Moderate and above significance that are specific to the Inverness to Gollanfield section. Impacts that are common to all route options within this section are discussed, followed by those impacts which are additional to these, for each route option.

Impacts Common to all Route Options

- 11.6.2 This section provides details on the potential impacts of Moderate or above significance that are common to all route options during construction and operation for designated sites, terrestrial habitats and species and freshwater habitats and species.

Designated Sites

- 11.6.3 During construction, there is the potential for the following impacts on designated sites:
- Pollution of the Inner Moray Firth SPA and Ramsar site. This impact is determined to be a result of the potential for construction runoff and accidental spills and is reversible, recurring, short-term and possible. This potential impact is assessed as being of Major significance.
 - Disturbance to qualifying species in their use of SPA supporting habitat (e.g. agricultural land) and the intertidal area. This impact is determined to result in a certain, direct and

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indirect long-term effect on qualifying species, or on the foraging resource of qualifying species. This potential impact is assessed as being of Major significance.

- Pollution of the Moray Firth SAC as a result of the potential for reversible, recurring, short-term and possible runoff from construction. This potential impact is assessed as being of Major significance.
- Disturbance to bottlenose dolphins as a result of noise and vibration from construction activities. These potential impacts are determined to be certain, direct and indirect long-term effects on qualifying species, or on the foraging resource of qualifying species. These potential impacts are assessed as being of Major significance.
- Disturbance to Slavonian grebe, a qualifying species of Loch Flemington SPA. This species may be disturbed due to potential noise impacts from the construction of a local road associated with the Brackley Junction. This potential effect is determined to be a result of short-term, reversible, recurring effects and is considered to be unlikely. Disturbance would therefore have an impact of Moderate significance due to the relative rarity of Slavonian grebe, which is a qualifying feature of the SPA.
- Disturbance to cited species of the Longman and Castle Stuart Bays SSSI in their use of the intertidal area. This is determined as being irreversible (in the short-term) and recurring and near certain, and occurring over approximately 50% the designated site. These potential impacts are assessed to be of Major significance.

11.6.4 During operation, impacts could potentially occur from loss of the Inner Moray Firth SPA/Ramsar supporting habitat (e.g. agricultural land) and disturbance for qualifying species in their use of this supporting habitat. At the Longman and Castle Stuart Bays SSSI there is a potential impact in relation to disturbance of cited species utilising the intertidal area. These potential impacts are determined to have permanent and irreversible effects on the distribution and occurrence of qualifying species in the designated sites. All these potential impacts are assessed as being of Major significance.

11.6.5 Pollution from road runoff could also potentially affect the Inner Moray Firth SPA and Ramsar and the Moray Firth SAC. The effects of pollution are expected to be reversible, recurring, short-term and unlikely, but would be of Major significance if they occurred.

Terrestrial Habitats and Plants

11.6.6 During construction, there is the potential for the transfer of INNS (Himalayan balsam) from locations on SWF 02 (Scretan Burn), SWF 03 (Cairnlaw Burn), SWF 04 (Tributary of Cairnlaw Burn (1)), SWF 05 (Tributary of Cairnlaw Burn (2)) and SWF 06 (Kenneth's Black Well). These impacts are determined to be irreversible and to be recurring, permanent and near certain. These potential impacts are assessed to be of Major significance.

11.6.7 There are no potential impacts of Moderate or above significance for terrestrial habitats and plants that are common to all route options during the operational phase of the proposed scheme.

Terrestrial Species

11.6.8 During construction, there is the potential for impacts on wintering birds (qualifying species of the Inner Moray Firth SPA and Ramsar site) in relation to disturbance, habitat loss, habitat fragmentation and pollution.

11.6.9 Habitat loss and fragmentation are determined to be irreversible, single event, permanent and certain. Disturbance is determined to be irreversible, recurring, temporary and certain. Pollution is determined to be reversible, recurring, short-term and unlikely. All these potential impacts are assessed as being of Moderate significance.

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- 11.6.10 During construction, there is also the potential for impacts on otter as a result of habitat fragmentation along SWF 03 (Cairnlaw Burn). This is due to the construction works associated with the crossing of the watercourse and the installation of a culvert. These potential impacts are determined to be certain, recurring, short-term and reversible, and are assessed as being of Moderate significance.
- 11.6.11 During operation, there is the potential for impacts on wintering birds (qualifying species of the Inner Moray Firth SPA and Ramsar site) in relation to direct mortality, habitat loss, disturbance and pollution. These are determined to be possible, recurring, permanent and irreversible (direct mortality), or certain, single event, permanent and irreversible (habitat loss), or certain, recurring, permanent and irreversible (disturbance), or unlikely, recurring, long-term and reversible (pollution). There are also potential impacts in relation to habitat loss for breeding birds which are determined to be near certain, single event, long-term and reversible. All these potential impacts are assessed as being of Moderate significance.
- 11.6.12 During operation, there is also the potential for impacts on otter and badger as a result of habitat loss. These potential impacts are determined to be near certain, single-event, irreversible and permanent. For otter this is along SWF 03 (Cairnlaw Burn) and for badger this is within Tornagrain Wood. These potential impacts are assessed as being of Moderate significance for otter and Major significance for badger.

Freshwater Habitats and Species

- 11.6.13 During construction, there is the potential for impacts on SWF 03 (Cairnlaw Burn) and SWF 04 (Tributary of Cairnlaw Burn (1)) through habitat loss, habitat fragmentation and pollution as a result of the construction activities associated with the watercourse realignment and the construction of a culvert. These potential impacts are determined to be temporary, reversible, certain and single event (habitat loss/fragmentation) or recurring (pollution). The same potential impacts are expected for freshwater species within these watercourses, with the addition of direct mortality during de-watering of sections of the watercourse and noise and vibration during construction works. The additional direct mortality impact is assessed as being single event, permanent, near certain and irreversible. These potential impacts are assessed as being of Moderate significance.
- 11.6.14 During operation, there is the potential for impacts on SWF 03 (Cairnlaw Burn) and SWF 04 (Tributary of Cairnlaw Burn (1)) as a result of habitat loss and fragmentation (due to the realignment of the watercourse and the installation of a new culvert) and pollution from road runoff. The same potential impacts are expected to occur for freshwater species. Habitat loss and fragmentation are assessed as being permanent, single event, near certain and irreversible, whilst pollution impacts would be temporary, near certain, recurring and reversible. These potential impacts are assessed as being of Moderate significance.

Option 1A

- 11.6.15 This section presents the potential impacts of Moderate and above significance specific for Option 1A and which are additional to those reported as common to all route options (refer to paragraphs 11.6.3 to 11.6.14).

Habitat Loss

- 11.6.16 The amount of habitat expected to be lost as a result of the operation of Option 1A is provided in Table 11.14.

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Table 11.14: Habitat loss (ha) – Option 1A

Habitat	ha
Woodland and Scrub	8.3
Agriculture	111.7
Other habitat	0.1
Overall Total	120.1

- 11.6.17 Overall approximately 120.1ha of habitat is expected to be lost to the operation of Option 1A. The largest amount of habitat loss is associated with agricultural land (111.7ha), of which arable is the largest component.
- 11.6.18 Option 1A is expected to result in the loss of 7.3ha of woodland which is listed on the AWI as Category 2b (Long-established Woodlands of Plantation Origin). Please note, in some cases habitat loss of woodland listed on the AWI may be greater than the actual woodland loss (refer to Table 11.14) due to changes in land use since the inventory was established.
- 11.6.19 Further information on the breakdown of the habitats lost is provided in Part 6 (Appendices), Appendix A11.5 (Estimated Habitat Loss) of this report.

Designated Sites

- 11.6.20 During construction of the local road to Alturlie Point, Option 1A has the potential to result in disturbance to qualifying species utilising the intertidal area and supporting habitat of the Inner Moray Firth SPA. There is also the potential for disturbance to cited species of the Longman and Castle Stuart Bays SSSI in their use of the intertidal area. These potential impacts are determined to be irreversible (in the short-term), temporary, recurring and certain, and have been assessed as being of Major significance.
- 11.6.21 During operation of the local road to Alturlie Point, Option 1A has the potential for loss of supporting habitat of the Inner Moray Firth SPA and disturbance to qualifying species utilising this habitat and the intertidal area. There is also the potential for disturbance to cited species of the Longman and Castle Stuart Bays SSSI in their use of the intertidal area. These potential impacts are determined to be irreversible, permanent, recurring and certain, and have been assessed as being of Major significance.

Terrestrial Habitats and Plants

- 11.6.22 No additional construction impacts are expected for Option 1A on terrestrial habitats and plants.
- 11.6.23 No additional operational impacts of Moderate or above significance are expected for Option 1A on terrestrial habitats and plants.

Terrestrial Species

- 11.6.24 The potential additional construction impacts for Option 1A on terrestrial species and their significance are provided in Table 11.15.

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Table 11.15: Potential construction impacts on terrestrial species - additional for Option 1A

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Badger	Disturbance	Along the length of the route option.	Reversible, recurring, short-term and near certain.	Moderate
Great crested newt	Direct mortality	Terrestrial habitat in broadleaved woodland to the east of Redhill.	Irreversible, single-event, permanent and possible.	Major
	Pollution		Reversible, recurring, short-term, unlikely.	Moderate
Otter	Habitat fragmentation	Areas adjacent to SWF 08 (Fiddler's Burn) and SWF 16 (Tributary of the Ardersier Burn).	Reversible, recurring, short-term, certain.	Moderate
	Disturbance	Along the length of the route option.	Reversible, recurring, short-term, near certain.	Moderate
Wintering birds*	Habitat loss	Along the length of the local road to Alturlie Point.	Irreversible, single-event, permanent, certain.	Moderate
	Habitat fragmentation		Irreversible, single-event, permanent, certain.	Moderate
	Disturbance		Irreversible, recurring, temporary, certain.	Moderate
	Pollution		Reversible, recurring, short-term, unlikely.	Moderate

*These birds are qualifying species of the Inner Moray Firth SPA and Ramsar.

11.6.25 The potential additional operational impacts for Option 1A on terrestrial species and their significance are provided in Table 11.16.

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Table 11.16: Potential operational impacts on terrestrial species – additional for Option 1A

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Badger	Habitat loss (e.g. existing sett)	In the area of Newton Junction A and north-east of Allanfearn Farm.	Irreversible, single-event, permanent, certain.	Moderate
Great crested newt	Direct mortality	Terrestrial habitat in broadleaved woodland to the east of Redhill.	Irreversible, single-event, permanent, possible.	Moderate
	Habitat loss		Irreversible, single-event, permanent, certain.	Moderate
	Pollution		Reversible, recurring, short-term, unlikely.	Moderate
Otter	Habitat loss	Areas adjacent to SWF 08 (Fiddler's Burn) and SWF 16 (Tributary of the Ardersier Burn).	Irreversible, single-event, permanent, certain.	Moderate
	Disturbance	Along the length of the route option.	Reversible, recurring, temporary, certain.	Moderate
Wintering birds*	Disturbance	Along the local road to Alturlie Point.	Irreversible, recurring, permanent, certain.	Moderate

*These birds are qualifying species of the Inner Moray Firth SPA and Ramsar.

Freshwater Habitats and Species

11.6.26 No additional construction or operational impacts of Moderate or above significance are expected for Option 1A on freshwater habitats and species.

Option 1A (MV)

11.6.27 This section presents the potential impacts of Moderate and above significance specific for Option 1A (MV) and which are additional to those reported as common to all route options (refer to paragraphs 11.6.3 to 11.6.14).

Habitat Loss

11.6.28 The amount of habitat expected to be lost as a result of the operation of Option 1A (MV) is provided in Table 11.17.

Table 11.17: Habitat loss (ha) - Option 1A (MV)

Habitat	ha
Woodland and Scrub	8.7
Agriculture	112.4
Other habitat	0.1
Overall Total	121.2

11.6.29 Overall approximately 121.2ha of habitat is expected to be lost to the operation of Option 1A (MV). The largest amount of habitat loss is associated with agricultural land (112.4ha), of which arable is the largest component.

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- 11.6.30 Option 1A (MV) is expected to result in the loss of 7.5ha of woodland which is listed on the AWI as Category 2b (Long-established Woodlands of Plantation Origin). Please note, in some cases habitat loss of woodland listed on the AWI may be greater than the actual woodland loss (refer to Table 11.17) due to changes in land use since the inventory was established.
- 11.6.31 Further information on the breakdown of the habitats lost is provided in Part 6 (Appendices), Appendix A11.5 (Estimated Habitat Loss) of this report.

Designated Sites

- 11.6.32 During construction and operation, Option 1A (MV) is expected to have the same additional potential impacts on designated sites as Option 1A (refer to paragraphs 11.6.20 and 11.6.21).

Terrestrial Habitats and Plants

- 11.6.33 No additional construction impacts are expected for Option 1A (MV) on terrestrial habitats and plants.
- 11.6.34 No additional operational impacts of Moderate or above significance are expected for Option 1A (MV) on terrestrial habitats and plants.

Terrestrial Species

- 11.6.35 During construction, the potential additional impacts for Option 1A (MV) on terrestrial species are the same as Option 1A (refer to Table 11.15), with an additional potential impact on otter due to habitat fragmentation along SWF 12 (Rough Burn). This impact is determined as being reversible, recurring, short term and certain. This is due to the route option alignment south of Morayston Farm and has been assessed as being of Moderate significance.
- 11.6.36 During operation, the potential additional impacts for Option 1A (MV) on terrestrial species are the same as Option 1A (refer to Table 11.16), with the exception of the potential impacts on badgers and otters:
- In addition to those reported for Option 1A, there is one additional impact on otter due to habitat loss along SWF 12 (Rough Burn) as a result of the route option alignment south of Morayston Farm. This impact has been determined to be permanent, irreversible, single event and certain, and has been assessed as being of Moderate significance.
 - In relation to badgers, Option 1A (MV) has three potential impacts in relation to habitat loss (e.g. loss of an existing sett), which occur along the length of the route option. These impacts have been determined to be permanent, irreversible, single event and near certain. Two are assessed as being of Moderate significance and one is assessed as being of Major significance.

Freshwater Habitats and Species

- 11.6.37 No additional construction or operational impacts of Moderate or above significance are expected for Option 1A (MV) for freshwater habitats and species.

Option 1B

- 11.6.38 This section presents the potential impacts of Moderate and above significance specific for Option 1B and which are additional to those reported as common to all route options (refer to paragraphs 11.6.3 to 11.6.14).

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Habitat Loss

- 11.6.39 The amount of habitat expected to be lost as a result of the operation of Option 1B is provided in Table 11.18.

Table 11.18: Habitat loss (ha) – Option 1B

Habitat	ha
Woodland and Scrub	14.0
Agriculture	106.6
Other habitat	0.2
Overall Total	120.8

- 11.6.40 Overall approximately 120.8ha of habitat is expected to be lost to the operation of Option 1B. The largest amount of habitat loss is associated with agricultural land (106.6ha), of which arable is the largest component.
- 11.6.41 Option 1B is expected to result in the loss of 16ha of woodland which is listed on the AWI as Category 2b (Long-established Woodlands of Plantation Origin). Please note, in some cases habitat loss of woodland listed on the AWI may be greater than the actual woodland loss (refer to Table 11.18) due to changes in land use since the inventory was established.
- 11.6.42 Further information on the breakdown of the habitats lost is provided in Part 6 (Appendices), Appendix A11.5 (Estimated Habitat Loss) of this report.

Designated Sites

- 11.6.43 During construction and operation, Option 1B is expected to have the same additional potential impacts on designated sites as Option 1A (refer to paragraphs 11.6.20 to 11.6.21).

Terrestrial Habitats and Plants

- 11.6.44 No additional construction impacts are expected for Option 1B on terrestrial habitats and plants.
- 11.6.45 No additional operational impacts of Moderate or above significance are expected for Option 1B on terrestrial habitats and plants.

Terrestrial Species

- 11.6.46 The potential additional construction impacts for Option 1B on terrestrial species and their significance are provided in Table 11.19.

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Table 11.19: Potential construction impacts on terrestrial species - additional for Option 1B

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Badger	Disturbance	Along the length of the route option.	Reversible, recurring, short-term, near certain.	Moderate
Otter	Habitat loss	Areas adjacent to SWF 08 (Fiddler's Burn).	Reversible, recurring, short-term, certain.	Moderate
Great crested newt	Direct mortality	Terrestrial habitat in broadleaved woodland to the east of Redhill.	Irreversible, single-event, permanent, possible.	Major
	Pollution		Reversible, recurring, short-term, unlikely.	Moderate
	Direct mortality	Terrestrial and/or aquatic habitat at Bruaich na Fuaran. Site has higher GCN potential than Redhill.	Irreversible, single-event, permanent, possible.	Major
	Pollution		Reversible, recurring, short-term, unlikely.	Major
Wintering birds*	Habitat loss	Along the local road to Alturlie Point.	Irreversible, single-event, permanent, certain.	Moderate
	Habitat fragmentation		Irreversible, single-event, permanent, certain.	Moderate
	Disturbance		Irreversible, recurring, permanent, certain.	Moderate
	Pollution		Reversible, recurring, short-term, unlikely.	Moderate

*These birds are qualifying species of the Inner Moray Firth SPA and Ramsar.

11.6.47 The potential additional operational impacts for Option 1B on terrestrial species and their significance are provided in Table 11.20.

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Table 11.20: Potential operational impact on terrestrial species - additional for Option 1B

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Bat	Habitat fragmentation	Woodland near to Mid Coul Farm.	Reversible, single-event, permanent, near certain.	Moderate
Badger	Habitat loss	In the area of Newton Junction A and north-east of Allanfean Farm.	Irreversible, single-event, permanent, certain.	Moderate
Great crested newt	Direct mortality	Terrestrial habitat in broadleaved woodland to the east of Redhill.	Irreversible, single-event, permanent, possible.	Moderate
	Habitat loss		Irreversible, single-event, permanent, certain.	Moderate
	Pollution		Reversible, recurring, short-term, unlikely.	Moderate
	Direct mortality	Terrestrial and/or aquatic habitat near Bruaich na Fuaran. Site has higher GCN potential than Redhill.	Irreversible, single-event, permanent, possible.	Moderate
	Habitat loss		Irreversible, single-event, permanent, certain.	Moderate
	Pollution		Reversible, recurring, short-term, unlikely.	Major
Otter	Habitat loss	Areas adjacent to SWF 08 (Fiddler's Burn).	Irreversible, single-event, permanent, certain.	Moderate
Wintering birds*	Disturbance	Along the local road to Alturlie Point.	Irreversible, recurring, permanent certain.	Moderate

*These birds are qualifying species of the Inner Moray Firth SPA and Ramsar.

Freshwater Habitats and Species

- 11.6.48 During construction and operation of Option 1B, there is the potential for pollution of a pond near a local road associated with Mid Coul Junction B. This potential impact is determined to be temporary, near certain, recurring and reversible, and has been assessed as being of Moderate significance.
- 11.6.49 No additional impacts of Moderate or above significance are expected for Option 1B in relation to freshwater species.

Option 1B (MV)

- 11.6.50 This section presents the potential impacts of Moderate and above significance specific for Option 1B (MV) and which are additional to those reported as common to all route options (refer to paragraphs 11.6.3 to 11.6.14).

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Habitat Loss

- 11.6.51 The amount of habitat expected to be lost as a result of the operation of Option 1B (MV) is provided in Table 11.21.

Table 11.21: Habitat loss (ha) - Option 1B (MV)

Habitat	ha
Woodland and Scrub	15.5
Agriculture	107.8
Other habitat	0.2
Overall Total	123.5

- 11.6.52 Overall approximately 123.5ha of habitat is expected to be lost to the operation of Option 1B (MV). The largest amount of habitat loss is associated with agricultural land (107.8ha), of which arable is the largest component.
- 11.6.53 Option 1B (MV) is expected to result in the loss of 17.8ha of woodland which is listed on the AWI as Category 2b (Long-established Woodlands of Plantation Origin). Please note, in some cases habitat loss of woodland listed on the AWI may be greater than the actual woodland loss (refer to Table 11.21) due to changes in land use since the inventory was established.
- 11.6.54 Further information on the breakdown of the habitats lost is provided in Part 6 (Appendices), Appendix A11.5 (Estimated Habitat Loss) of this report.

Designated Sites

- 11.6.55 During construction and operation, Option 1B (MV) is expected to have the same additional potential impacts on designated sites as Option 1A (refer to paragraphs 11.6.20 and 11.6.21).

Terrestrial Habitats and Plants

- 11.6.56 No additional construction impacts are expected for Option 1B (MV) on terrestrial habitats and plants.
- 11.6.57 No additional operational impacts of Moderate or above significance are expected for Option 1B (MV) on terrestrial habitats and plants.

Terrestrial Species

- 11.6.58 During construction, the potential impacts for Option 1B (MV) on terrestrial species are expected to be the same as Option 1B (refer to Table 11.19), with the exception of potential impacts on otter. This is due to the route option alignment south of Morayston Farm. The potential impacts on otter and their significance are detailed in Table 11.22.

Table 11.22: Potential construction impacts on otter - additional for Option 1B (MV)

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Otter	Habitat fragmentation	Areas adjacent to SWF 08 (Fiddlers Burn), SWF 12 (Rough Burn).	Reversible, temporary, recurring, certain.	Moderate
	Disturbance	Along the length of the route option.	Reversible, recurring, short-term, near certain.	Moderate

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11.6.59 During operation, the potential impacts for Option 1B (MV) on terrestrial species are expected to be the same as Option 1B (refer to Table 11.20) with the exception of impacts on badger and otter. This is due to the route option alignment south of Morayston Farm. The potential impacts on these receptors and their significance are detailed in Table 11.23.

Table 11.23: Potential operational impact on badger and otter – additional for Option 1B (MV)

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Badger	Habitat loss	Along the length of the route option at three potential locations.	Irreversible, single-event, permanent, certain.	2 x Moderate 1 x Major
Otter	Habitat loss	Areas adjacent to SWF 08 (Fiddlers Burn) and SWF 12 (Rough Burn).	Irreversible, single-event, permanent, certain.	Moderate
	Disturbance	Along the length of the route option.	Reversible, recurring, temporary, certain.	Moderate

Freshwater Habitats and Species

11.6.60 The potential construction and operational impacts on freshwater habitats and species for Option 1B (MV) are expected to be the same as for Option 1B (refer to paragraph 11.6.48 to 11.6.49).

Option 1C

11.6.61 This section presents the potential impacts of Moderate and above significance specific for Option 1C and which are additional to those reported as common to all route options (refer to paragraphs 11.6.3 to 11.6.14).

Habitat Loss

11.6.62 The amount of habitat expected to be lost as a result of the operation of Option 1C is provided in Table 11.24.

Table 11.24: Habitat loss (ha) - Option 1C

Habitat	ha
Woodland and Scrub	8.5
Agriculture	104.6
Other habitat	0.1
Overall Total	113.2

11.6.63 Overall approximately 113.2ha of habitat is expected to be lost to the operation of Option 1C. The largest amount of habitat loss is associated with agricultural land (104.6ha), of which arable is the largest component.

11.6.64 Option 1C is expected to result in the loss of 7.3ha of woodland which is listed on the AWI as Category 2b (Long-established Woodlands of Plantation Origin). Please note, in some cases habitat loss of woodland listed on the AWI may be greater than the actual woodland loss (refer to Table 11.24) due to changes in land use since the inventory was established.

11.6.65 Further information on the breakdown of the habitats lost is provided in Part 6 (Appendices), Appendix A11.5 (Estimated Habitat Loss) of this report.

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Designated Sites

11.6.66 No additional construction or operational impacts are expected for Option 1C in relation to designated sites.

Terrestrial Habitats and Plants

11.6.67 No additional construction impacts are expected for Option 1C on terrestrial habitats and plants.

11.6.68 No additional operational impacts of Moderate or above significance are expected for Option 1C on terrestrial habitats and plants.

Terrestrial Species

11.6.69 During construction and operation, Option 1C is expected to have additional potential impacts on otter as a result of habitat fragmentation (construction) and habitat loss (operation) for SWF 16 (Tributary of the Ardersier Burn). These potential impacts have been determined to be short-term, reversible, recurring and certain (construction) and permanent, irreversible, single event and certain (operation). These are assessed as being of Moderate significance.

Freshwater Habitats and Species

11.6.70 No additional construction or operational impacts of Moderate or above significance are expected for Option 1C for freshwater habitats and species.

Option 1C (MV)

11.6.71 This section presents the potential impacts of Moderate and above significance specific for Option 1C (MV) and which are additional to those reported as common to all route options (refer to paragraphs 11.6.3 to 11.6.14).

Habitat Loss

11.6.72 The amount of habitat expected to be lost as a result of the operation of Option 1C (MV) is provided in Table 11.25.

Table 11.25: Habitat loss (ha) - Option 1C (MV)

Habitat	ha
Woodland and Scrub	8.8
Agriculture	105.3
Other habitat	0.1
Overall Total	114.2

11.6.73 Overall approximately 114.2ha of habitat is expected to be lost to the operation of Option 1C (MV). The largest amount of habitat loss is associated with agricultural land (105.3ha), of which arable is the largest component.

11.6.74 Option 1C (MV) is expected to result in the loss of 7.4ha of woodland which is listed on the AWI as Category 2b (Long-established Woodlands of Plantation Origin). Please note, in some cases habitat loss of woodland listed on the AWI may be greater than the actual woodland loss (refer to Table 11.25) due to changes in land use since the inventory was established.

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- 11.6.75 Further information on the breakdown of the habitats lost is provided in Part 6 (Appendices), Appendix A11.5 (Estimated Habitat Loss) of this report.

Designated Sites

- 11.6.76 No additional construction or operational impacts are expected for Option 1C (MV) in relation to designated sites.

Terrestrial Habitats and Plants

- 11.6.77 No additional construction impacts are expected for Option 1C (MV) on terrestrial habitats and plants.

- 11.6.78 No additional operational impacts of Moderate or above significance are expected for Option 1C (MV) on terrestrial habitats and plants.

Terrestrial Species

- 11.6.79 The potential additional construction impacts for Option 1C (MV) on terrestrial species and their significance are provided in Table 11.26.

Table 11.26: Potential construction impacts on terrestrial species - additional for Option 1C (MV)

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Badger	Disturbance	Along the length of the route option.	Reversible, recurring, short-term, near certain.	Moderate
Otter	Habitat fragmentation	Areas adjacent to SWF 12 (Rough Burn) and SWF 16 (Tributary of Ardersier Burn).	Reversible, recurring, short-term, certain.	Moderate
	Disturbance	Along the length of the route option.	Reversible, recurring, short-term, near certain.	Moderate

- 11.6.80 The potential additional operational impacts for Option 1C (MV) on terrestrial species and their significance are provided in Table 11.27.

Table 11.27: Potential operational impacts on terrestrial species - additional for Option 1C (MV)

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Badger	Habitat loss	Along the length of the route option at two potential locations.	Irreversible, single-event, permanent, certain.	1 x Major 1 x Moderate
Otter	Habitat fragmentation	Areas adjacent to SWF 12 (Rough Burn) and SWF 16 (Tributary of Ardersier Burn).	Irreversible, single-event, permanent, certain.	Moderate
	Disturbance	Along the length of the route option.	Reversible, recurring, temporary, certain.	Moderate

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Freshwater Habitats and Species

- 11.6.81 No additional construction and operational impacts of Moderate or above significance are expected for Option 1C (MV) for freshwater habitats and species.

Option 1D

- 11.6.82 This section presents the potential impacts of Moderate and above significance specific for Option 1D and which are additional to those reported as common to all route options (refer to paragraphs 11.6.3 to 11.6.14).

Habitat Loss

- 11.6.83 The amount of habitat expected to be lost as a result of the operation of Option 1D is provided in Table 11.28.

Table 11.28: Habitat loss (ha) - Option 1D

Habitat	ha
Woodland and Scrub	14.2
Agriculture	99.6
Other habitat	0.2
Overall Total	114.0

- 11.6.84 Overall approximately 114.0ha of habitat is expected to be lost to the operation of Option 1D. The largest amount of habitat loss is associated with agricultural land (99.6ha), of which arable is the largest component.
- 11.6.85 Option 1D is expected to result in the loss of 16ha of woodland which is listed on the AWI as Category 2b (Long-established Woodlands of Plantation Origin). Please note, in some cases habitat loss of woodland listed on the AWI may be greater than the actual woodland loss (refer to Table 11.28) due to changes in land use since the inventory was established.
- 11.6.86 Further information on the breakdown of the habitats lost is provided in Part 6 (Appendices), Appendix A11.5 (Estimated Habitat Loss) of this report.

Designated Sites

- 11.6.87 No additional construction or operational impacts are expected for Option 1D in relation to designated sites.

Terrestrial Habitats and Plants

- 11.6.88 No additional construction impacts are expected for Option 1D on terrestrial habitats and plants.
- 11.6.89 No additional operational impacts of Moderate or above significance are expected for Option 1D on terrestrial habitats and plants.

Terrestrial Species

- 11.6.90 During construction, Option 1D is expected to have additional potential impacts on great crested newt as a result of direct mortality in terrestrial habitat and pollution of terrestrial and aquatic habitat near Braaich na Fuaran. This is mainly due to the construction of a local road associated with Mid Coul Junction B. These impacts have been determined to be irreversible, single event, permanent and possible (direct mortality) or reversible, recurring

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short term and unlikely (pollution). These potential impacts are assessed to be of Major significance.

- 11.6.91 The potential additional operational impacts for Option 1D on terrestrial species and their significance are provided in Table 11.29.

Table 11.29: Potential operational impact on terrestrial species - additional for Option 1D

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Bats	Habitat fragmentation of bat commuting routes.	Woodland near to Mid Coul Farm.	Reversible, single event, permanent, near certain.	Moderate
Great crested newt	Direct mortality	Terrestrial and/or aquatic habitat near Bruaich na Fuaran.	Irreversible, single-event, permanent, possible.	Moderate
	Habitat loss		Irreversible, single-event, permanent, certain.	Moderate
	Pollution		Reversible, recurring, short-term, unlikely.	Major

Freshwater Habitats and Species

- 11.6.92 During construction and operation of Option 1D there is the potential for pollution of a pond near a local road associated with Mid Coul Junction B. This potential impact is determined to be temporary, near certain, recurring and reversible, and has been assessed as being of Moderate significance.
- 11.6.93 No additional impacts of Moderate or above significance are expected for Option 1D in relation to freshwater species.

Option 1D (MV)

- 11.6.94 This section presents the potential impacts of Moderate and above significance specific for Option 1D (MV) and which are additional to those reported as common to all route options (refer to paragraphs 11.6.3 to 11.6.14).

Habitat Loss

- 11.6.95 The amount of habitat expected to be lost as a result of the operation of Option 1D (MV) is provided in Table 11.30.

Table 11.30: Habitat loss (ha) – Option 1D (MV)

Habitat	ha
Woodland and Scrub	15.8
Agriculture	101.9
Other habitat	0.2
Overall Total	117.9

- 11.6.96 Overall approximately 117.9ha of habitat is expected to be lost to the operation of Option 1D (MV). The largest amount of habitat loss is associated with agricultural land (101.9ha), of which arable is the largest component.

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11.6.97 Option 1D (MV) is expected to result in the loss of 17.9ha of woodland which is listed on the AWI as Category 2b (Long-established Woodlands of Plantation Origin). Please note, in some cases habitat loss of woodland listed on the AWI may be greater than the actual woodland loss (refer to Table 11.30) due to changes in land use since the inventory was established.

11.6.98 Further information on the breakdown of the habitats lost is provided in Part 6 (Appendices), Appendix A11.5 (Estimated Habitat Loss) of this report.

Designated Sites

11.6.99 No additional construction or operational impacts are expected for Option 1D (MV) in relation to designated sites.

Terrestrial Habitats and Plants

11.6.100 No additional construction impacts are expected for Option 1D (MV) on terrestrial habitats and plants.

11.6.101 No additional operational impacts of Moderate or above significance are expected for Option 1D (MV) on terrestrial habitats and plants.

Terrestrial Species

11.6.102 During construction, the potential additional impacts for Option 1D (MV) on terrestrial species are expected to be the same as Option 1D (refer to paragraph 11.6.90), with the addition of potential impacts on otter and badger. This is due to the route option alignment south of Morayston Farm. The potential impacts on these receptors and their significance are detailed in Table 11.31.

Table 11.31: Potential construction impacts on otter and badger - additional for Option 1D (MV)

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Badger	Disturbance	Along the length of the route option.	Reversible, recurring, short-term, near certain.	Moderate
Otter	Habitat fragmentation	Areas adjacent to SWF 12 (Rough Burn).	Reversible, recurring, short-term, certain.	Moderate

11.6.103 During operation, the potential additional impacts for Option 1D (MV) on terrestrial species are expected to be the same as Option 1D (refer to Table 11.29), with the addition of potential impacts on otter and badger. This is due to the route option alignment south of Morayston Farm. The potential impacts on these receptors and their significance are detailed in Table 11.32.

Table 11.32: Potential operational impacts on otter and badger – additional for Option 1D (MV)

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Badger	Habitat loss	Along the length of the route option at two potential locations.	Irreversible, single-event, permanent, certain.	1 x Moderate 1 x Major
Otter	Habitat fragmentation	Areas adjacent to SWF 12 (Rough Burn).	Irreversible, single-event, permanent, certain.	Moderate

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Freshwater Habitats and Species

- 11.6.104 The potential construction and operational impacts on freshwater habitats and species for Option 1D (MV) are expected to be the same as for Option 1D (refer to paragraph 11.6.92 to 11.6.93).

11.7 Impact Assessment: Nairn Bypass

- 11.7.1 This section describes the impacts of Moderate and above significance that are specific to the Nairn Bypass section. Impacts that are common to all route options in this section are discussed, followed by those impacts which are additional to these for each route option.

- 11.7.2 It should be noted that part of Kildrummie Kames SSSI is predicted to be lost under the footprint of Options 2D, 2H and 2I. However, as discussed in paragraph 11.5.3, the site is designated for its geological as well as biological features, and in the vicinity of the potential land-take, only the geological features are present (SNH, pers comm. meeting 8 October 2013 (SNH, 2013c)). As a result, no potential impacts on the cited biological features are expected. Potential impacts on the geological features of the site are assessed in Chapter 12 (Geology and Soils) of this report.

Impacts Common to all Route Options

- 11.7.3 This section provides details on the potential impacts of Moderate or above significance, which are common to all route options during construction and operation for designated sites, terrestrial habitats and species and freshwater habitats and species.

Designated Sites

- 11.7.4 During construction, there is the potential for disturbance to qualifying species utilising supporting habitat of the Inner Moray Firth SPA and Ramsar site and Moray and Nairn Coasts SPA and Ramsar site. This is as a result of the Nairn East Junction and the route option alignment from this junction to the end of the scheme. These potential impacts have been assessed as being reversible, recurring, short-term and near certain. There is also the potential along the length of the route options for pollution of the Moray Firth SAC as a result of runoff from construction activities. This has been determined to be reversible, short-term, recurring and near certain. All these potential impacts have been assessed as being of Major significance.

- 11.7.5 During operation, there is the potential along the length of the route options, for pollution of the Moray Firth SAC as a result of runoff from road traffic. This has been determined to be reversible, short-term, recurring and possible and has been assessed as being of Major significance.

Terrestrial Habitats and Plants

- 11.7.6 During construction, all the route options have the potential to result in the transfer of INNS (Himalayan balsam and Japanese knotweed) during construction of the bridge over the River Nairn. There is also the potential for transfer of INNS (giant hogweed) during construction of the local road near Easter and Wester Hardmuir. These potential impacts have been determined to be irreversible and to be recurring, permanent and near certain, and have been assessed as being of Major significance.
- 11.7.7 There are no potential operational impacts of Moderate or above significance that are common to all route options for terrestrial habitats and plants.

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Terrestrial Species

- 11.7.8 The potential construction impacts that are common to all route options for terrestrial species and their significance are shown in Table 11.33.

Table 11.33: Potential construction impacts on terrestrial species - common to all route options

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Badger	Habitat fragmentation	Along length of route options (offline sections).	Reversible, recurring, short-term, certain.	Moderate
Otter	Habitat fragmentation	Areas adjacent to SWF 22 (Alton Burn) and SWF 23 (River Nairn).	Reversible, recurring, short-term, certain.	Moderate
Wintering birds*	Disturbance	Throughout the length of the route options in areas of agricultural land.	Irreversible, recurring, temporary, certain.	Moderate
	Habitat loss		Irreversible, single event, permanent, certain.	Moderate
	Habitat fragmentation		Irreversible, single event, permanent, near certain.	Moderate
	Pollution		Reversible, recurring, short-term, unlikely.	Moderate

*These birds are qualifying species of the Inner Moray Firth SPA and Ramsar or the Moray and Nairn Coast SPA and Ramsar.

- 11.7.9 The potential operational impacts that are common to all route options for terrestrial species and their significance are shown in Table 11.34.

Table 11.34: Potential operational impacts on terrestrial species – common to all route options

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Bats	Disturbance	SWF 23 (River Nairn).	Reversible, recurring, permanent, possible.	Moderate
Breeding Birds	Habitat loss	Throughout the length of the route options.	Reversible, single event, permanent, near certain.	Moderate
Wintering Birds*	Disturbance	Throughout the length of the route options in areas of agricultural land.	Irreversible, recurring, permanent certain.	Moderate
	Habitat loss		Irreversible, single event, permanent certain.	Moderate
	Habitat fragmentation		Irreversible, single event, permanent certain.	Moderate
	Pollution		Irreversible, recurring, long-term, unlikely.	Moderate
Otter	Habitat loss	Areas adjacent to SWF 22 (Alton Burn), SWF 23 (River Nairn).	Irreversible, single-event, permanent, certain.	Moderate
		Areas adjacent to SWF 26 (Auldearn Burn).	Irreversible, single-event, permanent, certain.	Major

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*These birds are qualifying species of the Inner Moray Firth SPA and Ramsar or the Moray and Nairn Coast SPA and Ramsar.

Freshwater Habitats and Species

- 11.7.10 During construction, all route options have the potential to impact on SWF 23 (River Nairn), and the species it supports as a result of pollution impacts from construction of the bridge over the River Nairn. These potential impacts have been determined to be temporary, recurring, reversible and near certain, and have been assessed as being of Moderate significance.
- 11.7.11 During operation, all route options have the potential to impact on SWF 23 (River Nairn) and the species it supports as a result of pollution impacts from road runoff. The potential impacts on SWF 23 have been determined to be permanent, recurring, reversible and near certain, and have been assessed as being of Moderate significance, with the potential impacts on the species that it supports assessed as being of Major significance.

Option 2A

- 11.7.12 This section presents the potential impacts of Moderate and above significance specific for Option 2A and which are additional to those reported as common to all route options (refer to paragraphs 11.7.4 to 11.7.11).

Habitat Loss

- 11.7.13 The amount of habitat expected to be lost as a result of the operation of Option 2A is provided in Table 11.35.

Table 11.35: Habitat loss (ha) - Option 2A

Habitat	ha
Woodland and Scrub	39.5
Agriculture	81.9
Other habitat	1.2
Overall Total	122.6

- 11.7.14 Overall approximately 122.6ha of habitat is expected to be lost to the operation of Option 2A. The largest amount of habitat loss is associated with agricultural land (81.9ha), of which arable is the largest component.
- 11.7.15 Option 2A is expected to result in the loss of 38.7ha of woodland which is listed on the AWI as Category 2b (Long-established Woodlands of Plantation Origin) and 0.7ha of woodland which is listed on the AWI as Category 3 (Other woodland). Please note, in some cases habitat loss of woodland listed on the AWI may be greater than the actual woodland loss (refer to Table 11.35) due to changes in land use since the inventory was established.
- 11.7.16 Further information on the breakdown of this habitat loss is provided in Part 6 (Appendices), Appendix A11.5 (Estimated Habitat Loss) of this report.

Designated Sites

- 11.7.17 During construction, Option 2A has the potential to result in loss and fragmentation of supporting habitat associated with Moray and Nairn Coast SPA. This is due to the construction of Nairn East Junction A and the route option alignment to the east of this to the end of the scheme. This potential impact has been assessed as being irreversible (in the short-term), temporary, single event and near certain, and has been assessed to be of Major significance.

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- 11.7.18 During operation, Option 2A has the potential to result in loss and fragmentation of supporting habitat associated with Moray and Nairn Coast SPA, and disturbance to qualifying species utilising this supporting habitat. This is due to the operation of Nairn East Junction A and the route option alignment to the east of this to the end of the scheme. These potential impacts have been assessed as being irreversible, permanent and near certain, and single event (habitat loss/fragmentation) or recurring (disturbance), and have been assessed to be of Major significance.

Terrestrial Habitats and Plants

- 11.7.19 During construction, Option 2A has the potential to result in the transfer of INNS (Himalayan balsam and giant hogweed) along SWF 26 (Auldearn Burn). This potential impact has been determined to be irreversible and to be recurring, permanent and near certain, and assessed as being of Major significance.
- 11.7.20 During operation, Option 2A has the potential to result in the loss and fragmentation of woodland on the AWI (Category 2b: Long-established Woodland of Plantation Origin) at Delnies Wood. This is as a result of Nairn West Junction A and the route option alignment, which passes through this woodland. This potential impact has been determined to be permanent, single event, irreversible and certain, and is assessed as being of Moderate significance.

Terrestrial Species

- 11.7.21 The potential additional construction impacts for Option 2A in relation to terrestrial species and their significance are shown in Table 11.36

Table 11.36: Potential construction impacts on terrestrial species – additional for Option 2A

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Otter	Habitat fragmentation	Areas adjacent to SWF 26 (Auldearn Burn).	Reversible, recurring, short-term, certain.	Major
	Disturbance	Areas adjacent to SWF 19 (Balnagowan Burn), SWF 22 (Alton Burn), SWF 23 (River Nairn) and SWF 26 (Auldearn Burn).	Reversible, recurring, short-term, near certain.	Major
Red Squirrel	Direct mortality	Delnies Wood, Woodland south of Crook, along the A939 near Skene Park Cottage, and in Russell's Wood.	Irreversible, recurring, short-term, possible.	Moderate
	Disturbance		Reversible, recurring, short-term, near certain.	Moderate

- 11.7.22 During operation, Option 2A has the potential to result in the same potential impacts on red squirrel as during construction (refer to Table 11.36) with the addition of habitat loss and fragmentation within the noted woodlands and habitat fragmentation for red squirrel at the woodland near to Moss-side Road. These impacts are determined to be permanent, irreversible, single event and certain. There is also potential for loss of badger habitat (e.g. existing sett) at Boath House Hotel, which is determined to be permanent, irreversible, single event and near certain. All these potential impacts have been assessed as being of Moderate significance.

Freshwater Habitats and Species

- 11.7.23 No additional construction or operational impacts of Moderate or above significance are expected for Option 2A in relation to freshwater habitats and species.

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Option 2B

11.7.24 This section presents the potential impacts of Moderate and above significance specific for Option 2B and which are additional to those reported as common to all route options (refer to paragraphs 11.7.4 to 11.7.11).

Habitat Loss

11.7.25 The amount of habitat expected to be lost as a result of the operation of Option 2B is provided in Table 11.37.

Table 11.37: Habitat loss (ha) - Option 2B

Habitat	ha
Woodland and Scrub	39.8
Agriculture	72.6
Other habitat	1.2
Overall Total	113.6

11.7.26 Overall approximately 113.6ha of habitat is expected to be lost to the operation of Option 2B. The largest amount of habitat loss is associated with agricultural land (72.6ha), of which improved grassland is the largest component.

11.7.27 Option 2B is expected to result in the loss of 38.2ha of woodland which is listed on the AWI as Category 2b (Long-established Woodlands of Plantation Origin) and 0.9ha of woodland which is listed on the AWI as Category 3 (Other woodland). Please note, in some cases habitat loss of woodland listed on the AWI may be greater than the actual woodland loss (refer to Table 11.37) due to changes in land use since the inventory was established.

11.7.28 Further information on the breakdown of this habitat loss is provided in Part 6 (Appendices), Appendix A11.5 (Estimated Habitat Loss) of this report.

Designated Sites

11.7.29 During construction, Option 2B has the potential to result in loss and fragmentation of supporting habitat associated with Moray and Nairn Coast SPA. This is due to the construction of Nairn East Junction B and the route option alignment to the east of this to the end of the scheme. This potential impact has been assessed as being irreversible (in the short-term), temporary, single event and near certain, and has been assessed to be of Major significance.

11.7.30 During operation, Option 2B has the potential to result in loss and fragmentation of supporting habitat associated with Moray and Nairn Coast SPA, and disturbance to qualifying species utilising this supporting habitat. This is due to the operation of Nairn East Junction B and the route option alignment to the east of this to the end of the scheme. These potential impacts have been assessed as being irreversible, permanent and near certain, and single event (habitat loss/fragmentation) or recurring (disturbance), and have been assessed to be of Major significance.

Terrestrial Habitats and Plants

11.7.31 During construction, Option 2B has the potential to result in the transfer of INNS (Himalayan balsam and giant hogweed) along SWF 26 (Auldearn Burn). This potential impact has been determined to be irreversible and to be recurring, permanent and near certain, and has been assessed as being of Major significance.

11.7.32 During operation, Option 2B has the potential to result in loss and fragmentation of woodland on the AWI (Category 2b: Long-established Woodland of Plantation Origin) at Delnies Wood.

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This is as a result of Nairn West Junction A and the route option alignment, which passes through this woodland. This potential impact has been determined to be permanent, irreversible, single event and certain, and is assessed as being of Moderate significance.

Terrestrial Species

- 11.7.33 The potential additional construction impacts for Option 2B in relation to terrestrial species and their significance are shown in Table 11.38.

Table 11.38: Potential construction impacts on terrestrial species - additional for Option 2B

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Otter	Disturbance	Areas adjacent to SWF 19 (Balnagowan Burn), SWF 22 (Alton Burn), SWF 23 (River Nairn) and SWF 26 (Auldearn Burn).	Reversible, recurring, short-term, near certain.	Moderate
Red Squirrel	Direct mortality	Delnies Wood, Woodland south of Crook, along the A939 near Skene Park Cottage, and in Russell's Wood.	Irreversible, recurring, short-term, possible.	Moderate
	Disturbance		Reversible, recurring, short-term, near certain.	Moderate

- 11.7.34 During operation, Option 2B has the potential to result in the same potential impacts on red squirrel as during construction (refer to Table 11.38) with the addition of habitat loss and fragmentation within the noted woodlands and habitat fragmentation for red squirrel at the woodland near to Moss-side Road. These impacts are determined to be permanent, irreversible, single event and certain. There is also the potential for direct mortality of badger through RTAs along the length of the route option and loss of badger habitat (e.g. existing sett) at Boath House Hotel. These impacts are determined to be permanent, irreversible, recurring and near certain (direct mortality) and permanent, irreversible, single event and near certain (habitat loss). All these potential impacts have been assessed as being of Moderate significance.

Freshwater Habitats and Species

- 11.7.35 No additional construction or operational impacts of Moderate or above significance are expected for Option 2B in relation to freshwater habitats and species.

Option 2C

- 11.7.36 This section presents the potential impacts of Moderate and above significance specific for Option 2C and which are additional to those reported as common to all route options (refer to paragraphs 11.7.4 to 11.7.11).

Habitat Loss

- 11.7.37 The amount of habitat expected to be lost as a result of the operation of Option 2C is provided in Table 11.39.

Table 11.39: Habitat loss (ha) - Option 2C

Habitat	ha
Woodland and Scrub	46.2
Agriculture	76.4
Other habitat	2.1
Overall Total	124.7

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- 11.7.38 Overall approximately 124.7ha of habitat is expected to be lost to the operation of Option 2C. The largest amount of habitat loss is associated with agricultural land (76.4ha), of which arable is the largest component.
- 11.7.39 Option 2C is expected to result in the loss of 43.7ha of woodland which is listed on the AWI as Category 2b (Long-established Woodlands of Plantation Origin) and 0.5ha of woodland which is listed on the AWI as Category 3 (Other woodland). Please note, in some cases habitat loss of woodland listed on the AWI may be greater than the actual woodland loss (refer to Table 11.39) due to changes in land use since the inventory was established.
- 11.7.40 Further information on the breakdown of this habitat loss is provided in Part 6 (Appendices), Appendix A11.5 (Estimated Habitat Loss) of this report.

Designated Sites

- 11.7.41 No additional construction or operational impacts are expected for Option 2C in relation to designated sites.

Terrestrial Habitats and Plants

- 11.7.42 No additional construction impacts are expected for Option 2C in relation to terrestrial habitats and plants.
- 11.7.43 During operation, Option 2C has the potential to result in loss and fragmentation of woodland on the AWI (Category 2b: Long-established Woodland of Plantation Origin) at Delnies Wood. This is as a result of Nairn West Junction A and the route option alignment, which passes through this woodland. There is also the potential for loss of bluebells and their habitat at Roundall Wood. These potential impacts have been determined to be permanent, irreversible, single event and certain, and are assessed as being of Moderate significance.

Terrestrial Species

- 11.7.44 The potential additional construction impacts for Option 2C in relation to terrestrial species and their significance are shown in Table 11.40

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Table 11.40: Potential construction impacts on terrestrial species - additional for Option 2C

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Great crested newt	Direct mortality	Terrestrial and aquatic habitat; Policy Belts near Kinsteary House and at Garbilies.	Irreversible, single event, permanent, near certain.	Major
	Habitat loss		Reversible, single event, short-term, certain.	Major
	Habitat fragmentation		Reversible, single event, short-term, certain.	Major
	Pollution		Reversible, recurring, short-term, near certain.	Major
Otter	Habitat fragmentation	Areas adjacent to SWF 26 (Auldearn Burn).	Reversible, recurring, short-term, certain.	Moderate
	Disturbance	Areas adjacent to SWF 19 (Balnagowan Burn), SWF 22 (Alton Burn), SWF 23 (River Nairn) and SWF 26 (Auldearn Burn).	Reversible, recurring, short-term, near certain.	Moderate
Red squirrel	Direct mortality	Delnies Wood, Woodland south of Crook, along the A939 near Skene Park Cottage, and Boganfuaran Wood.	Irreversible, recurring, short-term, possible.	Moderate
	Disturbance		Reversible, recurring, short-term, near certain.	Moderate

11.7.45 During operation, Option 2C would also have the potential for impacts of Major significance as a result of direct mortality, habitat loss, habitat fragmentation and pollution on great crested newts (refer to Table 11.40). These have been determined as being irreversible, single event, permanent and certain (direct mortality, habitat loss/fragmentation) and near certain (pollution). Potential impacts are also similar for red squirrels (Moderate significance for direct mortality and disturbance) with the addition of habitat loss and fragmentation within the noted woodlands and habitat fragmentation for red squirrel at the woodland near to Moss-side Road. These impacts are determined to be permanent, irreversible, single event and certain. The additional impacts for red squirrels in relation to habitat loss and fragmentation are assessed as being of Moderate significance.

Freshwater Habitats and Species

11.7.46 During construction, Option 2C has the potential for pollution of a pond adjacent to the Policy Belts near Kinsteary House. There is also the potential for habitat loss and fragmentation and pollution of SWF 26 (Auldearn Burn). These potential impacts have been determined to be short-term, reversible, recurring and near certain and are assessed as being of Moderate significance. No additional construction impacts of Moderate or above significance are expected on freshwater species.

11.7.47 No additional operational impacts of Moderate or above significance are expected for Option 2C on freshwater habitats and species.

Option 2D

11.7.48 This section presents the potential impacts of Moderate and above significance specific for Option 2D and which are additional to those reported as common to all route options (refer to paragraphs 11.7.4 to 11.7.11).

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Habitat Loss

- 11.7.49 The amount of habitat expected to be lost as a result of the operation of Option 2D is provided in Table 11.41.

Table 11.41: Habitat loss (ha) - Option 2D

Habitat	ha
Woodland and Scrub	37.2
Agriculture	91.0
Other habitat	1.9
Overall Total	130.1

- 11.7.50 Overall approximately 130.1ha of habitat is expected to be lost to the operation of Option 2D. The largest amount of habitat loss is associated with agricultural land (91.0ha), of which arable is the largest component.
- 11.7.51 Option 2D is expected to result in the loss of 34.7ha of woodland which is listed on the AWI as Category 2b (Long-established Woodlands of Plantation Origin). Please note, in some cases habitat loss of woodland listed on the AWI may be greater than the actual woodland loss (refer to Table 11.41) due to changes in land use since the inventory was established.
- 11.7.52 Further information on the breakdown of this habitat loss is provided in Part 6 (Appendices), Appendix A11.5 (Estimated Habitat Loss) of this report.

Designated Sites

- 11.7.53 No additional construction or operational impacts are expected for Option 2D in relation to designated sites.

Terrestrial Habitats and Plants

- 11.7.54 No additional construction impacts are expected for Option 2D in relation to terrestrial habitats and plants.
- 11.7.55 During operation, Option 2D has the potential to result in loss and fragmentation of woodland on the AWI (Category 2b: Long-established Woodland of Plantation Origin) at Delnies Wood. This is as a result of Nairn West Junction A and the route option alignment, which passes through this woodland. There is also the potential for loss of bluebells and their habitat at Roundall Wood. These potential impacts have been determined to be permanent, irreversible, single event and certain, and have been assessed as being of Moderate significance.

Terrestrial Species

- 11.7.56 The potential construction impacts for Option 2D in relation to terrestrial species and their significance are shown in Table 11.42.

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Table 11.42: Potential construction impacts on terrestrial species - additional for Option 2D

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Great crested newt	Direct mortality	Terrestrial and aquatic habitat; Policy Belts near Kinsteary House and at Garblies.	Irreversible, Single-event, permanent, near certain.	Major
	Habitat loss		Reversible, single-event, short-term, certain.	Major
	Habitat fragmentation		Reversible, single-event, short-term, certain.	Major
	Pollution		Reversible, recurring, short-term, near certain.	Major
Otter	Habitat fragmentation	Areas adjacent to SWF 26 (Auldearn Burn).	Reversible, recurring, short-term, certain.	Major
	Disturbance	SWF 19 (Balnagowan Burn), SWF 22 (Alton Burn), SWF 23 (River Nairn) and SWF 26 (Auldearn Burn).	Reversible, recurring, short-term, near certain.	Major
Red squirrel	Direct mortality	Delnies Wood.	Irreversible, recurring, short-term, possible.	Moderate
	Disturbance		Reversible, recurring, short-term, near certain.	Moderate

11.7.57 During operation, Option 2D would also have the potential for impacts of Major significance as a result of direct mortality, habitat loss, habitat fragmentation and pollution on great crested newts (refer to Table 11.42). These have been determined as being irreversible, single event, permanent and certain (direct mortality, habitat loss/fragmentation) and near certain (pollution). Potential impacts are also similar for red squirrels (Moderate significance for direct mortality and disturbance) with the addition of habitat loss and fragmentation within Delnies Wood and habitat fragmentation for red squirrel at the woodland near to Moss-side Road. These impacts are determined to be permanent, irreversible, single event and certain. The additional impacts for red squirrels are assessed as being of Moderate significance.

Freshwater Habitats and Species

11.7.58 During construction, Option 2D has the potential for pollution of a pond adjacent to the Policy Belts near Kinsteary House. This potential impact has been determined to be short-term, reversible, recurring and near certain and is assessed as being of Moderate significance. No additional construction impacts of Moderate or above significance are expected on freshwater species.

11.7.59 No additional operational impacts of Moderate or above significance are expected for Option 2D in relation to freshwater habitats and species.

Option 2E

11.7.60 This section presents the potential impacts of Moderate and above significance specific for Option 2E and which are additional to those reported as common to all route options (refer to paragraphs 11.7.4 to 11.7.11).

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Habitat Loss

- 11.7.61 The amount of habitat expected to be lost as a result of the operation of Option 2E is provided in Table 11.43.

Table 11.43: Habitat loss (ha) - Option 2E

Habitat	ha
Woodland and Scrub	22.4
Agriculture	97.5
Other habitat	7.3
Overall Total	127.2

- 11.7.62 Overall approximately 127.2ha of habitat is expected to be lost to the operation of Option 2E. The largest amount of habitat loss is associated with agricultural land (97.5ha), of which arable is the largest component.
- 11.7.63 Option 2E is expected to result in the loss of 28.1ha of woodland which is listed on the AWI as Category 2b (Long-established Woodlands of Plantation Origin) and 0.8ha of woodland listed on the AWI as Category 3 (Other woodland). Please note, in some cases habitat loss of woodland listed on the AWI may be greater than the actual woodland loss (refer to Table 11.43) due to changes in land use since the inventory was established.
- 11.7.64 Further information on the breakdown of this habitat loss is provided in Part 6 (Appendices), Appendix A11.5 (Estimated Habitat Loss) of this report.

Designated Sites

- 11.7.65 During construction, Option 2E has the potential to result in loss and fragmentation of supporting habitat associated with Moray and Nairn Coast SPA. This is due to the construction of Nairn East Junction A and the route option alignment to the east of this to the end of the scheme. This potential impact has been assessed as being irreversible (in the short-term), temporary, single event and near certain, and has been assessed to be of Major significance.
- 11.7.66 During operation, Option 2E has the potential to result in loss and fragmentation of supporting habitat associated with Moray and Nairn Coast SPA, and disturbance to qualifying species utilising this supporting habitat. This is due to the operation of Nairn East Junction A and the route option alignment to the east of this to the end of the scheme. These potential impacts have been assessed as being irreversible, permanent, and near certain, and single event (habitat loss/fragmentation) or recurring (disturbance), and have been assessed to be of Major significance.

Terrestrial Habitats and Plants

- 11.7.67 During construction, Option 2E has the potential to result in the transfer of INNS (Himalayan balsam and giant hogweed) along SWF 26 (Auldearn Burn). These potential impacts have been determined to be irreversible and to be recurring, permanent and near certain, and are assessed as being of Major significance.
- 11.7.68 No additional operational impacts of Moderate or above significance are expected for Option 2E in relation to terrestrial habitats and species.

Terrestrial Species

- 11.7.69 The potential construction impacts for Option 2E in relation to terrestrial species and their significance are shown in Table 11.44.

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Table 11.44: Potential construction impacts on terrestrial species - additional for Option 2E

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Great crested newt	Direct mortality	Terrestrial habitat; Meikle Kildrummie.	Irreversible, single event, permanent, near certain.	Major
	Habitat loss		Reversible, single event, short-term, certain.	Moderate
	Habitat fragmentation		Reversible, single event, short-term, certain.	Moderate
Otter	Habitat fragmentation	Areas adjacent to SWF 26 (Auldearn Burn).	Reversible, recurring, short-term, certain.	Major
	Disturbance	Areas adjacent to SWF 19 (Balnagowan Burn), SWF 22 (Alton Burn), SWF 23 (River Nairn) and SWF 26 (Auldearn Burn).	Reversible, recurring, short-term, near certain.	Major
Red squirrel	Direct mortality	Woodland south of Crook, along the A939 near Skene Park Cottage and Russell's Wood.	Irreversible, recurring, short-term, possible.	Moderate
	Disturbance		Reversible, recurring, short-term, near certain.	Moderate

11.7.70 During operation, Option 2E would also have the potential for impacts of Major or Moderate significance as a result of direct mortality, habitat loss and habitat fragmentation on great crested newts (refer to Table 11.44). These have been determined as being irreversible, single event, permanent and certain. Potential impacts are also similar for red squirrels (Moderate significance for direct mortality and disturbance) with the addition of habitat loss and habitat fragmentation within the noted woodlands. These impacts are determined to be permanent, irreversible, single event and certain. There is also the potential for loss of badger habitat (e.g. existing sett) at Boath House Hotel, which is determined to be permanent, irreversible, single event and near certain. The additional impacts for red squirrels and badger are assessed as being of Moderate significance.

Freshwater Habitats and Species

11.7.71 There are no additional construction or operational impacts of Moderate or above significance for Option 2E in relation to freshwater habitats.

11.7.72 There are no additional impacts during construction for Option 2E in relation to freshwater species. During operation, there are no additional impacts for Option 2E that are of Moderate or above significance for freshwater species.

Option 2F

11.7.73 This section presents the potential impacts of Moderate and above significance specific for Option 2F and which are additional to those reported as common to all route options (refer to paragraphs 11.7.4 to 11.7.11).

Habitat Loss

11.7.74 The amount of habitat expected to be lost as a result of the operation of Option 2F is provided in Table 11.45.

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Table 11.45: Habitat Loss (ha) - Option 2F

Habitat	ha
Woodland and Scrub	22.8
Agriculture	88.4
Other habitat	7.3
Overall Total	118.5

- 11.7.75 Overall approximately 118.5ha of habitat is expected to be lost to the operation of Option 2F. The largest amount of habitat loss is associated with agricultural land (88.4ha), of which improved grassland is the largest component.
- 11.7.76 Option 2F is expected to result in the loss of 27.7ha of woodland which is listed on the AWI as Category 2b (Long-established Woodlands of Plantation Origin) and 1ha of woodland on the AWI as Category 3 (Other woodland). Please note, in some cases habitat loss of woodland listed on the AWI may be greater than the actual woodland loss (refer to Table 11.45) due to changes in land use since the inventory was established.
- 11.7.77 Further information on the breakdown of this habitat loss is provided in Part 6 (Appendices), Appendix A11.5 (Estimated Habitat Loss) of this report.

Designated Sites

- 11.7.78 During construction, Option 2F has the potential to result in loss and fragmentation of supporting habitat associated with Moray and Nairn Coast SPA. This is due to the construction of Nairn East Junction B and the route option alignment to the east of this to the end of the scheme. This potential impact has been assessed as being irreversible (in the short-term), temporary, single event and near certain, and has been assessed to be of Major significance.
- 11.7.79 During operation, Option 2F has the potential to result in loss and fragmentation of supporting habitat associated with Moray and Nairn Coast SPA, and disturbance to qualifying species utilising this supporting habitat. This is due to the operation of Nairn East Junction B and the route option alignment to the east of this to the end of the scheme. These potential impacts have been assessed as being irreversible, permanent and near certain, and single event (habitat loss/fragmentation) or recurring (disturbance), and have been assessed to be of Major significance.

Terrestrial Habitats and Plants

- 11.7.80 During construction, Option 2F has the potential to result in the transfer of INNS (Himalayan balsam and giant hogweed) along SWF 26 (Auldearn Burn). These potential impacts have been determined to be irreversible and to be recurring, permanent and near certain, and are assessed as being of Major significance.
- 11.7.81 No operational impacts of Moderate or above significance are expected for Option 2F in relation to terrestrial habitats and plants.

Terrestrial Species

- 11.7.82 The potential construction impacts for Option 2F in relation to terrestrial species and their significance are shown in Table 11.46.

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Table 11.46: Potential construction impacts on terrestrial species - additional for Option 2F

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Great crested newt	Direct mortality	Terrestrial habitat; Meikle Kildrummie.	Irreversible, single event, permanent, near certain.	Major
	Habitat loss		Reversible, single event, short-term, certain.	Moderate
	Habitat fragmentation		Reversible, single event, short-term, certain.	Moderate
Otter	Disturbance	Areas adjacent to SWF 19 (Balnagowan Burn), SWF 22 (Alton Burn), SWF 23 (River Nairn) and SWF 26 (Auldearn Burn).	Reversible, recurring, short-term, near certain.	Moderate
Red squirrel	Direct mortality	Woodland south of Crook, along the A939 near Skene Park Cottage and Russell's Wood.	Irreversible, recurring, short-term, possible.	Moderate
	Disturbance		Reversible, recurring, short-term, near certain.	Moderate

11.7.83 During operation, Option 2F would also have the potential for impacts of Major and Moderate significance as a result of direct mortality, habitat loss and habitat fragmentation on great crested newts (refer to Table 11.46). These have been determined as being irreversible, single event, permanent and certain. Potential impacts are also similar for red squirrels (Moderate significance for direct mortality and disturbance) with the addition of habitat loss and habitat fragmentation within the noted woodlands. These impacts are determined to be permanent, irreversible, single event and certain. There is also the potential for direct mortality of badger through RTAs along the length of the route option and loss of badger habitat (e.g. existing sett) at Boath House Hotel. These potential impacts are determined to be permanent, irreversible, recurring and near certain (direct mortality) and permanent, irreversible, single event and near certain (habitat loss). The additional impacts for red squirrels and badger are assessed as being of Moderate significance.

Freshwater Habitats and Species

11.7.84 No additional construction or operational impacts of Moderate or above significance are expected for Option 2F in relation to freshwater habitats and species.

Option 2G

11.7.85 This section presents the potential impacts of Moderate and above significance specific for Option 2G and which are additional to those reported as common to all route options (refer to paragraphs 11.7.4 to 11.7.11).

Habitat Loss

11.7.86 The amount of habitat expected to be lost as a result of the operation of Option 2G is provided in Table 11.47.

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Table 11.47: Habitat loss (ha) - Option 2G

Habitat	ha
Woodland and Scrub	28.1
Agriculture	92.1
Other habitat	8.2
Overall Total	128.4

- 11.7.87 Overall approximately 128.4ha of habitat is expected to be lost to the operation of Option 2G. The largest amount of habitat loss is associated with agricultural land (92.1ha), of which arable is the largest component.
- 11.7.88 Option 2G is expected to result in the loss of 33ha of woodland which is listed on the AWI as Category 2b (Long-established Woodlands of Plantation Origin) and 0.5ha of woodland on the AWI listed as Category 3 (Other woodland). Please note, in some cases habitat loss of woodland listed on the AWI may be greater than the actual woodland loss (refer to Table 11.47) due to changes in land use since the inventory was established.
- 11.7.89 Further information on the breakdown of this habitat loss is provided in Part 6 (Appendices), Appendix A11.5 (Estimated Habitat Loss) of this report.

Designated Sites

- 11.7.90 No additional construction or operational impacts are expected for Option 2G in relation to designated sites.

Terrestrial Habitats and Plants

- 11.7.91 No additional construction impacts are expected for Option 2G in relation to terrestrial habitats and plants.
- 11.7.92 During operation, Option 2G has the potential to result in the loss of bluebells and their habitat at Roundall Wood. This has been determined to be permanent, irreversible, single event and certain and has been assessed to be of Moderate significance.

Terrestrial Species

- 11.7.93 The potential construction impacts for Option 2G in relation to terrestrial species and their significance are shown in Table 11.48.

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Table 11.48: Potential construction impacts on terrestrial species - additional for Option 2G

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Great crested newt	Direct mortality	Terrestrial habitat; Meikle Kildrummie.	Irreversible, single event, permanent, near certain.	Major
	Habitat loss		Reversible, single event, short-term, certain.	Moderate
	Habitat fragmentation		Reversible, single event, short-term, certain.	Moderate
	Direct mortality	Terrestrial and aquatic habitat; Policy Belts near Kinsteary House and Garblies.	Irreversible, single event, permanent, near certain.	Major
	Habitat loss		Reversible, single event, short-term, certain.	Major
	Habitat fragmentation		Reversible, single event, short-term, certain.	Major
	Pollution		Reversible, recurring, short-term, near certain.	Major
	Otter	Habitat fragmentation	Areas adjacent to SWF 26 (Auldearn Burn).	Reversible, recurring, short-term, certain.
Disturbance		Areas adjacent to SWF 19 (Balnagowan Burn), SWF 22 (Alton Burn), SWF 23 (River Nairn) and SWF 26 (Auldearn Burn).	Reversible, recurring, short-term, near certain.	Moderate
Red squirrel	Direct mortality	Woodland south of Crook, along the A939 near Skene Park Cottage and Bognafuaran Wood.	Irreversible, recurring, short-term, possible.	Moderate
	Disturbance		Reversible, recurring, short-term, near certain.	Moderate

11.7.94 During operation, Option 2G would also have the potential for impacts of Major or Moderate significance as a result of direct mortality, habitat loss, habitat fragmentation and pollution on great crested newts (refer to Table 11.48). These have been determined as being irreversible, single event, permanent and certain (direct mortality, habitat loss/fragmentation) and near certain (pollution). Potential impacts are also similar for red squirrels (Moderate significance for direct mortality and disturbance) with the addition of habitat loss and habitat fragmentation within the noted woodlands. These impacts are determined to be permanent, irreversible, single event and certain. The additional impacts for red squirrels are assessed as being of Moderate significance.

Freshwater Habitats and Species

11.7.95 During construction, Option 2G has the potential for pollution of a pond adjacent to the Policy Belts near Kinsteary House. There is also the potential for habitat loss/fragmentation and pollution of SWF 26 (Auldearn Burn). These potential impacts have been determined to be short-term, reversible, recurring and near certain, and are assessed as being of Moderate significance. There are no additional construction impacts of Moderate or above significance for Option 2G on freshwater species.

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- 11.7.96 No additional operational impacts of Moderate or above significance are expected for Option 2G in relation to freshwater habitats and species.

Option 2H

- 11.7.97 This section presents the potential impacts of Moderate and above significance specific for Option 2H and which are additional to those reported as common to all route options (refer to paragraphs 11.7.4 to 11.7.11).

Habitat Loss

- 11.7.98 The amount of habitat expected to be lost as a result of the operation of Option 2H is provided in Table 11.49.

Table 11.49: Habitat loss (ha) - Option 2H

Habitat	ha
Woodland and Scrub	20.5
Agriculture	108.3
Other habitat	7.3
Overall Total	136.1

- 11.7.99 Overall approximately 136.1ha of habitat is expected to be lost to the operation of Option 2H. The largest amount of habitat loss is associated with agricultural land (108.3ha), of which arable is the largest component.
- 11.7.100 Option 2H is expected to result in the loss of 26.6ha of woodland which is listed on the AWI as Category 2b (Long-established Woodlands of Plantation Origin) and 0.2ha of woodland on the AWI listed as Category 3 (Other woodland). Please note, in some cases habitat loss of woodland listed on the AWI may be greater than the actual woodland loss (refer to Table 11.49) due to changes in land use since the inventory was established.
- 11.7.101 Further information on the breakdown of this habitat loss is provided in Part 6 (Appendices), Appendix A11.5 (Estimated Habitat Loss) of this report.

Designated Sites

- 11.7.102 During construction, Option 2H has the potential to result in loss and fragmentation of supporting habitat associated with Moray and Nairn Coast SPA. This is due to the construction of Nairn East Junction C and the route option alignment to the east of this to the end of the scheme. This potential impact has been assessed as being irreversible (in the short-term), temporary, single event and near certain, and has been assessed to be of Major significance.
- 11.7.103 During operation, Option 2H has the potential to result in loss and fragmentation of supporting habitat associated with Moray and Nairn Coast SPA, and disturbance to qualifying species utilising this supporting habitat. This is due to the operation of Nairn East Junction C and the route option alignment to the east of this to the end of the scheme. These potential impacts have been assessed as being irreversible, permanent and near certain, and single event (habitat loss/fragmentation) or recurring (disturbance), and have been assessed to be of Major significance.

Terrestrial Habitats and Plants

- 11.7.104 During construction, Option 2H has the potential to result in the transfer of INNS (Himalayan balsam and giant hogweed) along SWF 26 (Auldearn Burn). These potential impacts have been determined to be irreversible and to be recurring, permanent and near certain, and are assessed as being of Major significance.

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- 11.7.105 No operational impacts of Moderate or above significance are expected for Option 2H in relation to terrestrial habitats and plants.

Terrestrial Species

- 11.7.106 The potential construction impacts for Option 2H in relation to terrestrial species and their significance are shown in Table 11.50.

Table 11.50: Potential construction impacts on terrestrial species - additional for Option 2H

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Great crested newt	Direct mortality	Terrestrial habitat; Meikle Kildrummie.	Irreversible, single event, permanent, near certain.	Major
	Habitat loss		Reversible, single event, short-term, certain.	Moderate
	Habitat fragmentation		Reversible, single event, short-term, certain.	Moderate
Otter	Habitat fragmentation	Areas adjacent to SWF 26 (Auldearn Burn).	Reversible, recurring, short-term, certain.	Major
	Disturbance	Areas adjacent to SWF 19 (Balnagowan Burn), SWF 22 (Alton Burn), SWF 23 (River Nairn) and SWF 26 (Auldearn Burn).	Reversible, recurring, short-term, near certain.	Major
Red squirrel	Direct mortality	Woodland south of Crook, along the A939 near Skene Park Cottage and Russell's Wood.	Irreversible, recurring, short-term, possible.	Moderate
	Disturbance		Reversible, recurring, short-term, near certain.	Moderate

- 11.7.107 During operation, Option 2H would also have the potential for impacts of Major or Moderate significance as a result of direct mortality, habitat loss and habitat fragmentation on great crested newts (refer to Table 11.50). These have been determined as being irreversible, single event, permanent and certain. Potential impacts are also similar for red squirrels (Moderate significance for direct mortality and disturbance) with the addition of habitat loss and habitat fragmentation within the noted woodlands. These impacts are determined to be permanent, irreversible, single event and certain. There is also the potential for loss of badger habitat (e.g. existing setts) along the local road or route option alignment at Both House Hotel which is determined to be permanent, reversible, single event and near certain. These additional impacts are assessed as being of Moderate significance.

Freshwater Habitats and Species

- 11.7.108 There are no additional construction or operational impacts of Moderate or above significance for Option 2H in relation to freshwater habitats.
- 11.7.109 There are no additional impacts during construction for Option 2H in relation to freshwater species. During operation, there are no additional impacts for Option 2H that are of Moderate or above significance for freshwater species.

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Option 2I

11.7.110 This section presents the potential impacts of Moderate and above significance specific for Option 2I and which are additional to those reported as common to all route options (refer to paragraphs 11.7.4 to 11.7.11).

Habitat Loss

11.7.111 The amount of habitat expected to be lost as a result of the operation of Option 2I is provided in Table 11.51.

Table 11.51: Habitat loss (ha) - Option 2I

Habitat	ha
Woodland and Scrub	20.2
Agriculture	97.8
Other habitat	8.2
Overall Total	126.2

11.7.112 Overall approximately 126.2ha of habitat is expected to be lost to the operation of Option 2I. The largest amount of habitat loss is associated with agricultural land (97.8ha), of which arable is the largest component.

11.7.113 Option 2I is expected to result in the loss of 24.8ha of woodland which is listed on the AWI as Category 2b (Long-established Woodlands of Plantation Origin). Please note, in some cases habitat loss of woodland listed on the AWI may be greater than the actual woodland loss (refer to Table 11.51) due to changes in land use since the inventory was established.

11.7.114 Further information on the breakdown of this habitat loss is provided in Part 6 (Appendices), Appendix A11.5 (Estimated Habitat Loss) of this report.

Designated Sites

11.7.115 No additional construction or operational impacts are expected for Option 2I in relation to designated sites.

Terrestrial Habitats and Plants

11.7.116 No additional construction impacts are expected for Option 2I in relation to terrestrial habitats and plants.

11.7.117 During operation, Option 2I has the potential to result in the loss of bluebells and their habitat at Roundall Wood. This has been determined to be permanent, irreversible, single event and certain and has been assessed as being of Moderate significance.

Terrestrial Species

11.7.118 The potential additional construction impacts for Option 2I in relation to terrestrial species and their significance are shown in Table 11.52.

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Table 11.52: Potential construction impacts on terrestrial species - additional for Option 2I

Terrestrial Species	Potential Impact	Location of Impact	Impact Characterisation	Significance
Great crested newt	Direct mortality	Terrestrial habitat; Meikle Kildrummie.	Irreversible, single event, permanent, near certain.	Major
	Habitat loss		Reversible, single event, short-term, certain.	Moderate
	Habitat fragmentation		Reversible, single event, short-term, certain.	Moderate
	Direct mortality	Terrestrial and aquatic habitat; Policy Belts near Kinsteary House and Garblies.	Irreversible, single event, long-term, near certain.	Major
	Habitat loss		Reversible, single event, short-term, certain.	Major
	Habitat fragmentation		Reversible, single event, short-term, certain.	Major
	Pollution		Reversible, recurring, short-term, near certain.	Major
	Otter	Habitat fragmentation	Areas adjacent to SWF 26 (Auldearn Burn).	Reversible, recurring, short-term, certain.
Disturbance		Areas adjacent to SWF 19 (Balnagowan Burn), SWF 22 (Alton Burn), SWF 23 (River Nairn) and SWF 26 (Auldearn Burn).	Reversible, recurring, short-term, near certain.	Major

11.7.119 During operation, Option 2I would also have the potential for impacts of Major or Moderate significance as a result of direct mortality, habitat loss, habitat fragmentation and pollution on great crested newts (refer to Table 11.52). These have been determined as being irreversible, single event, permanent and certain (direct mortality, habitat loss/fragmentation) and near certain (pollution).

Freshwater Habitats and Species

11.7.120 During construction, Option 2I has the potential for pollution of a pond adjacent to the Policy Belts near Kinsteary House. This potential impact has been determined to be short-term, reversible, recurring and near certain and is assessed as being of Moderate significance. There are no additional construction impacts of Moderate or above significance for Option 2I on freshwater species.

11.7.121 No additional potential operational impacts of Moderate or above significance for Option 2I are expected in relation to freshwater habitats and species.

11.8 Compliance with Policies and Plans

11.8.1 An assessment of the compliance of the route options in relation to the policies and plans mentioned in Section 14.3 (Policies and Plans) is presented below for designated sites, protected species and other habitats and species for each section of the scheme; Inverness to Gollanfield and the Nairn Bypass. Where impacts are the same for both sections of the scheme this is identified and reported collectively.

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- 11.8.2 It should be noted that in relation to Policy 28 (Sustainable Design) of the HwLDP, the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme is considered to have a demonstrable overriding strategic benefit and as such there is scope to consider that there would be no conflict with this policy. The scheme is included in the Strategic Transport Projects Review (STPR) (Transport Scotland, 2008) which identifies a programme of strategic transport interventions necessary to support the future effective operation of Scotland's transport network. The Infrastructure Investment Plan (Scottish Government, 2011) also identifies investment in Scotland's transport as a key enabler for enhancing productivity and delivering sustainable growth, and has made a commitment to dual the A96 between Inverness and Aberdeen by 2030. The strategic benefits are also reflected in the HwLDP which states that key transport improvements must be delivered in order to support the development of the A96 corridor.
- 11.8.3 The above could also be considered in relation to SPP and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP in respect of impacts on nationally designated sites. These policies state that development would not be permitted unless it would not adversely affect the integrity of the area or the qualities for which the site has been designated, or any adverse effects are clearly outweighed by social, environmental or economic benefits of national importance.

Designated Sites

Inverness to Gollanfield

- 11.8.4 All of the route options have the potential to conflict with SPP and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP as a result of potential impacts on the Inner Moray Firth SPA and Ramsar, Moray Firth SAC, and Loch Flemington SPA. An appropriate assessment would be required and if this assessment does not conclude that there would be no adverse effect on the integrity of these sites, and there are no alternative solutions, imperative reasons of overriding public interest must be provided in order for the route options to comply with these policies.
- 11.8.5 In relation to designated sites, there is scope to consider that the route options would not conflict with Policy 28 (Sustainable Design) of the HwLDP, in respect of impacts on EU designated sites, and with SPP, Policy 28 (Sustainable Design) and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP in respect of nationally designated sites (e.g. Longman and Castle Stuart Bays SSSI). This is due to the strategic benefits of the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme (refer to paragraph 11.8.2). However, further assessment on the full extent of the impacts on these sites would be required to conclude whether or not the benefits of strategic and national importance outweigh these adverse impacts.
- 11.8.6 No significant impacts are expected on woodland listed on the AWI as a result of any of the route options. Therefore, no conflict is expected with the relevant section of SPP and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP in this regard.

Nairn Bypass

- 11.8.7 All of the route options have the potential to conflict with SPP and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP as a result of potential impacts on the on the Inner Moray Firth SPA and Ramsar, Moray Firth SAC, and Moray and Nairn Coast SPA and Ramsar. An appropriate assessment would be required and if this assessment does not conclude that there would be no adverse effect on the integrity of these sites and there are no alternative solutions, imperative reasons of overriding public interest must be provided in order for the route options to comply with these policies.
- 11.8.8 No significant impacts are expected on any biological features of SSSIs as a result of any of the route options. Therefore, no conflict is expected with the relevant section of SPP or

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Policy 28 (Sustainable Design) and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP in this regard.

- 11.8.9 Options 2A, 2B, 2C, and 2D have the potential to conflict with SPP and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP as a result of potential impacts on Delnies Wood which is listed on the AWI as a Category 2b woodland (Long established Woodland of Plantation Origin). The HwLDP designates this at the local level and in order to comply with this policy it must be demonstrated that these route options will not have an unacceptable impact on the natural environment.
- 11.8.10 In relation to designated sites, there is scope to consider that the route options would not conflict with Policy 28 (Sustainable Design) of the HwLDP due to the strategic benefits of the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme (refer to paragraph 11.8.2). However, further assessment on the full extent of the impacts on these sites would be required to conclude whether or not the strategic benefits outweigh these adverse impacts.

Protected Species

- 11.8.11 The compliance with policies and plans for protected species is the same for both sections of the scheme. The text below therefore represents both sections collectively.
- 11.8.12 All of the route options have the potential to conflict with SPP and Policy 58 (Protected Species) of the HwLDP as a result of potential impacts on European protected species. In order to comply with these policies, it would be necessary to demonstrate that there are no satisfactory alternatives to each of the route options, and the development is required for preserving public health, safety or another imperative reason of overriding public interest. Should further assessment identify that the route options would be detrimental to the maintenance of a population of a European protected species at a favourable conservation status in its natural range, the development would conflict with these planning policies.
- 11.8.13 All of the route options also have the potential to conflict with Policy 58 (Protected Species) of the HwLDP as a result of potential impacts on species protected under the Schedule 1 of the Wildlife and Country Act 1981 (as amended) and/or protected bird species. As the scheme is not required for preserving public health or safety, the development would conflict with these policies should it not be possible to remove any adverse effects through mitigation. All route options would also be required to accord with the requirements of the Protection of Badgers Act 1992 (as amended) in order to comply with Policy 58 (Protected Species) of the HwLDP.
- 11.8.14 In relation to protected species there is scope to consider that the route options would not conflict with Policy 28 (Sustainable Design) of the HwLDP due to the strategic benefits of the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme (refer to paragraph 11.8.2). However, further assessment on the full extent of the impacts on protected species would be required to conclude whether or not the strategic benefits outweigh the adverse impacts.

Other Habitats and Species

- 11.8.15 The compliance with policies and plans for other habitats and species is the same for both sections of the scheme. The text below therefore represents these impacts collectively.
- 11.8.16 All of the route options have the potential to conflict with SPP, Policy 59 (Other Important Species) and Policy 60 (Other Important Habitats and Article 10 Features) of the HwLDP as a result of potential impacts to habitats and species not otherwise protected by legislation or nature conservation site designations.

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- 11.8.17 In addition, all of the route options have the potential to conflict with SPP, Policy 60 (Other Important Habitats and Article 10 Features) and Policy 74 (Green Networks) of the HwLDP as a result of the loss and fragmentation of habitats within the A96 Corridor Green Network. In order to comply with these policies, the fragmentation of habitats should be minimised as far as possible and steps should be taken to improve connectivity.
- 11.8.18 There is also potential for all the route options to result in the loss of trees and woodland. All of the route options therefore have the potential to conflict with Policy 51 (Trees and Development) and Policy 52 (Principles of Development in Woodland) of the HwLDP that seek to protect existing hedges, trees and woodland. As the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme is expected to offer clear and significant public benefits (refer to paragraph 11.8.2), the route options have the potential to comply with Policy 52 (Principle of Development in Woodland) of the HwLDP provided compensatory planting is provided. Policy 51 (Trees and Development) of the HwLDP would also require a tree planting or landscape plan to secure additional tree/hedge planting in order to compensate for tree removal.
- 11.8.19 In relation to other habitats and species there is scope to consider that the route options would not conflict with Policy 28 (Sustainable Design) of the HwLDP due to the strategic benefits of the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme (refer to paragraph 11.8.2). However, further assessment on the full extent of the impacts would be required to conclude whether or not the strategic benefits outweigh the adverse impacts.

11.9 Potential Mitigation

- 11.9.1 For a DMRB Stage 2 Assessment the design has not been sufficiently developed to allow mitigation measures to be defined in detail at this stage. The objective of this section is to identify potential mitigation taking into account best practice, legislation and guidance, which would be developed and refined during the DMRB Stage 3 Assessment. As part of DMRB Stage 3, the design of the preferred option would be reviewed and, where possible, the preferred option would be further developed (pre-DMRB Stage 3 Assessment mitigation) to minimise impacts on habitats and biodiversity.
- 11.9.2 The mitigation presented follows the Ecological Impact Assessment (IEEM, 2006), DMRB (Highways Agency et al., 1993) and SNH guidance (SNH, 2013a). A hierarchical approach to mitigation design has been adopted with the aim of avoiding impacts in the first instance in line with the guidance in PAN1/2013: Environmental Impact Assessment (Scottish Government, 2013b).
- 11.9.3 It is expected that all impacts of negligible significance and the majority of impacts of minor significance would be mitigated through the application of best working practice (e.g. mitigation of potential pollution impacts through adherence to standard best practice and guidelines, such as the SEPA Pollution Prevention Guidelines (PPGs) (SEPA, 2014)).
- 11.9.4 Significant ecological impacts (Moderate or above) are expected to be mitigated through a combination of best practice and mitigation techniques (as described below) which would be targeted to specific locations.

Designated Sites

- 11.9.5 Disturbance to qualifying species during construction could be mitigated by timing construction of noisy activities (such as piling) to be outwith the wintering bird period. Utilisation of piling systems that minimise noise and vibration and that use soft-starts could also be used to mitigate for the effects of disturbance.
- 11.9.6 Screens could be used to shield any construction areas from locations that are assessed as being important to qualifying species. Minimising site access routes and creating exclusion zones in sensitive areas could also be used to mitigate for disturbance.

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- 11.9.7 During operation, habitat loss and disturbance could be mitigated through enhancement of existing habitat with the aim of increasing the amount of supporting habitat available for qualifying species.

Terrestrial Habitats and Plants

- 11.9.8 Habitat loss could be mitigated through the provision of new habitat, which would aim to reduce fragmentation of existing vegetation types, creating new linkages or more ecologically resilient functional units, thus enhancing the wider environment.
- 11.9.9 Loss of plant species of conservation interest could be mitigated by the minimisation of land-take and control of the working corridor. Soil plugs of individual species could be transplanted to new suitable locations. Topsoil should also be stored appropriately and re-used for the creation of similar habitat post construction.
- 11.9.10 The potential impacts as a result of the transfer of INNS (giant hogweed, Himalayan balsam, Japanese knotweed) during construction could be mitigated through the implementation of an INNS management plan. A plan would aim to contain existing stands of INNS, undertake species-appropriate treatment, and ensure that construction work was undertaken appropriately and within the legal framework to ensure prevention of spread within and beyond site boundaries. Such a plan should also cover animal biosecurity if appropriate.

Terrestrial Species

- 11.9.11 Impacts on species during construction could be mitigated through the provision of appropriate protection systems and/or exclusion zones. Mammal-proof fencing could be provided to mitigate for direct mortality (e.g. through RTAs) of badger and otter, and amphibian fencing could be provided in areas where great crested newts are likely to be present. Mammal-proof fencing and amphibian fencing could also be provided to mitigate for direct mortality during the operational phase of the scheme.
- 11.9.12 Severance of badger or otter commuting routes could be mitigated through the provision of mammal ledges in culverts and under bridges. Where ledges are inappropriate or where no culverts exist, dry mammal underpasses could be provided instead.
- 11.9.13 Where appropriate, dedicated wildlife overbridges or accommodation bridges with an enhanced design could be provided to increase the permeability of the route options to wildlife movement.
- 11.9.14 Exclusion zones around habitats could minimise the impact on protected species and their habitats, and reduce disturbance. Limits on night-time working or the provision of directional construction lighting could also reduce disturbance to protected species such as badgers, bats and otters.
- 11.9.15 Noise barriers (bunds or fencing) could be utilised during the operational phase of the scheme in areas of ecological interest deemed to be sensitive to noise. Minimisation and/or use of directional lighting with minimised spill could also be used at appropriate locations to avoid disturbance.
- 11.9.16 The loss of protected species lying-up/resting/roosting sites during construction and/or operation (under the scheme footprint) could be mitigated through the provision of alternative sites.
- 11.9.17 Artificial setts or holts could be constructed for loss of badger or otter habitat. Boxes could be erected for birds, bats, pine marten and red squirrel and artificial refuges could be created for great crested newts. In addition, planting could provide opportunities for above ground lying-up sites for otter and great crested newt, and foraging habitat for other species.

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- 11.9.18 The fragmentation of red squirrel habitat or severance of bat commuting routes could be mitigated through new planting to create new linkages between existing habitats.

Freshwater Habitats and Species

- 11.9.19 Habitat loss could be mitigated through the enhancement of realigned sections of watercourses, by creating naturalistic habitats which could lead to positive impacts in poor quality streams through channel and riparian enhancement work. Any realignments should be designed to minimise sedimentation and erosion.
- 11.9.20 Culvert extensions and new culverts should be constructed to take into account guidelines for migratory fish species such as Engineering in the Water Environment Good Practice Guide: Temporary Construction Methods (SEPA, 2009) and Engineering in the Water Environment Good Practice Guide: River Crossings (SEPA, 2010h).

Pollution Impacts

- 11.9.21 Potential pollution incidents affecting all nature conservation resources during construction could be mitigated through the adherence to standard best practice and guidelines, such as the SEPA PPGs (SEPA, 2014).
- 11.9.22 Potential pollution impacts during operation (e.g. road runoff) can be mitigated through the provision of Sustainable Drainage Systems (SuDS).

Other Mitigation

- 11.9.23 Where significant ecological impacts (Moderate or above) are unable to be sufficiently mitigated through the application of best practice and the mitigation measures discussed above, consideration of compensatory mitigation to off-set potential impacts may be required. This may involve the creation of new ecologically important habitats at specific locations, not necessarily within the location of the potential impact.

11.10 Summary of Route Options

- 11.10.1 This section provides a summary of the expected habitat loss and potential impacts of Moderate or above significance for each of the route options.
- 11.10.2 A discussion of the potential residual impacts is then presented taking into account the possible mitigation measures outlined in Section 11.9 (Potential Mitigation).

Inverness to Gollanfield

- 11.10.3 A summary of the habitat expected to be lost for each route option can be found in Table 11.53.

Table 11.53: Expected habitat loss (ha) for each route option (Inverness to Gollanfield)

Habitat Type	Option/ Land-take (ha)							
	1A	1A(MV)	1B	1B(MV)	1C	1C(MV)	1D	1D(MV)
Woodland and Scrub	8.3	8.7	14.0	15.5	8.5	8.8	14.2	15.8
Agriculture	111.7	112.4	106.6	107.8	104.6	105.3	99.6	101.9
Other habitat	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.2
Total (ha)	120.1	121.2	120.8	123.5	113.2	114.2	114.0	117.9

- 11.10.4 Options 1A, 1A (MV), 1B and 1B (MV) are expected to have greatest loss of habitat, with Option 1B (MV) expected to have the greatest loss of habitat overall. This is mainly due to the local road to Alturlie Point, and for Option 1B (MV) the additional habitat loss associated

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with the route option alignment south of Morayston and Mid Coul Junction B. Options 1C and 1D are expected to have the least amount of habitat loss overall and this is mainly due to these route options avoiding the habitat loss associated with both the local road to Alturlie Point and the route option alignment south of Morayston Farm.

- 11.10.5 Agricultural land is the largest component of land to be lost, with arable land being the largest constituent of this. Options 1A and 1A (MV) would result in the loss of largest area of agricultural land and this is mainly due to the local road to Alturlie Point and the habitat loss associated with the route option alignment through agricultural land to the east of Tornagrain. The majority of woodland to be lost is comprised of coniferous plantation woodland, of which some is listed on the AWI, with Options 1B, 1B (MV) 1D and 1D (MV) resulting in the greatest losses. This is mainly due to Mid Coul Junction B and the potential loss of habitat at Tornagrain Wood.
- 11.10.6 A summary of the potential construction impacts of Moderate or above significance for each route option is provided in Table 11.54. This includes a summary of potential impacts on designated sites, terrestrial habitats and plants, terrestrial species and freshwater habitats and plants.

Table 11.54: Summary of potential construction impacts (Moderate or above significance) for all ecological receptors (Inverness to Gollanfield)

Significance	Option							
	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Major	11	11	13	13	7	7	9	9
Moderate	20	21	19	21	12	15	12	14
Total	31	32	32	34	19	22	21	23

- 11.10.7 Options 1A, 1A (MV), 1B and 1B (MV) are expected to have the greatest number of construction impacts, and also the greatest number of impacts of Major significance. This is mainly due to the construction of the local road to Alturlie Point and the potential impacts on the following; Inner Moray Firth SPA/Ramsar in respect of the potential for disturbance of qualifying species using SPA supporting habitat and the intertidal area; disturbance of cited species of the Longman and Castle Stuart Bays SSSI in their use of the intertidal area; and wintering birds through habitat loss, habitat fragmentation, disturbance and potential pollution of terrestrial and intertidal habitat. There are also potential impacts in relation to direct mortality and pollution of habitat for great crested newt within broadleaved woodland to the east of Redhill.
- 11.10.8 Option 1B (MV) is expected to have the greatest number of construction impacts overall. This is mainly due to the impacts in relation to the construction of Mid Coul Junction B for great crested newt (direct mortality and pollution of habitat) and pollution of freshwater habitat at Bruaich na Fuaran, and fragmentation of other habitat as a result of the route option alignment south of Morayston. It should be noted that the potential impacts on otter as a result of the route option alignment south of Morayston are also present for Options 1A (MV), 1C (MV) and 1D (MV).
- 11.10.9 Options 1C, 1C (MV), 1D and 1D (MV) are expected to have the least number of construction impacts, with Options 1C and 1D expected to have the least number of impacts overall. This is mainly due to these route options avoiding the impacts associated with the construction of the local road to Alturlie Point, with Option 1C and 1D further avoiding the impacts on otter associated with the route option alignment south at Morayston (refer to paragraph 11.10.8).
- 11.10.10 A summary of the potential operational impacts of Moderate or above significance for each route option is provided in Table 11.55. This includes a summary of potential impacts on designated sites, terrestrial habitats and plants, terrestrial species and freshwater habitats and plants.

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Table 11.55: Summary of potential operational impacts (Moderate or above significance) for all ecological receptors (Inverness to Gollanfield)

Significance	Option							
	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Major	10	11	11	12	6	7	7	8
Moderate	19	20	21	23	11	14	14	16
Total	29	31	32	35	17	21	21	24

- 11.10.11 During operation, the route options show a similar pattern and number of impacts as seen during construction (refer to paragraphs 11.10.7 to 11.10.9), with the exception of the following:
- Inner Moray Firth SPA/Ramsar – additional impacts related to the potential for loss of SPA supporting habitat;
 - wintering birds - operational impacts relate to disturbance only;
 - great crested newt – additional impacts related to habitat loss within the broadleaved woodland to the east of Redhill; and
 - otter and badger – potential impacts relate to habitat loss associated with the route option alignment to the south of Morayston.
- 11.10.12 In addition, for Options 1B, 1B (MV), 1D and 1D (MV) there are additional impacts during operation in relation to habitat fragmentation of bat commuting routes near Mid Coul Farm.
- 11.10.13 Overall, taking into account habitat loss and potential construction and operational impacts of Moderate or above significance, Option 1B (MV) is expected to have the greatest impact on habitats and biodiversity. As noted above, this is mainly due to the following; the local road to Alturlie Point and the associated potential impacts on the Inner Moray Firth SPA/Ramsar and its qualifying species; Mid Coul Junction B in relation to the potential impacts on great crested newt, freshwater habitats and bat commuting routes; and the route option alignment south of Morayston in relation to potential impacts on badger and otter habitat. Option 1C avoids all of these potential impacts and is therefore expected to have the least impact overall on habitats and biodiversity.
- 11.10.14 Mitigation as described in Section 11.9 (Potential Mitigation) is expected to reduce the impacts on habitats and biodiversity from those reported above and it is anticipated that there would be no significant residual effects. However, it should be noted that in relation to the potential impacts on the Inner Moray Firth SPA/Ramsar site, Loch Flemington and the Moray Firth SAC, further assessment would be required to confirm whether mitigation would prevent any adverse effects on these European designated sites.
- 11.10.15 In relation to compliance with planning policies, with appropriate mitigation (refer to Section 11.9), all of the route options have the potential to comply with SPP, Policy 51 (Trees and Development), Policy 52 (Principles of Development in Woodland), Policy 57 (Natural, Built and Cultural Heritage), Policy 58 (Protected Species), Policy 59 (Other Important Species), Policy 60 (Other Important Habitats and Article 10 Features) and Policy 74 (Green Networks) of the HwLDP. There is also scope to consider that there would be no conflict with Policy 28 (Sustainable Design) of the HwLDP, and in relation to potential impacts on nationally designated sites no conflict would be expected with SPP and Policy 57 (Natural, Built and Cultural Heritage). This is due to the nationally important and strategic benefits of the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme. However, further assessment on the full extent of the impacts on these sites would be required to conclude whether or not the benefits of national importance outweigh these adverse impacts.
- 11.10.16 With regard to internationally designated sites, an appropriate assessment would be required. If the assessment does not conclude that there would be no adverse effect on the integrity of the site and if there were no alternative solutions, imperative reasons of

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overriding public interest must be provided for the scheme in order to comply with SPP and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP.

Nairn Bypass

- 11.10.17 A summary of the habitat expected to be lost for each route option can be found in Table 11.56.

Table 11.56: Expected habitat loss (ha) for each route option (Nairn Bypass)

Habitat Type	Option/Land-take (ha)								
	2A	2B	2C	2D	2E	2F	2G	2H	2I
Woodland/Scrub	39.5	39.8	46.2	37.2	22.4	22.8	28.1	20.5	20.2
Agriculture	81.9	72.6	76.4	91.0	97.5	88.4	92.1	108.3	97.8
Other habitat	1.2	1.2	2.1	1.9	7.3	7.3	8.2	7.3	8.2
Total	122.6	113.6	124.7	130.1	127.2	118.5	128.4	136.1	126.2

- 11.10.18 Option 2H is expected to result in the greatest loss of habitat overall. This is mainly due to Option 2H being both one of the most southern route options at its western end and one of the most northern route options at its eastern end. Together this results in greater habitat loss overall. Options 2B and 2F are expected to have the least amount of habitat loss overall and this is mainly due to these route options closely following the existing A96 to the east of Auldearn.
- 11.10.19 Agricultural land is the largest component of habitat to be lost with arable land being the largest constituent of this. Options 2E, 2H and 2I are expected to result in the greatest loss of agricultural land and this is mainly due to the route option alignment south of Moss-side in combination with either the route option alignment to the north-east of Auldearn (Options 2E and 2H) or south of Newton of Park (Option 2I). Options 2A, 2B and 2C are expected to have the least amount of loss of agricultural land and this is mainly due to these route options having the largest amount of woodland loss as they go through Delnies Wood at their western end. Option 2D also goes through Delnies Wood, but as this route option is similar to Option 2I at its eastern end (south of Newton of Park), it has a larger amount of agricultural habitat loss.
- 11.10.20 A summary of the potential construction impacts of Moderate or above significance for each route option is provided in Table 11.57. This includes a summary of potential impacts on designated sites, terrestrial habitats and plants, terrestrial species and freshwater habitats and plants.

Table 11.57: Summary of potential construction impacts (Moderate or above significance) for all ecological receptors (Nairn Bypass)

Significance	Option								
	2A	2B	2C	2D	2E	2F	2G	2H	2I
Major	10	7	13	15	11	8	14	11	16
Moderate	17	18	24	12	17	18	24	17	12
Total	27	25	37	27	28	26	38	28	28

- 11.10.21 Options 2C and 2G are expected to have the greatest number of construction impacts overall. This is mainly due to the following additional impacts that these route options have on; great crested newt due to the construction of Nairn East Junction D; freshwater habitat near Kinsteary House due to construction of the route option alignment; and red squirrels as a result of the route option alignment through the woodland south of Crook, the woodland on the A939 near Skene Park and Bognafuaran Wood. Options 2D and 2I have similar impacts in relation to great crested newts and the freshwater habitat near Kinsteary House, but they

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avoid most of the woodland where there are expected to be significant impacts for red squirrel.

- 11.10.22 Options 2B and 2F are expected to have the least number of construction impacts overall. This is mainly due to these route options being online to the north of Auldearn and avoiding a number of impacts on SWF 26 (Auldearn Burn).
- 11.10.23 Although the location of the potential construction impacts varies, Options 2A, 2D, 2E, 2H and 2I are expected to have a similar number of impacts on ecological receptors.
- 11.10.24 A summary of the potential operational impacts of Moderate or above significance for each route option is provided in Table 11.58. This includes a summary of potential impacts on designated sites, terrestrial habitats and plants, terrestrial species and freshwater habitats and plants.

Table 11.58: Summary of potential operational impacts (Moderate or above significance) for all ecological receptors (Nairn Bypass)

Habitat Type	Option								
	2A	2B	2C	2D	2E	2F	2G	2H	2I
Major	5	5	11	11	6	6	12	6	12
Moderate	28	29	28	16	24	25	24	24	12
Total	33	34	39	27	30	31	36	30	24

- 11.10.25 Options 2C and 2G are expected to have the greatest number of operational impacts overall. This is mainly due to the additional impacts that these route options have on great crested newts due to Nairn East Junction D; on bluebells and bluebell habitat within Roundall Wood due to the route option alignment; and red squirrels as a result of the route option alignment through the woodland south of Crook, the woodland on the A939 near Skene Park and Bognafuaran Wood. Options 2D and 2I have similar impacts in relation to great crested newts and bluebells within Roundall wood. However, Option 2D avoids most of the woodland where there are expected to be significant impacts for red squirrel and Option 2I avoids all of the woodland where there are expected to be significant impacts for red squirrel.
- 11.10.26 Option 2I is expected to have the least number of operational impacts overall. This is mainly due to this route option avoiding significant impacts on red squirrels and badgers. Options 2C, 2D and 2G also have no significant impacts expected on badger during operation, but these route options are expected to have greater impacts on red squirrel.
- 11.10.27 Although the location of the potential construction impacts varies, Options 2A, 2B, 2E, 2F and 2H are expected to have a similar number of impacts on ecological receptors.
- 11.10.28 In determining the route options which are expected to have the greatest overall impact on habitats and biodiversity, consideration of the potential impacts on European designated sites including the Inner Moray Firth SPA, Moray and Nairn Coast SPA and Moray Firth SAC should be taken into account. All route options are expected to have an impact through disturbance to qualifying species in their use of SPA supporting habitat and potential pollution of the Moray Firth SAC. However, Options 2A, 2B, 2E, 2F and 2H all have additional impacts on the Moray and Nairn Coast SPA in relation to loss and fragmentation of supporting habitat as a result of Nairn East Junction A, B or C and the route option alignment to the east of this to the end of the proposed scheme.
- 11.10.29 Overall, taking into account habitat loss and the potential impacts noted above, whereby the potential impacts on European designated sites are considered to be important differentiators between the route options, Options 2E and 2H are expected to have the greatest impact on habitats and biodiversity. This is mainly due to the additional impacts in relation to the following; loss and fragmentation of supporting habitat of the Moray and Nairn Coast SPA due to Nairn East Junction B or C and the route option alignment to the east of

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this to the end of the scheme; the route option alignment south of Moss-side in relation to potential impacts on great crested newts at Meilke Kildrummie; and the potential impacts on red squirrels at woodland south of Crook, the woodland on the A939 near Skene Park and Russell's Wood. Options 2D and 2I are expected to have the least impact overall mainly due to these route options avoiding the additional impacts on the supporting habitat of the Moray and Nairn Coast SPA and having less of an impact in relation to red squirrels and badgers.

- 11.10.30 Mitigation as described in Section 11.9 (Potential Mitigation) is expected to reduce the impacts on habitats and biodiversity from those reported above and it is anticipated that there would be no significant residual effects. However, it should be noted that in relation to the potential impacts on the Inner Moray Firth SPA/Ramsar site, Moray and Nairn Coast SPA/Ramsar site and Moray Firth SAC, further assessment would be required to confirm whether mitigation would prevent any adverse effects on these European designated sites.
- 11.10.31 In relation to compliance with planning policies the same applies as noted for the Inverness to Gollanfield section (refer to paragraphs 11.10.15 to 11.10.16 for further details).

11.11 Scope of DMRB Stage 3 Assessment

- 11.11.1 The DMRB Stage 3 Assessment for habitats and biodiversity should be undertaken in accordance with DMRB Ecology and Nature Conservation and IAN 130/10.
- 11.11.2 To inform the DMRB Stage 3 Assessment the following surveys should be considered:
- Surveys of the utilisation of grassland and arable areas by seabirds adjacent to the SPA and Ramsar. General wintering and breeding bird surveys should also be considered.
 - Surveys of protected species (as required) to investigate the distribution and population of these species within the study area.
 - Badger surveys to determine social group territories and commuting routes.
 - Surveys of bat roosting and foraging sites and commuting routes to determine the occurrence and distribution of bat species within the study area.
 - Great crested newt surveys to inform the full extent of the occurrence of this species within the study area.
 - Surveys of affected watercourses to assess their utilisation by otter, especially in locations of new or extended culverts, realignments or overbridges.
 - Surveys of watercourses and ponds to determine their ability to support ecologically significant species.
- 11.11.3 The requirement and scope of these surveys, and any other surveys required as part of the DMRB Stage 3 Assessment, should be agreed with SNH during the DMRB Stage 3 consultation process.

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12 Geology and Soils

12.1 Introduction

- 12.1.1 This chapter presents the DMRB Stage 2 Assessment of the expected impacts of each of the route options in relation to geology, groundwater and contaminated land.
- 12.1.2 The assessment includes a discussion of the following:
- baseline conditions within the study area relating to solid and drift geology, mineral extraction, contaminated land, groundwater and the location of private water supplies (PWS) (e.g. springs and wells);
 - potential impacts of each of the route options with regard to the identified baseline conditions;
 - outline or anticipated mitigation measures that might be developed at DMRB Stage 3 for the preferred option; and
 - a summary of the route option assessment identifying, where possible, residual impacts taking into account likely mitigation.
- 12.1.3 The assessment is supported by the following appendices which are located in Part 6 (Appendices) of this report:
- Appendix A12.1: Contaminated Land Sources.
- 12.1.4 As described in Part 1 (The Scheme), Chapter 3 (Description of Route Options) of this report, the proposed scheme is divided into two sections; Inverness to Gollanfield and the Nairn Bypass. The information presented in Section 12.2 (Approach and Methods), Section 12.3 (Policies and Plans) and Section 12.9 (Potential Mitigation) is appropriate to both sections. The information presented in Section 12.4 (Baseline Conditions), Sections 12.5 to 12.7 (Impact Assessment), Section 12.8 (Compliance with Policies and Plans) and Section 12.10 (Summary of Route Options) is reported for each section and where appropriate under the headings Inverness to Gollanfield and the Nairn Bypass.
- 12.1.5 Section 12.11 provides details on the proposed scope for the DMRB Stage 3 Assessment and Section 12.12 provides a full list of references that are noted within this chapter.

12.2 Approach and Methods

Scope and Guidance

- 12.2.1 This assessment has been undertaken using the guidance contained in DMRB, Volume 11, Section 3, Part 11, Geology and Soils (The Highways Agency et al., 1993) (hereafter referred to as DMRB Geology and Soils), taking into account updated guidance on contaminated land risk assessment where appropriate (refer to paragraph 12.2.11), and DMRB, Volume 11, Section 3, Part 10, HD45/09 Road Drainage and the Water Environment (The Highways Agency et al., 2009) (hereafter referred to as HD45/09).
- 12.2.2 With the exception of contaminated land, impacts on soils are not assessed in detail in this chapter. The principal issue with regard to soils is deterioration of agricultural soil quality due to disturbance at construction stage (and subsequent storage/reuse). Measures to address this are considered in the context of agricultural land capability in Chapter 16 (Community and Private Assets) of this report. Potential impacts on peat deposits are included in the assessment of superficial deposits and potential impacts on made ground are included in the assessment of contaminated land.

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Study Area

- 12.2.3 The assessment covers a study area extending 500m from the outermost edge of the route option.

Baseline Data

- 12.2.4 Baseline conditions cover the following aspects of ground conditions:

- solid and drift geology;
- features of geological and geomorphological importance;
- mineral extraction;
- groundwater environment including PWS; and
- contaminated land.

- 12.2.5 Baseline conditions were determined through a desk-based assessment and consultation with statutory and non-statutory bodies.

- 12.2.6 The desk-based assessment included a review of the following information:

- British Geological Society (BGS) data, including BGS Drift and Solid Geological Maps, BGS borehole logs, BGS Hydrogeological and Groundwater Vulnerability Maps (BGS, 1988ab) and other relevant BGS publications (<http://www.bgs.ac.uk/>).
- Ordnance Survey (OS) historical maps dating back to 1856 for information on former land use, potential contamination and physical hazards and information on PWS.
- Scottish Environmental Protection Agency (SEPA) Groundwater Vulnerability Maps and the interactive River Basin Management Plan (RBMP) (<http://gis.sepa.org.uk/rbmp/>).
- Scottish National Heritage (SNH) designation database (<https://gateway.snh.gov.uk/natural-spaces/index.jsp>).
- Peat Probing Report for Blar nam Fiadh peat bog (Jacobs, 2013).
- Results of previous studies conducted by Atkins; Environmental Planning Constraints Preliminary Assessment and Geotechnical Preliminary Sources Study Report (Atkins 2010a,b).

- 12.2.7 Consultations were undertaken with a number of statutory and non-statutory bodies in order to assess geological and hydrogeological impacts and contaminated land. These included the following:

- Highland and Moray Councils for information on former contaminated land use, Part IIA determinations, PWS, licensed fuel storage and any additional relevant information;
- SEPA for information on Licenced groundwater abstractions (via The Water Environment (Controlled Activities) (Scotland) (Regulations) 2011) and on former and current contaminated land use; and
- SNH for information on the location and extent of environmental or historical sensitivities in the vicinity of the route options and to establish any future development constraints.

- 12.2.8 Further information on the consultation process is provided in Chapter 7 (Overview of Environmental Assessment) of this report.

Impact Assessment

- 12.2.9 The impacts in relation to geology, hydrogeology and contaminated land have been assessed individually as per the methodologies provided below. The overall impact of the

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route options is then determined through a combination of these impacts, and for the purposes of this assessment is based on impacts of Slight/Moderate and above significance. Impacts of Slight/Moderate and above significance are highlighted for comparison between the route options as at these significance levels (i.e. Slight/Moderate and above) it is considered that mitigation would be required.

Geology

- 12.2.10 For solid and drift geology, features of geological importance and mineral extraction the sensitivity and magnitude criteria provided in Table 12.1 and 12.2 were used to assign sensitivity and magnitude. The impact significance was then determined in line with Table 12.3.

Table 12.1: Sensitivity criteria for geology assessment

Sensitivity	Description
High	Areas containing unique or rare geological or geomorphological features considered to be of national interest e.g. Sites of Special Scientific Interest (SSSI).
Medium	Areas containing features of designated regional importance considered worthy of protection for their educational, research, historic or aesthetic importance e.g. Regionally Important Geological Sites (RIGS). Geological resources of national/regional importance.
Low	Features not currently protected but that may require specific protection in the future e.g. Geological Conservation Review (GCR). Geological resources of local importance.
Negligible	Features not currently protected and unlikely to require specific protection in the future. No exploitable geological resources.

Table 12.2: Magnitude criteria for geology assessment

Magnitude	Description
High	Partial (greater than 50%) or total loss of a site, or where there would be complete severance of a site such as to affect the value of the site.
Medium	Loss of part (between approximately 15% and 50%) of a site, major severance, major effects to the setting, or disturbance such that the value of the site would be affected, but not to a major degree.
Low	Small effect on a site (up to 15%) or a medium effect on its setting, or where there would be a minor severance or disturbance such that the value of the site would not be affected.
Negligible	Very slight change from baseline condition. Change hardly discernible, approximating to 'no change' conditions.

Table 12.3: Matrix for determination of impact significance for geology assessment

Sensitivity Magnitude	Negligible	Low	Medium	High
High	Slight	Moderate	Moderate/Substantial	Substantial
Medium	Negligible/ Slight	Slight/Moderate	Moderate	Moderate/Substantial
Low	Negligible	Negligible/Slight	Slight/Moderate	Moderate
Negligible	Negligible	Negligible	Negligible/Slight	Slight

Contaminated Land

- 12.2.11 In line with industry standards the assessment focuses on the potential for impacts on receptors as a consequence of encountering contaminated land using a conceptual site model (CSM) developed for the route options. A receptor can be a person (including construction workers), the water environment, flora, fauna or building/structures. The CSM represents a network of relationships between potential sources of contamination from within the study area and exposure of the receptors through different pathways. The potential receptors (refer to Table 12.4) and pathways have been compiled based on the legal

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definitions used in Part IIA of the Environment Protection Act 1990, as provided in the Statutory Guidance (Scottish Executive, 2006).

- 12.2.12 Historical sources of contaminated land have been identified in the baseline information.
- 12.2.13 The pollutant pathways (PP) and type of receptors used within the assessment are provided in Table 12.4, with individual references for linkages, e.g. PP1 to PP22.

Table 12.4: Potential pollutant pathways and receptors

Pollutant Pathway	Receptor	Pathway
Construction		
PP1	Human Health (Construction)	Ingestion, inhalation and dermal contact with soils, soil dust, deep and shallow groundwater and surface water.
PP2		Migration of ground gases into shallow pits or site buildings.
PP3	Off-site Receptors (Local residents and transient traffic (foot, road and rail traffic)).	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works.
PP4		Migration of ground gases into homes or workplaces through preferential pathways created during construction posing a potential asphyxiation/explosion risk.
PP5	Groundwater - Superficial Aquifers	Leaching and migration of contaminants.
PP6	Groundwater - Bedrock Aquifers	Migration of contaminants or contaminated shallow groundwater into the deeper rock aquifer.
PP7	Surface Waters	Migration of contaminated shallow groundwater through drift deposits or made ground.
PP8		Runoff from contaminated source(s).
PP9		Migration of contaminated bedrock groundwater towards surface water receptor.
PP10		Discharge of intercepted contaminated groundwater during passive or active dewatering.
PP11	Ecological Receptors (water dependant habitats and agricultural land/livestock)	Inhalation, ingestion and direct contact with contaminated soils/water.
Operational		
PP12	Human Health (Operational)	Ingestion, inhalation and dermal contact with soils, soil dust, deep and shallow groundwater, surface water in the long term during routine maintenance activities e.g. drainage inspections.
PP13		Migration of ground gases into confined spaces e.g. service pits, accommodation buildings creating an asphyxiation/explosion risk.
PP14	Off-site Receptors	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas.
PP15		Migration of ground gases into homes or workplaces through preferential pathways remaining following construction thus posing a potential asphyxiation/explosion risk.
PP16	Groundwater - Superficial Aquifers	Leaching and migration of contaminants.
PP17	Groundwater - Bedrock Aquifers	Migration of contaminated shallow groundwater into the deeper rock aquifer.
PP18	Surface Water	Migration of shallow groundwater through drift deposits or made ground.
PP19		Runoff from contaminated source(s).

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Pollutant Pathway	Receptor	Pathway
PP20		Migration of contaminated shallow groundwater through drainage channels and associated granular bedding materials or engineered structures.
PP21		Discharge of intercepted contaminated groundwater.
PP22	Ecological Receptors	Inhalation, ingestion and direct contact with contaminated soils/water.

12.2.14 For the purposes of this assessment, the CSM disregards those pathways that are incomplete and therefore cannot pose a risk to any of the identified receptors. Where a source, pathway and receptor combination exists this is referred to as a complete pollutant linkage, and a generic qualitative risk assessment has been undertaken.

12.2.15 Potential impacts are discussed in terms of likelihood as shown in Table 12.5 and magnitude/consequence as shown in Table 12.6. The generic qualitative risk assessment is then undertaken based on the matrix shown in Table 12.7.

Table 12.5: Likelihood criteria for contaminated land assessment

Likelihood	Definition
High likelihood	There is a complete pollution linkage of an event that either appears very likely in the short-term and almost inevitable over the long-term, or there is evidence at the receptor of harm or pollution.
Likely	There is a complete pollution linkage and all the elements are present and available, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short-term and likely over a long-term.
Low likelihood	There is a complete pollution linkage and the circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such an event would take place, and is less likely in the shorter term.
Unlikely	There is a complete pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long-term.

Table 12.6: Magnitude (consequence) criteria for contaminated land assessment

Magnitude	Definition
Severe	Short-term (acute) damage to human health (significant harm). Pollution of sensitive water resources as a result of short-term exposure. Damage to a particular ecosystem as a result of acute exposure. Catastrophic damage to buildings/property.
Medium	Long-term (chronic) damage to human health (significant harm). Pollution of sensitive water resources as a result of chronic exposure. A significant change in a particular ecosystem, or organism forming part of such an ecosystem.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services. Damage to sensitive buildings/structures/services or the environment.
Minor	Harm (not necessarily significant), which may result in financial loss or require expenditure to resolve. Non-permanent health affects to human health. Easily reparable damage to buildings, structures and services.

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Table 12.7: Matrix for determination of generic qualitative risk assessment for contaminated land

Likelihood \ Consequence	Unlikely	Low likelihood	Likely	High likelihood
Severe	Moderate/low	Moderate	High	Very high
Medium	Low	Moderate/low	Moderate	High
Mild	Very low	Low	Moderate/low	Moderate
Minor	Very low	Very low	Low	Moderate/low

Groundwater

- 12.2.16 The assessment considers groundwater sensitivity in the context of hydrogeological conditions including groundwater resources. Criteria for the definition of groundwater sensitivity and magnitude are shown in Table 12.8 and 12.9.
- 12.2.17 The criteria for the definition of the magnitude of impact on PWS quality and yield are based primarily on the type of road profile (e.g. cutting, embankment or transition cutting-embankment) facing the PWS. However, where appropriate, the vulnerability of groundwater flow to sub-surface disruptions is also considered to refine the magnitude of impact.
- 12.2.18 The impact significance for groundwater aspects was then determined using the matrix as shown in Table 12.3.

Table 12.8: Sensitivity criteria for groundwater

Sensitivity	Description
High	Local aquifer(s) constitutes a valuable resource because of its high quality and yield, or extensive exploitation for public, private domestic and/or agricultural (i.e. feeding ten or more properties) and/or industrial supply. Designated sites of nature conservation dependent on groundwater.
Medium	Local aquifer(s) are of limited value either because of some quality impairment or because exploitation of local groundwater is not extensive (i.e. private domestic and/or agricultural supply feeding less than 10 properties). Local areas of nature conservation known to be sensitive to groundwater impacts.
Low	Poor groundwater quality and/or low permeability make exploitation of groundwater unlikely. Changes to groundwater not expected to have an impact on local ecology.
Negligible	Very poor groundwater quality and/or very low permeability make exploitation of groundwater unfeasible. No known past or existing exploitation of this water body. Changes to groundwater are irrelevant to local ecology.

Table 12.9: Magnitude criteria for groundwater

Magnitude	Description
High	Major permanent or long-term change to groundwater quality or available yield. Existing resource use is irreparably impacted upon. Changes to quality or water table level would have an impact upon local ecology.
Medium	Changes to the local groundwater regime are predicted to have a slight impact on resource use. Minor impacts on local ecology may result.
Low	Changes to groundwater quality, levels or yields do not represent a risk to existing resource use or ecology.
Negligible	Very slight change from groundwater baseline conditions approximating to a 'no change' situation.

Mitigation

- 12.2.19 Potential mitigation measures to reduce impacts have been considered during this assessment and are discussed in Section 12.9 (Potential Mitigation).

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Limitations to Assessment

- 12.2.20 The extent and quantum of contaminated land cannot be determined from desk-based reviews. Whilst these processes identify and inform an evaluation of the potential for contamination, the nature, extent, severity and location of soil and groundwater contamination cannot be determined without intrusive site investigation and the chemical analysis of samples of soil and groundwater collected at the location. This level of assessment would be progressed at a later date to inform the DMRB Stage 3 Assessment of the preferred option.
- 12.2.21 This assessment relies on the accuracy and level of detail of documented sources used. For example, the identification of potential contamination sources relies on the accuracy of historical mapping.
- 12.2.22 The scale and information contained in the BGS Hydrogeological and Groundwater Vulnerability Map of Scotland (BGS, 1988a,b) mean that the characterisation of the baseline conditions, and hence a detailed analysis of the potential impacts, is limited at this stage. Detailed site investigations and further PWS consultation will be undertaken during the DMRB Stage 3 Assessment to inform the assessment and development of the preferred option.
- 12.2.23 The information that was available regarding PWS is presented within this assessment. However, it should be noted that this will be updated at DMRB Stage 3 through detailed landowner consultation, which may identify further springs and wells which have not yet been identified.
- 12.2.24 No site-specific ground or survey information is available at this stage except for a peat probing exercise (Jacobs, 2013) covering part of the peat deposits associated with the Blar nam Fiadh peat bog. Therefore the full and exact extent/depth of peat deposits remains uncertain.
- 12.2.25 Historical quarrying is based on a desk-based review of OS maps. It is possible that quarrying works could have been undertaken and the void backfilled between the recorded years of mapping.
- 12.2.26 The above limitations are typical of a DMRB Stage 2 Assessment, and the assessment reported in this chapter is considered robust and of an appropriate level of detail and in line with the DMRB guidance for a DMRB Stage 2 Assessment. As noted above, further detailed work would be undertaken at DMRB Stage 3 to inform the design of the preferred option.

12.3 Policies and Plans

- 12.3.1 The national, regional and local planning policies and guidance relevant to geology, hydrogeology and contaminated land is identified in this section. An assessment of the compliance of the route options in relation to these policies is provided in Section 12.8 (Compliance with Policies and Plans).

National Planning Policy and Guidance

- 12.3.2 National planning policy on a variety of themes is contained within Scottish Planning Policy (SPP) (Scottish Government, 2014) (hereafter referred to as SPP). In terms of the impact of proposals on geology and soils, including contaminated land and groundwater, SPP is focussed on:
- promoting sustainable development;
 - supporting healthier living by improving the quality of the built environment and by addressing environmental problems affecting communities;

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- encouraging planning authorities to take the probability of flooding from all sources, including groundwater, and the risks involved into account when preparing development plans and determining planning applications; and
- taking into account the implications of development for water, air and soil quality.

12.3.3 Planning Advice Notes (PAN) published by the Scottish Government provide further guidance on specific topics. PAN 33: Development of Contaminated Land (Scottish Government, 2000) is applicable to contaminated land and the details of this guidance are summarised in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.

Regional and Local Planning Policy and Guidance

12.3.4 The Highland-wide Local Development Plan (HwLDP) (The Highland Council, 2012) (hereafter referred to as HwLDP) is the land-use Plan which will guide the development and investment in the region over the next 20 years. Relevant policies in relation to geology, hydrogeology and contaminated land include:

- Policy 28: Sustainable Design;
- Policy 30: Physical Constraints;
- Policy 53: Minerals;
- Policy 55: Peat and Soils;
- Policy 57: Natural, Built and Cultural Heritage;
- Policy 62: Geodiversity;
- Policy 63: Water Environment; and
- Policy 72: Pollution.

12.3.5 The HwLDP has a number of supporting supplementary guidance notes, and those of relevance include:

- Sustainable Design Guide Supplementary Guidance (adopted January 2013) (The Highland Council, 2013a); and
- Physical Constraints Supplementary Guidance (adopted March 2013) (The Highland Council, 2013b).

12.3.6 The details of these policies and guidance are summarised in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.

Review of Planning Policies

12.3.7 The key aspects of the relevant planning policies are discussed in this section in relation to their relevance for geology, hydrogeology and contaminated land.

Geology

12.3.8 SPP states that development that affects a SSSI should only be permitted in the following circumstances:

- it will not adversely affect the integrity of the area or the qualities for which it has been designated; or
- any such adverse effects are clearly outweighed by social, environmental or economic benefits of national importance.

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- 12.3.9 Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP states that The Highland Council will allow development that has the potential to impact on features of national importance if it can be shown not to compromise the natural environment, amenity and heritage resource. The policy reflects SPP stating that where there may be significant adverse effects, these must be clearly outweighed by social or economic benefits of national importance.
- 12.3.10 SPP also seeks to protect areas of peatland. Where peat and other carbon rich soils are present, development should aim to minimise the release of carbon dioxide. This is reflected in Policy 55 (Peat and Soils) of the HwLDP, which requires developments to demonstrate how they have avoided unnecessary disturbances, degradation or erosion of peat and soils. Any unacceptable disturbances of peat would have to be clearly outweighed by social, environmental or economic benefits arising from the development. A peatland management plan would be required if the development on peat is shown to be unavoidable, and this plan should clearly demonstrate how impacts have been minimised and mitigated.
- 12.3.11 Policy 55 (Peat and Soils) of the HwLDP also states that if the development is likely to result in the extraction of peat, the proposal is required to demonstrate that its extraction would not adversely affect the integrity of nearby European designated sites containing areas of peatland.
- 12.3.12 In relation to mineral resources, SPP states that an adequate and steady supply of minerals is essential in order to support sustainable economic growth as the minerals industry provides raw material for construction, manufacturing, agriculture and other sectors. In line with this, Policy 28 (Sustainable Design) of the HwLDP requires proposed developments to be assessed on the extent to which they impact on non-renewable resources such as mineral deposits of potential commercial value. Should a development be judged as being of significant detriment to such deposits, it will not accord with the HwLDP, unless there are no suitable alternatives, if there is an overriding strategic benefit to the development or if satisfactory mitigation is incorporated.
- 12.3.13 Policy 53 (Minerals) of the HwLDP supports the extraction of minerals from any reserves underlying a proposed development where it would be desirable to extract the minerals prior to development.
- 12.3.14 Policy 62 (Geodiversity) of the HwLDP emphasises the importance of geodiversity interests in the wider landscape (outwith designated sites) which represent an integral component of the scenery and heritage of the Highlands. This policy therefore provides support to any proposals that include measures to protect and enhance geodiversity interests in the wider countryside.

Hydrogeology

- 12.3.15 Policy 28 (Sustainable Design) of the HwLDP requires development to be designed with sustainability in mind. As such, developments will be assessed on a number of criteria including the extent to which they impact on freshwater systems. Developments which are judged to be significantly detrimental in terms of these criteria will not accord with the HwLDP, unless there are no suitable alternatives, if there is an overriding strategic benefit to the development or if satisfactory mitigation is incorporated.
- 12.3.16 Policy 30 (Physical Constraints) of the HwLDP refers to the Physical Constraints Supplementary Guidance (The Highland Council, 2013b) which identifies a list of constraints to development in Highland. Where a proposed development is affected by any of the constraints detailed in the guidance, the development must demonstrate compatibility with the constraint or outline appropriate mitigation measures. PWS are identified as a constraint as new developments have the potential to disrupt them and also pose a risk to the supply in terms of contamination. Another constraint identified is waters within 15m that are identified on the SEPA Register of Protected Areas. The Register of Protected Areas shows that the

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Drinking Water Protected Areas for groundwater covers a large proportion of Scotland including the area of the route options.

- 12.3.17 Policy 63 (Water Environment) of the HwLDP states that The Highland Council will support proposals for development that do not compromise the objectives of the Water Framework Directive (2000/60/EC). This sets out to protect and improve the water environment including both surface and groundwater.
- 12.3.18 Policy 72 (Pollution) of the HwLDP requires any development that may result in significant water pollution to provide a detailed assessment on the levels, character, transmission and receiving environment of potential pollution to show how the pollution can be appropriately avoided and if necessary mitigated. Major developments and developments that are subject of Environmental Impact Assessment (EIA) are expected to follow a robust project environmental management process, following the approach set out in the following guidance note 'Construction Environmental Management Process for Large Scale Projects' (The Highland Council, 2010) or a similar approach.

Contaminated Land

- 12.3.19 Policy 30 (Physical Constraints) of the HwLDP refers to the Physical Constraints Supplementary Guidance (The Highland Council, 2013b) which identifies a list of constraints to development in Highland. Where a proposed development is affected by any of the constraints detailed in the guidance, the development must demonstrate compatibility with the constraint or outline appropriate mitigation measures. Areas which have had potentially contaminating land uses in the past are listed as a constraint. Further guidance relating to the remediation of contaminated land is provided in PAN 33 (Scottish Government, 2000), which highlights that the presence of contaminated land can threaten public safety as well as the natural and built environment. It states that applications for development should provide suitable remediation measures for any contaminated land identified, and contaminated land should be remediated before the development is brought into use. The remediation plan must avoid unacceptable risks to human health and the wider environment from the contamination on the site, both during the remediation period and for the final end use.

12.4 Baseline Conditions

- 12.4.1 The baseline conditions are similar across the two sections; Inverness to Gollanfield and the Nairn Bypass. The baseline conditions have therefore been reported to represent both sections, and where there are differences/additional features, this has been highlighted.

Geology

Solid Geology

- 12.4.2 Solid geology is generally composed of the Middle Old Red Sandstone formation in the Inverness to Gollanfield section of the study area. This group is predominantly represented by the Hillhead Sandstone Formation, which is recorded as comprising red and grey quartzose sandstone with interbeds of micaceous siltstone and silty mudstone.
- 12.4.3 The Nairn Bypass section of the study area is characterised by the following solid geological conditions:
- Forres Sandstone Group - this belongs to the Upper Old Red Sandstone Formation and reaches the northern and eastern limits of the study area. The Forres Sandstone Group is characterised by red sandstone and rare siltstone.
 - Auldearn Granite Pluton - this is located to the south of Auldearn and Househill.
- 12.4.4 As per definitions in Table 12.1, solid bedrock present in the study area is considered to be of negligible sensitivity.

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Drift Geology

- 12.4.5 Superficial deposits include made ground, peat, alluvium, a variety of Flandrian and Late Devensian Raised Marine deposits, and Late Devensian glacial deposits.
- 12.4.6 Made ground is expected to be locally derived and generally limited to areas of existing road or railway embankment, or the infill of historical quarries. As per the definitions in Table 12.1, made ground is considered to be of negligible sensitivity.
- 12.4.7 Three grouped extensive areas of peat have been identified within and to the north of the Kildrummie Kames SSSI. These include the Kildrummie Kames itself, Blar nam Fiadh and an extended area of peat as per BGS information (referred to in this report as BGS peat area). Limited peat deposits are also present in localised areas. The thickness of peat is considered to be variable based on historical BGS borehole logs and Jacobs Peat Probing Report (Jacobs, 2013). Depths of over 5m below ground level (bgl) have been recorded, however large areas of peat have not been investigated and deeper deposits are therefore possible. As per definitions in Table 12.1, the Kildrummie Kames peat bog is considered to have high sensitivity, with the Blar nam Fiadh and the BGS peat area considered to have low sensitivity.
- 12.4.8 Alluvial deposits comprise of two distinct types. These include fluvial deposits underlying river and burn floodplains which are generally described as river gravel overlain by thinly laminated silty sand and lacustrine deposits which are found within enclosed basins, comprising fine to medium grained humic sand, silt and clay. Alluvium generally forms relatively small areas throughout the study area. As per definitions in Table 12.1, alluvial deposits are considered to be of negligible sensitivity.
- 12.4.9 Raised marine deposits are located within the western and northern part of the Inverness to Gollanfield section of the study area and include undifferentiated shoreface and beach deposits, and tidal flat deposits. The raised shoreface and beach deposits comprise mainly of medium sand and well-rounded shingle. The tidal flat deposits constitute spreads of fine grained sand, silty clay, and clayey silt which typically infill broader depressions and glacial kettleholes. As per definitions in Table 12.1, these deposits are considered to be of negligible sensitivity.
- 12.4.10 Glaciomarine deposits of the Alturlie Gravels Formation and Raised Tidal Flat deposits are predominantly located in the central and eastern part of the Inverness to Gollanfield section and the western part of the Nairn Bypass section of the study area. The Alturlie Gravels Formation is recorded as likely to include blown sand, beach gravel and silt in addition to sand and gravel. The Raised Tidal Flat deposits constitute spreads of fine grained sand, silty clay, and clayey silt, which typically infill broader depressions and glacial kettleholes. As per definitions in Table 12.1, these deposits are considered to be of negligible sensitivity.
- 12.4.11 Glacial deposits include glaciofluvial sheet and ice contact deposits, glaciomarine deposits, till and hummocky glacial deposits. As per definitions in Table 12.1, these deposits are considered to be of negligible sensitivity.

Designated Geological Receptors

- 12.4.12 The Kildrummie Kames SSSI affords statutory protection to an assemblage of landforms which are collectively known as the Kildrummie Kames (also known as Flemington Kames or more correctly Flemington Eskers (Auton, 1992)). The Kildrummie Kames represent probably the best preserved (and one of the longest) examples of a system of large braided eskers in Britain. The assemblage of landforms which comprise the Kildrummie Kames SSSI consists of up to eight braided eskers (5 to 10m high) with intervening kettleholes (often filled with peat and waterlogged silt and sand), kames and outwash terraces. The site has largely escaped large-scale modifications, such as sand and gravel extraction, and demonstrates a series of well defined, glacially derived, landforms.

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- 12.4.13 The landforms in the vicinity of Meikle Kildrummie are of particular importance, as the Esker system ends abruptly approximately 200m to the south-west of this point. From here the landscape to the east is dominated by outwash deposits. Since the landform assemblage was first described by Jamieson (1866), there have been a range of interpretations as to the mode of their formation (summarised in Auton, 1992).
- 12.4.14 The area between Meikle Kildrummie and Howford is dominated by a large linear, relatively broad and flat topped, ridge with a west-east orientation. This feature is classed as a Kame (ice contact deposit) by Auton (1992), with the lower laying land surrounding the ridge described as terraced glaciofluvial sand and gravel deposits, derived from glacial outwash. Firth (1984) (summarised in Gordon and Auton, 1993) suggests the ridge was formed in an open crevasse which formed when a sub-glacial ice tunnel (part of the tunnel system in which the Eskers to the west of Meikle Kildrummie were deposited) collapsed.
- 12.4.15 The site is considered to be of importance for the following:
- the landform assemblage is one of the finest and largest examples of a braided esker system in Britain;
 - the assemblage is largely intact and unmodified by sand and gravel extraction;
 - the surface morphology of the landforms are particularly clear; and
 - the landform assemblage continues to provide important opportunities for further research into Esker formation and glacier hydrology.
- 12.4.16 As per the definitions in Table 12.1, the Kildrummie Kames SSSI is considered to be of high sensitivity.
- 12.4.17 No other designated geological receptors or GCR sites are present within the study area. Other SSSIs are present within the area of interest and these are described in Chapter 11 (Habitats and Biodiversity) of this report.

Mineral Extraction

- 12.4.18 There are a number of active and disused quarries, primarily associated with sand and gravel quarrying.
- 12.4.19 The review of BGS Mineral Resources publications did not indicate any specific future mineral resource other than suggesting that the area has general mineral resource potential.
- 12.4.20 Due to the history of the study area where local sand and gravel exploitation are known to have taken place, the potential for future sand and gravel exploitation is expected to remain as a local natural resource and as such is considered to be of low sensitivity.

Contaminated Land

- 12.4.21 There are 99 potentially contaminated land sources within the study area, and through consultation with The Highland Council, further information was gathered on 91 of these. Due to the large number of potentially contaminated land sources the details of these are provided in Part 6 (Appendices), Appendix A12.1 (Contaminated Land Sources) of this report and are shown on Figures 12.1 to 12.9.
- 12.4.22 No chemical testing of soils or soil leachate had been conducted in the study area at the time of writing this assessment. Similarly, no ground gas data monitoring data was available at the time of writing this assessment.

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Hydrogeology

- 12.4.23 The Sandstone rock strata is highlighted as a highly productive aquifer and is characterised by a combination of both intergranular and fracture flow resulting in high productivity.
- 12.4.24 SEPA RBMP classification from 2008 is 'Good' with 'High' confidence for both the groundwater quality and quantity.
- 12.4.25 The BGS Groundwater Vulnerability Map, indicates that the study area is moderately permeable, with intermediate leaching potential (i.e. moderate ability to attenuate diffuse pollution), and the Baseline Scotland: groundwater chemistry of the Old Red Sandstone aquifers of the Moray Firth area (BGS, 2010) confirms that groundwater in both superficial and bedrock aquifers are highly vulnerable to contamination from surface activities.
- 12.4.26 The BGS Hydrogeological Map identified the aquifer underlying the site as comprising Quaternary sands and gravels, in which intergranular flow is significant in the Inverness to Gollanfield section of the study area and to the east of the River Nairn in the Nairn Bypass section. The aquifer is also noted to be of local importance.
- 12.4.27 To the west of the River Nairn, the Quaternary coastal and river alluvium constitute a concealed aquifer of limited or local potential. Furthermore, in this section, to the south of Auldearn, intrusive rocks are present and characterised underlain by the absence of groundwater except at shallow depth.
- 12.4.28 Groundwater flow within the superficial deposits is likely to follow surface topography towards the local surface watercourses. The direction of flow of any bedrock groundwater is unknown.
- 12.4.29 The hydrogeological characteristics of drift and bedrock units within the Inverness to Gollanfield and the Nairn Bypass sections are shown in Table 12.10.

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Table 12.10: Hydrogeological characteristics of drift and bedrock units

Geological Unit		Geological Characteristic	Hydrogeological Characteristic	Sensitivity	Section
Drift	Made Ground	Composed of clay, sand and gravel (predominantly engineered fill).	Very poor groundwater potential due to surface/close surface location and possible low permeable nature.	Low	Inverness to Gollanfield/ Nairn Bypass
	Alluvial Deposits	Composed of variable sediments including clay, silt, sand, gravel and peat.	Local groundwater potential. Groundwater system is expected to be hydraulically connected to surface water.	Medium	Inverness to Gollanfield/ Nairn Bypass
	Alturie Gravels Formation and Raised Tidal Flat deposits	Silt, clay and fine-grained sand with lenses of gravel.	Local groundwater potential.	Medium	Inverness to Gollanfield/ Nairn Bypass
	Raised Marine	Glaciomarine sand and gravel.	Local groundwater potential.	Medium	Inverness to Gollanfield
	Glacial Deposits (till)	Heterogeneous deposits.	Poor groundwater potential due to generally low and variable permeable nature.	Low	Inverness to Gollanfield/ Nairn Bypass
	Peat	Decomposed organic deposits.	Very poor groundwater potential due to compacted nature, low permeability and limited spatial extent.	Low (from a resource point of view)	Inverness to Gollanfield/ Nairn Bypass
Bedrock	Middle and Upper Old Red Sandstone	Principally sandstones and mudstones with notable successions of conglomerates, shales and siltstones, but also igneous intrusions.	Moderate to high groundwater potential.	High	Inverness to Gollanfield/ Nairn Bypass
	Auldearn Granite Pluton	Granite block.	Poor groundwater potential except through fractures.	Low	Nairn Bypass

Groundwater Flow

- 12.4.30 A number of PWS have been identified within the study area. These are shown on Figures 12.1 to 12.9 and relate to GE102 to GE107, GE109 to GE125 and GE132 to GE133. It should be noted that no information regarding the source, use or supply networks of these supplies is available at this stage. As it is unclear at this stage what the status of these supplies are, all PWS have been provisionally assessed to be of medium sensitivity as per definitions shown in Table 12.8.

Groundwater Monitoring

- 12.4.31 No ground investigation information was available at the time of writing, however information reported by Atkins (2010b) and through initial consultation with SEPA in 2011, suggest that the depth of groundwater levels vary considerably in the area, from approximately 1m to 8.5m bgl.

Groundwater Quality

- 12.4.32 Baseline Scotland: groundwater chemistry of the Old Red Sandstone aquifers of the Moray Firth area (BGS, 2010) describes the groundwater in the Old Red Sandstone as generally moderately mineralised, with calcium as a dominant cation and bicarbonate as a dominant

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anion. The study area forms part of a Nitrate Vulnerable Zone (NVZ) with samples taken suggesting nitrate concentrations ranging from 0.05 to 8 mg/l.

12.4.33 No other groundwater quality data is available for review at the time of writing the report.

Groundwater Dependent Terrestrial Ecosystems (GWDTE)

12.4.34 Three extensive areas of peat have been identified within and to the north of the Kildrummie Kames SSSI (Kildrummie Kames, Blar nam Fiadh and the BGS peat area). These are considered likely to be groundwater dependent and of high (Kildrummie Kames) and low (Blar nam Fiadh and the BGS peat area) sensitivity.

12.4.35 An area of marshy grassland associated with a semi-natural woodland is present near Moss-side on the western outskirts of Nairn. This area is also thought to be groundwater dependant.

12.4.36 The location of these sites is provided on Figures 12.1 to 12.9.

Surface Water Features (SWFs)

12.4.37 There are 36 SWFs within the study area (19 for Inverness to Gollanfield and 17 for the Nairn Bypass). These are detailed in Chapter 13 (Road Drainage and the Water Environment) of this report and are shown on Figures 13.1 to 13.9. The same sensitivity criteria attributed for quality and flow parameters within Chapter 13 of this report have been used within this assessment.

12.4.38 Loch Flemington is located west of the western extent of the Kildrummie Kames peat bog and is a Special Protection Area (SPA). This feature is therefore considered to be of high sensitivity. Further characterisation of this designated site can be found in Chapter 11 (Habitats and Biodiversity) and Chapter 13 (Road Drainage and the Water Environment) of this report.

12.5 Impact Assessment: Introduction

12.5.1 This section provides an introduction to the impact assessment of the route options within Section 12.6 (Impact Assessment: Inverness to Gollanfield) and Section 12.7 (Impact Assessment: Nairn Bypass).

12.5.2 The potential impacts detailed in Section 12.6 and 12.7 are reported in line with the following:

- The potential impacts are described without mitigation, and therefore represent a worst-case scenario. Potential mitigation measures are considered in Section 12.9 (Potential Mitigation). Mitigation to reduce these impacts will be developed for the preferred option during the DMRB Stage 3 Assessment.
- The assessment of impacts includes those that are common to all route options and those that vary between the route options. The potential impacts that are common to all have been based on the level of significance. This means that although there may be some differences in the activity that would lead to a particular impact, if that impact would be of the same significance regardless of which route option was selected, it is said to be common to all.
- The construction and operational impacts are assessed together, as the majority of the construction impacts (such as excavation and removal of material or dewatering effect due to road cuttings) would extend throughout the operational phase.
- Due to the number of potential impacts on PWS, only the impacts of Slight/Moderate and above significance have been reported.

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- 12.5.3 There are a variety of ways in which road development schemes can impact on geological resources, as follows:
- Excavating or masking exposures of rocks or superficial geological deposits of specific scientific interest can represent a significant impact if the features of interest are not reproduced elsewhere in the area.
 - Impacts on the existing or the potential commercial exploitation of resources.
 - Impacts on underlying groundwater aquifers both during construction and operation, for example, through the dewatering of aquifers as a result of construction works involving excavation.
 - Risk of spillage or leakage of fuel or oil from storage tanks or construction plant, which without suitable mitigation measures, can enter the aquifers.
 - Groundwater flow or quality changes may also impact on secondary receptors such as groundwater abstractions, SWFs or GWDTE.
 - During operation, runoff from the surface may contain elevated concentrations of pollutants such as oils, suspended solids, metals (e.g. copper and zinc) and, in winter, salt and engine coolants (e.g. ethylene glycol), and lead to pollution of the aquifers.
 - Ground conditions can also impose constraints on a proposed road scheme, for example, where land has become unstable due to mining or has been contaminated by previous land uses.

12.6 Impact Assessment: Inverness to Gollanfield

- 12.6.1 This section describes the impacts that are specific to the Inverness to Gollanfield section. Impacts that are common to all route options are discussed, followed by those impacts which are additional to these, for each route option.
- 12.6.2 A key aspect of the impact assessment is to identify areas of temporary or permanent excavations. All proposed excavations relate to road cuttings. Information on proposed cutting areas and the associated geological and hydrogeological settings are shown on Figures 12.1 to 12.4. It should be noted that the cuttings shown are all newly proposed and are those which are deeper than 3m bgl as (in the absence of data from ground investigation) these are most likely to intercept shallow groundwater.

Impacts Common to all Route Options

Geology

Solid Geology

- 12.6.3 None of the route options overlap onto the Kildrummie Kames SSSI and its associated landforms of importance. No impact is therefore expected.
- 12.6.4 It is currently unknown whether the underlying bedrock (negligible sensitivity) is likely to be excavated, due to the absence of local ground investigation information in the areas of the cuttings. In any case the potential magnitude of impact is expected to be low and therefore the potential impact would be of Negligible significance.

Drift Geology

- 12.6.5 Drift deposits (negligible sensitivity, except peat deposits) are considered likely to be impacted by the proposed construction and associated earthworks for all route options.
- 12.6.6 The reduction of drift deposits (excluding peat deposits) as a result of the creation of the route options is expected to be minimal compared to their widespread distribution. The

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potential magnitude of impact is anticipated to be low, and would result in a potential impact of Negligible significance.

- 12.6.7 In relation to peat deposits, although the Kildrummie Kames peat bog has a high sensitivity due to its classification as a SSSI, the peat deposits are not expected to extend towards the route options and are therefore not expected to be intercepted. Due to the distance of the route options from any peat bog (i.e. Kildrummie Kames and associated Blar nam Fiadh and the BGS peat area) (approximately 400m south) no impacts are expected on the geology of these sites.

Mineral Extraction

- 12.6.8 The magnitude of impact on sand and gravel resources (low sensitivity) is expected to be low to moderate due to the expected footprint of the route options, which would result in a potential impact of Slight significance.

Hydrogeology

- 12.6.9 Groundwater is likely to be intercepted by a number of cuttings deeper than 3m bgl regardless of the route option.

Groundwater Quality

- 12.6.10 Impacts on groundwater quality in relation to historical and current land uses are assessed in the contaminated land section.

- 12.6.11 In the event of accidental spillage during the construction or operational phases, potential contamination may migrate through the upper unsaturated zone reaching the shallow drift aquifer and impair groundwater quality, unless appropriate measures for control of discharge and drainage are taken.

- 12.6.12 Given the highly vulnerable nature of all aquifers to surface pollution, the potential magnitude of impact from accidental spillages for all route options is considered to be medium. The potential impact assessment from accidental spillages on aquifers is shown in Table 12.11.

Table 12.11: Potential impacts for accidental spillages on key hydrogeological units - common to all route options (Inverness to Gollanfield)

Hydrogeological Unit	Sensitivity	Magnitude	Significance
Middle Old Red Sandstone.	High	Medium	Moderate/Substantial
Superficial Aquifers – Alluvium, Alturie Gravels Formation, Raised Marine and Raised Tidal Flat Deposits.	Medium	Medium	Moderate
Superficial Aquifers – Glacial Till and Peat.	Low	Medium	Slight/Moderate

- 12.6.13 Potential impacts of accidental spillages on SWFs are discussed in Chapter 13 (Road Drainage and the Water Environment) of this report.

Groundwater Flow

- 12.6.14 As a result of the cuttings, groundwater within drift deposits (low to medium sensitivity) is expected to be the most at risk from all route options, with a potential magnitude of impact anticipated to be low to medium. This would result in a potential impact for superficial aquifers of Slight/Moderate significance.

- 12.6.15 Potential magnitude of impact on bedrock groundwater (high sensitivity) is anticipated to be negligible as a result of the cuttings. This would result in a potential impact of Slight significance.

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12.6.16 The construction of embankments may result in localised compaction of superficial deposits. However, in groundwater flow terms this would result in localised impacts of negligible magnitude. The potential impact is assessed as being of Negligible/Slight significance on drift groundwater. No impact is expected on the bedrock groundwater as a result of embankment construction.

PWS

12.6.17 Potential impacts on PWS have been assessed based on their distance from the route options, taking into account the levelling of the proposed infrastructure (i.e. presence of cuttings or embankments) and the surrounding topography.

12.6.18 The potential magnitude of impact on the quality of PWS GE107 is assessed as being medium for all route options. This would result in a potential impact of Moderate significance.

12.6.19 PWS infrastructure (wells, underground water pipes and tanks) could be intercepted and destroyed by road construction and road cuttings in all the route options, which could lead to the loss of water supply in the absence of mitigation. However, this level of information is not available at this stage and has therefore not been considered further in this assessment.

SWF

12.6.20 Potential surface water quality impairment or reduction in baseflow contribution as a result of impacts on the groundwater environment, have been assessed based on the proximity of SWFs to areas where impacts on the groundwater environment are potentially occurring. It is assumed that a degree of hydraulic connectivity exists between the groundwater and surface water systems.

12.6.21 It should be noted that in order to keep the assessment focussed on key impacts, only those potential impacts with a magnitude of medium and above have been assessed.

12.6.22 All of the route options would have potential indirect impacts (via groundwater) on surface water quality of Moderate/Substantial significance for Loch Flemington and of Moderate significance on 14 SWFs. The impact assessment for these SWFs is shown in Table 12.12.

Table 12.12: Potential indirect impacts on SWF quality - common to all route options

SWF	Sensitivity	Magnitude	Significance
Loch Flemington.	High	Medium	Moderate/Substantial
SWFs 2 to 6, 8, 9 and 12 to 18.	Medium	Medium	Moderate

12.6.23 All of the route options would have potential indirect impacts (via groundwater dewatering) on surface water flow of Substantial significance for SWF 16 (Tributary of Ardersier Burn), Moderate significance for SWF 13 (Tributary of 'Unnamed Burn – Castle Stuart to source (Tornagrain)' (1)) and Slight/Moderate significance for SWF 18 (Indirect tributary drains of Ardersier Burn).

GWDTE

12.6.24 Kildrummie Kames peat bog is considered to be of high sensitivity, being a groundwater dependant site. Kildrummie Kames and any further associated deposits (Blar nam Fiadh and the BGS peat area) lie about 400m south of all of the route options and over 500m from the nearest cutting areas deeper than 3m bgl. As previously discussed, these peat deposits are not expected to extend towards the route options and are not expected to be intercepted. Therefore no direct impacts are expected on the hydrogeology of these deposits.

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Contaminated Land

- 12.6.25 A number of potential pollution sources, exposure and migration pathways have been identified for the route options along with potential receptors that may be at risk and these are discussed below.
- 12.6.26 A CSM assessment has been undertaken to determine the potential risk from the potential pollution sources to each receptor.
- 12.6.27 There are two potential ways in which the route options can impact on contaminated land:
- direct interaction between the route options and potentially contaminated land sources (i.e. within the route option footprint and within its immediate vicinity); and
 - indirect disturbance of potentially contaminated land as a result of the route options via the interception in excavated areas of gas or water associated with potentially contaminated land sources.
- 12.6.28 For all route options direct interaction may occur with six potentially contaminated land sources. The resulting impact assessment is shown in Table 12.13.

Table 12.13: Potential direct interaction with contaminated land - common to all route options

Receptor	Name	Likelihood	Magnitude	Impact
GE07	Inverness to Lossiemouth Fuel Pipeline	High Likelihood	Severe	Very High
GE47	Filling Station	High Likelihood	Severe	Very High
GE10	Smithton Junction - Made Ground	High Likelihood	Medium	High
GE11	Milltown Mill Dam	High Likelihood	Medium	High
GE31	Dalcross Railway Station	High Likelihood	Medium	High
GE49	Smithy 2	High Likelihood	Medium	High

- 12.6.29 Direct interaction with potentially contaminated land sources has the potential to impact on human receptors via pollutant pathways PP1, PP3 and PP12 (refer to Table 12.4).
- 12.6.30 In addition, soils/made ground from those potentially contaminated land sources may be removed and temporarily stored on site, which may represent a hazard to the water environment via pollutant pathways PP5 to PP9 (refer to Table 12.4). The soils/made ground from those potentially contaminated land sources may be proposed for reuse elsewhere along the route options and also pose a potential long-term risk to the water environment via pollutant pathways PP18 to PP20 (refer to Table 12.4).
- 12.6.31 Indirect impact may occur in cutting areas likely to intercept groundwater, which could draw contaminated groundwater towards the cutting (PP21) (refer to Table 12.4).
- 12.6.32 As shown on Figures 12.1 to 12.4, a number of cutting areas across the route options are considered likely to intercept groundwater. Potential contaminated land source GE07 (Inverness to Lossiemouth Fuel Pipeline) has been identified as being potentially impacted by a cutting deeper than 3m bgl for all route options. The potential for drawing contaminated groundwater associated with GE07 towards this cutting is assessed as being likely and is considered to have a potential magnitude of impact of severe. This would result in an impact of High significance.

Option 1A

- 12.6.33 This section presents the potential impacts specific for Option 1A which are additional to those reported as common to all route options (refer to paragraphs 12.6.3 to 12.6.32). Please note there are no additional impacts related to geology and therefore these aspects are not discussed further.

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Hydrogeology

PWS

- 12.6.34 Option 1A has no additional impacts of Slight/Moderate significance or above in relation to the quality or yield of PWS.

SWFs

- 12.6.35 Option 1A has no additional indirect impacts (via groundwater) on surface water quality.
- 12.6.36 Option 1A would have three additional SWFs which are potentially at risk from a cutting deeper than 3m bgl. These include SWF 08 (Fiddler's Burn), SWF 12 (Rough Burn) and SWF 15 (Tributary of 'Unnamed Burn - Castle Stuart to source (Tornagrain)' (2)).
- 12.6.37 For these there would be potential indirect impacts (via groundwater dewatering) on surface water flow of Moderate significance for SWF 12, and Slight/Moderate significance for SWF 08 and SWF 15.

Contaminated Land

- 12.6.38 Direct interaction may occur between Option 1A and the following three additional potentially contaminated land sources; GE06 (Aberdeen to Inverness Railway Line), GE26 (Sand Pit 1) and GE27 (Morayston Farm Petrol Tank). These would have potential impacts of High significance.
- 12.6.39 The same pollutant linkages apply to these potentially contaminated land sources as those described in paragraphs 12.6.29 to 12.6.30.
- 12.6.40 Option 1A has six additional potentially contaminated land sources that are expected to be impacted by a cutting deeper than 3m bgl, and which could draw contaminated groundwater. The impact assessment is shown in Table 12.14.

Table 12.14: Potential indirect impacts on contaminated land - additional for Option 1A

Receptor	Name	Likelihood	Magnitude	Impact
GE21	Tile and Brickworks	Likely	Medium	Moderate
GE27	Morayston Farm Petrol Tank	Likely	Medium	Moderate
GE39	Inverness Airport	Low Likelihood	Medium	Moderate/Low
GE19	Pit 1	Low Likelihood	Medium	Moderate/Low
GE06	Aberdeen to Inverness Railway Line	Low Likelihood	Medium	Moderate/Low
GE34	Gravel Pit 2	Low Likelihood	Medium	Moderate/Low

Option 1A (MV)

- 12.6.41 This section presents the potential impacts specific for Option 1A (MV) which are additional to those reported as common to all route options (refer to paragraphs 12.6.3 to 12.6.32). Please note there are no additional impacts related to geology and therefore these aspects are not discussed further.

Hydrogeology

PWS

- 12.6.42 Option 1A (MV) has no additional impacts of Slight/Moderate significance or above in relation to the quality or yield of PWS.

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SWFs

- 12.6.43 Option 1A (MV) has one additional potential indirect impact (via groundwater) on surface water quality for SWF 09 (Tributary of Rough Burn). This potential impact is assessed to be of Moderate/Substantial significance.
- 12.6.44 Option 1A (MV) would have four additional SWFs (SWF 08 (Fiddler's Burn), SWF 09 (Tributary of Rough Burn), SWF 11 (Indirect tributary of Rough Burn (2)) and SWF 15 (Tributary of 'Unnamed Burn - Castle Stuart to source (Tornagrain)' (2))) which are potentially at risk from a cutting deeper than 3m bgl. These would all have a potential indirect impact (via groundwater dewatering) on surface water flow of Slight/Moderate significance, with the exception of SWF 09 which would have a potential indirect impact of Moderate significance.

Contaminated Land

- 12.6.45 Direct interaction may occur between Option 1A (MV) and one additional potentially contaminated land source; GE06 (Aberdeen to Inverness Railway Line). This would have a potential impact of High significance.
- 12.6.46 The same pollutant linkages apply to these potentially contaminated land sources as those described in paragraphs 12.6.29 to 12.6.30.
- 12.6.47 Option 1A (MV) has five additional potentially contaminated land sources that are expected to be impacted by a cutting deeper than 3m bgl, and which could draw contaminated groundwater. The impact assessment is shown in Table 12.15.

Table 12.15: Potential indirect impacts on contaminated land - additional for Option 1A (MV)

Receptor	Name	Likelihood	Magnitude	Impact
GE21	Tile and Brickworks	Likely	Medium	Moderate
GE39	Inverness Airport	Low Likelihood	Medium	Moderate/Low
GE19	Pit 1	Low Likelihood	Medium	Moderate/Low
GE06	Aberdeen to Inverness Railway Line	Low Likelihood	Medium	Moderate/Low
GE34	Gravel Pit 2	Low Likelihood	Medium	Moderate/Low

Option 1B

- 12.6.48 This section presents the potential impacts specific for Option 1B which are additional to those reported as common to all route options (refer to paragraphs 12.6.3 to 12.6.32). Please note there are no additional impacts related to geology and therefore these aspects are not discussed further.

Hydrogeology

PWS

- 12.6.49 Option 1B would have a potential impact on the quality of two additional PWS; GE104 and GE105. These would have potential impacts of Moderate and Slight/Moderate significance, respectively.
- 12.6.50 Option 1B would have a potential impact on the yield of PWS GE104, which would have a potential impact of Slight/Moderate significance.

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SWFs

- 12.6.51 Option 1B has no additional indirect impacts (via groundwater) on surface water quality.
- 12.6.52 Option 1B would have two additional SWFs (SWF 08 (Fiddler's Burn) and SWF 12 (Rough Burn)) which are potentially at risk from a cutting deeper than 3m bgl. These would have potential indirect impacts (via groundwater dewatering) on surface water flow of Slight/Moderate and Moderate significance, respectively.

Contaminated Land

- 12.6.53 Direct interaction may occur between Option 1B and the following eight additional potentially contaminated land sources; GE06 (Aberdeen to Inverness Railway Line), GE26 (Sand Pit 1), GE27 (Morayston Farm Petrol Tank), GE33 (Sand Pit 2), GE34 (Gravel Pit 2), GE35 (Gravel Pit 3), GE36 (Gravel Pit 4) and GE42 (Gravel Pit 5). These would have potential impacts of High significance.
- 12.6.54 The same pollutant linkages apply to these potentially contaminated land sources as those described in paragraphs 12.6.29 to 12.6.30.
- 12.6.55 Option 1B has six areas of potentially contaminated land sources that are expected to be impacted by a cutting deeper than 3m bgl, and which could draw contaminated groundwater. The impact assessment is shown in Table 12.16.

Table 12.16: Potential indirect impacts on contaminated land - additional for Option 1B

Receptor	Name	Likelihood	Magnitude	Impact
GE21	Tile and Brickworks	Likely	Medium	Moderate
GE38	Mid Coul Mill Dam	Likely	Medium	Moderate
GE27	Morayston Farm Petrol Tank	Likely	Medium	Moderate
GE19	Pit 1	Low Likelihood	Medium	Moderate/Low
GE37	Hill Head Quarry	Low Likelihood	Medium	Moderate/Low
GE06	Aberdeen to Inverness Railway Line	Low Likelihood	Medium	Moderate/Low

Option 1B (MV)

- 12.6.56 This section presents the potential impacts specific for Option 1B (MV) which are additional to those reported as common to all route options (refer to paragraphs 12.6.3 to 12.6.32). Please note there are no additional impacts related to geology and therefore these aspects are not discussed further.

Hydrogeology

PWS

- 12.6.57 Option 1B (MV) would have a potential impact on the quality of two additional PWS; GE104 and GE105. These would have potential impacts of Moderate and Slight/Moderate significance, respectively.
- 12.6.58 Option 1B (MV) would have a potential impact on the yield of PWS GE104, which would have a potential impact of Slight/Moderate significance.

SWFs

- 12.6.59 Option 1B (MV) has one additional potential indirect impact (via groundwater) on surface water quality for SWF 09 (Tributary of Rough Burn) of Moderate/Substantial significance.

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- 12.6.60 Option 1B (MV) would have three additional SWFs which are potentially at risk from a cutting deeper than 3m bgl. The impact assessment in relation to the potential indirect impact (via groundwater dewatering) on surface water flow is shown in Table 12.17.

Table 12.17: Potential indirect impacts on surface water flow - additional for Option 1B (MV)

Receptor	Name	Sensitivity	Magnitude	Impact
SWF 09	Tributary of Rough Burn	Medium	Medium	Moderate
SWF 08	Fiddler's Burn	Low	Medium	Slight/Moderate
SWF 11	Indirect tributary of Rough Burn (2)	Low	Medium	Slight/Moderate

Contaminated Land

- 12.6.61 Direct interaction may occur between Option 1B (MV) and the following six additional potentially contaminated land sources; GE06 (Aberdeen to Inverness Railway Line), GE33 (Sand Pit 2), GE34 (Gravel Pit 2), GE35 (Gravel Pit 3), GE36 (Gravel Pit 4) and GE42 (Gravel Pit 5). These would have potential impacts of High significance.
- 12.6.62 The same pollutant linkages apply to these potentially contaminated land sources as those described in paragraphs 12.6.29 to 12.6.30.
- 12.6.63 Option 1B (MV) has five additional areas of potentially contaminated land that are expected to be impacted by a cutting deeper than 3m bgl, and which could draw contaminated groundwater. The impact assessment is shown in Table 12.18.

Table 12.18: Potential indirect impacts on contaminated land - additional for Option 1B (MV)

Receptor	Name	Likelihood	Magnitude	Impact
GE21	Tile and Brickworks	Likely	Medium	Moderate
GE38	Mid Coul Mill Dam	Likely	Medium	Moderate
GE19	Pit 1	Low Likelihood	Medium	Moderate/Low
GE37	Hill Head Quarry	Low Likelihood	Medium	Moderate/Low
GE06	Aberdeen to Inverness Railway Line	Low Likelihood	Medium	Moderate/Low

Option 1C

- 12.6.64 This section presents the potential impacts specific for Option 1C which are additional to those reported as common to all route options (refer to paragraphs 12.6.3 to 12.6.32). Please note there are no additional impacts related to geology and therefore these aspects are not discussed further.

Hydrogeology

PWS

- 12.6.65 Option 1C has no additional impacts of Slight/Moderate significance or above in relation to the quality or yield of PWS.

SWFs

- 12.6.66 Option 1C would potentially impact on the quality of surface water (via groundwater) for SWF 07 (Drain at Allanfean), SWF 09 (Tributary of Rough Burn), SWF 10 (Indirect tributary of Rough Burn (1)) and SWF 11 (Indirect tributary of Rough Burn (2)). These would have potential impacts of Moderate/Substantial significance.

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- 12.6.67 Option 1C would have five additional SWFs which are potentially at risk from a cutting deeper than 3m bgl. The impact assessment in relation to the potential indirect impact (via groundwater dewatering) on surface water flow is shown in Table 12.19.

Table 12.19: Potential indirect impacts on surface water flow - additional for Option 1C

Receptor	Name	Sensitivity	Magnitude	Impact
SWF 08	Fiddler's Burn	Low	High	Moderate
SWF 09	Tributary of Rough Burn	Medium	Medium	Moderate
SWF 12	Rough Burn	Low	High	Moderate
SWF 10	Indirect tributary of Rough Burn (1)	Low	Medium	Slight/Moderate
SWF 15	Tributary of 'Unnamed Burn – Castle Stuart to source (Tornagrain)' (2)	Low	Medium	Slight/Moderate

Contaminated Land

- 12.6.68 Direct interaction may occur between Option 1C and the following four additional potentially contaminated land sources; GE06 (Aberdeen to Inverness Railway Line), GE22 (Pit 2), GE26 (Sand Pit 1) and GE27 (Morayston Farm Petrol Tank). These would have potential impacts of High significance.
- 12.6.69 The same pollutant linkages apply to these potentially contaminated land sources as those described in paragraphs 12.6.29 to 12.6.30.
- 12.6.70 Option 1C would have five additional areas of potentially contaminated land that are expected to be impacted by a cutting deeper than 3m bgl, and which could draw contaminated groundwater. The impact assessment is shown in Table 12.20.

Table 12.20: Potential indirect impacts on contaminated land - additional for Option 1C

Receptor	Name	Likelihood	Magnitude	Impact
GE22	Pit 2	Likely	Medium	Moderate
GE27	Morayston Farm Petrol Tank	Likely	Medium	Moderate
GE06	Aberdeen to Inverness Railway Line	Low Likelihood	Medium	Moderate/Low
GE34	Gravel Pit 2	Low Likelihood	Medium	Moderate/Low
GE39	Inverness Airport	Low Likelihood	Medium	Moderate/Low

Option 1C (MV)

- 12.6.71 This section presents the potential impacts specific for Option 1C (MV) which are additional to those reported as common to all route options (refer to paragraphs 12.6.3 to 12.6.32). Please note there are no additional impacts related to geology and therefore these aspects are not discussed further.

Hydrogeology

PWS

- 12.6.72 Option 1C (MV) has no additional impacts of Slight/Moderate significance or above in relation to the quality or yield of PWS.

SWFs

- 12.6.73 Option 1C (MV) would potentially impact on the quality of surface water (via a groundwater) for SWF 07 (Drain at Allanfean), SWF 09 (Tributary of Rough Burn), SWF 10 (Indirect tributary of Rough Burn (1)) and SWF 11 (Indirect tributary of Rough Burn (2)). These would have potential impacts of Moderate/Substantial significance.

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- 12.6.74 Option 1C (MV) would have four additional SWFs which are potentially impacted by a cutting deeper than 3m bgl. The impact assessment in relation to the potential indirect impact (via groundwater dewatering) on surface water flow is shown in Table 12.21.

Table 12.21: Potential indirect impacts on surface water flow - additional for Option 1C (MV)

Receptor	Name	Sensitivity	Magnitude	Impact
SWF 08	Fiddler's Burn	Low	High	Moderate
SWF 09	Tributary of Rough Burn	Medium	Medium	Moderate
SWF 10	Indirect tributary of Rough Burn (1)	Low	Medium	Slight/Moderate
SWF 15	Tributary of 'Unnamed Burn – Castle Stuart to source (Tornagrain)' (2)	Low	Medium	Slight/Moderate

Contaminated Land

- 12.6.75 Direct interaction may occur between Option 1C (MV) and the following two additional potentially contaminated land sources; GE06 (Aberdeen to Inverness Railway Line) and GE22 (Pit 2). These would have potential impacts of High significance.
- 12.6.76 The same pollutant linkages apply to these potentially contaminated land sources as those described in paragraphs 12.6.29 to 12.6.30.
- 12.6.77 Option 1C (MV) would have four additional areas of potentially contaminated land that are expected to be impacted by a cutting deeper than 3m bgl, and which could draw contaminated groundwater. The impact assessment is shown in Table 12.22.

Table 12.22: Potential indirect impacts on contaminated land - additional for Option 1C (MV)

Receptor	Name	Likelihood	Magnitude	Impact
GE22	Pit 2	Likely	Medium	Moderate
GE06	Aberdeen to Inverness Railway Line	Low Likelihood	Medium	Moderate/Low
GE34	Gravel Pit 2	Low Likelihood	Medium	Moderate/Low
GE39	Inverness Airport	Low Likelihood	Medium	Moderate/Low

Option 1D

- 12.6.78 This section presents the potential impacts specific for Option 1D which are additional to those reported as common to all route options (refer to paragraphs 12.6.3 to 12.6.32). Please note there are no additional impacts related to geology and therefore these aspects are not discussed further.

Hydrogeology

PWS

- 12.6.79 Option 1D would have a potential impact on the quality of two additional PWS; GE104 and GE105. These would have potential impacts of Moderate and Slight/Moderate significance, respectively.
- 12.6.80 Option 1D would potentially impact on the yield of PWS GE104, with a potential impact of Slight/Moderate significance.

SWFs

- 12.6.81 Option 1D would potentially impact on the quality of surface water (via a groundwater) for SWF 07 (Drain at Allanfearn), SWF 09 (Tributary of Rough Burn), SWF 10 (Indirect tributary

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of Rough Burn (1)) and SWF 11 (Indirect tributary of Rough Burn (2)). These would have potential impacts of Moderate/Substantial significance.

- 12.6.82 Option 1D would have four additional SWFs which are potentially at risk from a cutting deeper than 3m bgl. The impact assessment in relation to the potential indirect impact (via groundwater dewatering) on surface water flow is shown in Table 12.23.

Table 12.23: Potential indirect impacts on surface water flow - additional for Option 1D

Receptor	Receptor Name	Sensitivity	Magnitude	Impact
SWF 08	Fiddler's Burn	Low	High	Moderate
SWF 09	Tributary of Rough Burn	Medium	Medium	Moderate
SWF 12	Rough Burn	Low	High	Moderate
SWF 10	Indirect tributary of Rough Burn (1)	Low	Medium	Slight/Moderate

Contaminated Land

- 12.6.83 Direct interaction may occur between Option 1D and the following eight additional potentially contaminated land sources; GE22 (Pit 2), GE26 (Sand Pit 1), GE27 (Morayston Farm Petrol Tank), GE33 (Sand Pit 2), GE34 (Gravel pit 2), GE35 (Gravel Pit 3), GE36 (Gravel Pit 4) and GE42 (Gravel Pit 5). These would have potential impacts of High significance.

- 12.6.84 The same pollutant linkages apply to these potentially contaminated land sources as those described in paragraphs 12.6.29 to 12.6.30.

- 12.6.85 Option 1D would have four additional areas of potentially contaminated land that are expected to be impacted by a cutting deeper than 3m bgl, and which could draw contaminated groundwater. The impact assessment is shown in Table 12.24.

Table 12.24: Potential indirect impacts on contaminated land - additional for Option 1D

Receptor	Name	Likelihood	Magnitude	Impact
GE22	Pit 2	Likely	Medium	Moderate
GE38	Mid Coul Mill Dam	Likely	Medium	Moderate
GE27	Morayston Farm Petrol Tank	Likely	Medium	Moderate
GE37	Hill Head Quarry	Low Likelihood	Medium	Moderate/Low

Option 1D (MV)

- 12.6.86 This section presents the potential impacts specific for Option 1D (MV) which are additional to those reported as common to all route options (refer to paragraphs 12.6.3 to 12.6.32). Please note there are no additional impacts related to geology and therefore these aspects are not discussed further.

Hydrogeology

PWS

- 12.6.87 Option 1D (MV) would have a potential impact on the quality of two additional PWS; GE104 and GE105. These would have potential impacts of Moderate and Slight/Moderate significance, respectively.
- 12.6.88 Option 1D (MV) would have a potential impact on the yield of PWS GE104, which would have a potential impact of Slight/Moderate significance.

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SWFs

- 12.6.89 Option 1D (MV) would potentially impact on the quality of surface water (via a groundwater) for SWF 07 (Drain at Allanfearn), SWF 09 (Tributary of Rough Burn), SWF 10 (Indirect tributary of Rough Burn (1)) and SWF 11 (Indirect tributary of Rough Burn (2)). These would have potential impacts of Moderate/Substantial significance.
- 12.6.90 Option 1D (MV) would have three additional SWFs which are potentially at risk from a cutting deeper than 3m bgl. The impact assessment in relation to the potential indirect impact (via groundwater dewatering) on surface water flow is shown in Table 12.25.

Table 12.25: Potential indirect impacts on surface water flow - additional for Option 1D (MV)

Receptor	Receptor Name	Sensitivity	Magnitude	Impact
SWF 08	Fiddler's Burn	Low	High	Moderate
SWF 09	Tributary of Rough Burn	Medium	Medium	Moderate
SWF 10	Indirect tributary of Rough Burn (1)	Low	Medium	Slight/Moderate

Contaminated Land

- 12.6.91 Direct interaction may occur between Option 1D (MV) and the following six additional potentially contaminated land sources; GE22 (Pit 2), GE33 (Sand Pit 2), GE34 (Gravel Pit 2), GE35 (Gravel Pit 3) GE36 (Gravel Pit 4) and GE42 (Gravel Pit 5). These would have potential impacts of High significance.
- 12.6.92 The same pollutant linkages apply to these potentially contaminated land sources as those described in paragraphs 12.6.29 to 12.6.30.
- 12.6.93 Option 1D (MV) would have three additional areas of potentially contaminated land that are expected to be impacted by a cutting deeper than 3m bgl, and which could draw contaminated groundwater. The impact assessment is shown in Table 12.26.

Table 12.26: Potential indirect impacts on contaminated land - additional for Option 1D (MV)

Receptor	Name	Likelihood	Magnitude	Impact
GE22	Pit 2	Likely	Medium	Moderate
GE38	Mid Coul Mill Dam	Likely	Medium	Moderate
GE37	Hill Head Quarry	Low Likelihood	Medium	Moderate/Low

12.7 Impact Assessment: Nairn Bypass

- 12.7.1 This section describes the impacts that are specific to the Nairn Bypass section. Impacts that are common to all route options are discussed, followed by those impacts which are additional to these, for each route option.
- 12.7.2 A key aspect of the impact assessment is to identify areas of temporary or permanent excavations. All proposed excavations relate to road cuttings. Information on proposed cutting areas and the associated geological and hydrogeological settings are shown on Figures 12.5 to 12.9. It should be noted that the cuttings shown are all newly proposed and are those which have a minimum depth of below 3m bgl as (in the absence of data from ground investigation) these are most likely to intercept shallow groundwater.

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Impacts Common to all Routes Options

Geology

Solid Geology

12.7.3 The potential impacts on the Kildrummie Kames SSSI landform are discussed separately for each route option as the impacts vary depending on the route option.

12.7.4 It is currently unknown whether the underlying bedrock (negligible sensitivity) is likely to be excavated due to the absence of local ground investigation information in the areas of the cuttings. In any case, potential magnitude of impact is expected to be low and would result in a potential impact of Negligible significance.

Drift geology

12.7.5 The reduction of drift deposits (negligible sensitivity except peat deposits), as a result of the route options, is expected to be minimal compared to their widespread distribution. The potential magnitude of impact is anticipated to be low and would result in a potential impact of Negligible significance for drift (except peat deposits).

12.7.6 Due to the proximity of the route options from the different peat areas, the potential impact on each area that are common to all route options is as follows:

- There is a slight encroachment onto the western boundary of the BGS peat area (low sensitivity) by all route options which is assessed as a low potential magnitude of impact. This would result in a potential impact of Slight significance. However a small area of peat deposits may need to be removed and disposed off-site.
- Kildrummie Kames peat bog retains its integrity with all route options. No impact on Kildrummie Kames peat bog (from a drift geological point of view) is expected.

Mineral Extraction

12.7.7 The magnitude of impact on sand and gravel resources (low sensitivity) is expected to be low to moderate due to the expected footprint of the route options. This would result in a potential impact of Slight significance.

Hydrogeology

12.7.8 Figures 12.5 to 12.9 indicate that groundwater is likely to be intercepted by a number of the proposed excavations of deeper than 3m bgl, regardless of the route option.

Groundwater Quality

12.7.9 Impacts on groundwater quality in relation to historical and current land uses are assessed in the contaminated land section.

12.7.10 In the event of accidental spillage during construction or operational phases, potential contamination may migrate through the upper unsaturated zone reaching the shallow drift aquifer and impair groundwater quality, unless appropriate measures for control of discharge and drainage are taken.

12.7.11 Given the high vulnerable nature of all aquifers to surface pollution, the potential magnitude of impact from accidental spillages is considered to be medium. The potential impact assessment from accidental spillages on these aquifers is shown in Table 12.27.

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Table 12.27: Potential impact from accidental spillages onto key hydrogeological units - common to all route options (Nairn Bypass)

Hydrological Unit	Sensitivity	Magnitude	Significance
Upper Old Red Sandstone.	High	Medium	Moderate/Substantial
Superficial Aquifers – Alluvium, Alturie Gravels Formation, and Raised Tidal Flat Deposits.	Medium	Medium	Moderate
Superficial Aquifers – Glacial Till and Peat.	Low	Medium	Slight/Moderate
Auldearn Granite Pluton.	Low	Medium	Slight/Moderate

12.7.12 Potential impacts of accidental spillages on surface waters are discussed in Chapter 13 (Road Drainage and the Water Environment) of this report.

Groundwater Flow

12.7.13 As a result of excavations, groundwater within drift deposits (low to medium sensitivity) is expected to be the most at risk from all route options, with a potential magnitude of impact anticipated to be low to medium. This would result in a potential impact of Slight/Moderate significance.

12.7.14 Potential magnitude of impacts on bedrock groundwater (high sensitivity) is anticipated to be negligible as a result of excavations. This would result in a potential impact of Slight significance.

12.7.15 The construction of embankments may result in localised compaction of superficial deposits. However, in groundwater flow terms, this would result in localised effects of negligible magnitude on drift groundwater. The overall potential impact of compaction from embankments on groundwater would be of Negligible significance on groundwater within drift deposits. No impact is expected on the bedrock groundwater as a result of embankment construction.

PWS

12.7.16 Potential impacts on PWS have been assessed based on their distance from the route options, taking into account the levelling of the proposed infrastructure (i.e. presence of cuttings or embankments) and the surrounding topography.

12.7.17 All of the route options would have potential impacts of Moderate/Substantial significance on the quality and yield of PWS GE112 and GE113 and a potential impact of Moderate significance on the quality and yield of PWS GE110.

12.7.18 PWS infrastructure (wells, underground water pipes and tanks) could also be intercepted and destroyed by road construction and road cuttings in all the route options, which could lead to the loss of water supply, without mitigation. However this level of information is not available at this stage and this has not been considered further in this assessment.

SWFs

12.7.19 Potential surface water quality impairment or reduction in baseflow contribution as a result of impact on the groundwater environment have been assessed based on the proximity of SWFs to areas where impacts on the groundwater environment are potentially occurring. It is assumed that a degree of hydraulic connectivity exists between the groundwater and surface water systems.

12.7.20 All of the route options would have potential indirect impacts (via groundwater) on the surface water quality of Moderate significance for five SWFs; SWF 19 (Balnagowan Burn),

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SWF 22 (Alton Burn) SWF 23 (River Nairn), SWF 26 (Auldearn Burn) and SWF 33 (Drain at Penick Farm).

- 12.7.21 Loch Flemington is located west of the western extent of the Kildrummie Kames Peat Bog and is designated as a SPA. The loch is considered to be of high sensitivity due to its designation, however given its distance from the proposed works, the potential magnitude of impact is considered to be negligible and therefore the potential impacts to the loch levels is assessed as being of Slight significance for all route options.
- 12.7.22 There are no SWFs that are impacted similarly by cuttings located in all route options. Therefore, there are no impacts which are common to all route options for SWF flow. The potential impacts in relation to SWF flow are discussed in relation to each route option below.

GWDTE

- 12.7.23 The integrity of the Kildrummie Kames Peat Bog is not at risk with any of the route options.
- 12.7.24 No potential impact is expected on the marshy grassland near Moss-side from any of the route options.

Contaminated Land

- 12.7.25 A number of potential pollution sources, exposure and migration pathways have been identified for the route options along with potential receptors that may be at risk and these are discussed below.
- 12.7.26 A CSM assessment has been undertaken to determine the potential risk from the sources to each receptor.
- 12.7.27 There are two potential ways in which the route options can impact on contaminated land:
- direct interaction between the route options and potentially contaminated land sources (i.e. within the route option footprint and within its immediate vicinity); and
 - indirect disturbance of potentially contaminated land sources as a result of the route options via the interception in excavated areas of gas or water associated with potentially contaminated land sources.
- 12.7.28 For all route options direct interaction may occur with four potentially contaminated sources; GE06 (Aberdeen to Inverness Railway Line), GE07 (Inverness to Lossiemouth Fuel Pipeline), GE56 (Gravel Pit 7) and GE101 (Quarry disused). All would have potential impacts of High significance, with the exception of GE56 which would have a potential impact of Very High significance.
- 12.7.29 Direct interaction with the potentially contaminated land sources has the potential to impact on human receptors via pollutant pathways PP1, PP3 and PP12 (refer to Table 12.4).
- 12.7.30 In addition, soils/made ground from those potentially contaminated land sources may be removed and temporarily stored on site, which may represent a hazard to the water environment via pollutant pathways PP5 to PP9 (refer to Table 12.4). The soils/made ground from those potentially contaminated land sources may be proposed for reuse elsewhere along the route options and also pose a potential long-term risk to the water environment via pollutant pathways PP18 to PP20 (refer to Table 12.4).
- 12.7.31 Indirect impacts may occur in cutting areas likely to intercept groundwater which could draw contaminated groundwater towards the cutting (PP21) (refer to Table 12.4).

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12.7.32 There are no contaminated land sites that are impacted similarly by cuttings for all route options. Therefore, there are no impacts which are common to all route options. Potential indirect impacts on contaminated land sites are discussed in relation to each route option below.

Option 2A

12.7.33 This section presents the potential impacts specific for Option 2A which are additional to those reported as common to all route options (refer to paragraphs 12.7.3 to 12.7.32).

Geology

12.7.34 Option 2A is not expected to directly interact with the most eastern part of the Kildrummie Kames SSSI landform. No impact is therefore expected.

12.7.35 Option 2A follows the boundary of Blar nam Fiadh (low sensitivity) and there is a low likelihood of encountering peat deposits. This results in a potential impact of Negligible significance.

Hydrogeology

PWS

12.7.36 Option 2A would have potential impacts on the quality of five additional PWS. The impact assessment is shown in Table 12.28.

Table 12.28: Potential impacts on PWS quality - additional for Option 2A

Receptor	Sensitivity	Magnitude	Impact
GE120	Medium	High	Moderate/Substantial
GE125	Medium	High	Moderate/Substantial
GE117	Medium	Medium	Moderate
GE119	Medium	Medium	Moderate
GE115	Medium	Low	Slight/Moderate

12.7.37 Option 2A would potentially impact on the yield of two additional PWS; GE117 and GE120. GE120 would have a potential impact of Moderate/Substantial significance, whereas GE117 would have a potential impact of Slight/Moderate significance.

GWDTE

12.7.38 Option 2A runs along the northern boundary of Blar nam Fiadh and slightly encroaches onto the extended BGS peat area (low sensitivity). Potential impacts are expected to be localised. These have been assessed as low to medium locally, but the remaining part of the site is not expected to be impacted. This would result in potential local impacts of Moderate significance, and Negligible significance overall.

SWFs

12.7.39 Option 2A would potentially impact on the quality of surface water (via groundwater) for two additional SWFs; SWF 20 (Tributary of Balnagowan Burn) and SWF 24 (Tributary of River Nairn). These would have potential impacts of Moderate and Moderate/Substantial significance, respectively.

12.7.40 Option 2A would have two additional SWFs potentially impacted by a cutting deeper than 3m bgl. The impact assessment in relation to the potential indirect impacts (via groundwater dewatering) on surface water flow is shown in Table 12.29.

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Table 12.29: Potential indirect impacts on surface water flow - additional for Option 2A

Receptor	Name	Sensitivity	Magnitude	Impact
SWF 26	Auldearn Burn	High	Medium	Moderate/Substantial
SWF 19	Balnagowan Burn	Low	Medium	Slight/Moderate

Contaminated Land

- 12.7.41 Direct interaction may occur between Option 2A and nine additional potentially contaminated land sources. The impact assessment is shown in Table 12.30.

Table 12.30: Potential direct interaction with contaminated land - additional for Option 2A

Receptor	Name	Likelihood	Magnitude	Impact
GE58	Smithy 4	High Likelihood	Medium	High
GE64	Gravel Pit 9	High Likelihood	Medium	High
GE65	Refuse Tip	High Likelihood	Severe	Very High
GE68	Tradespark Burial Ground	High Likelihood	Severe	Very High
GE60	Ross Timber Products	High Likelihood	Medium	High
GE61	Gravel Pit 8	High Likelihood	Medium	High
GE66	Sand Pit/Gravel Pit	High Likelihood	Medium	High
GE67	Gravel Pit (Disused)	High Likelihood	Medium	High
GE84	Sand Pit 3	High Likelihood	Medium	High

- 12.7.42 The same pollutant linkages apply to these potentially contaminated land sources as those described in paragraphs 12.7.29 to 12.7.30.
- 12.7.43 Option 2A would have five additional potentially contaminated land sources that are expected to be impacted by a cutting deeper than 3m bgl and which could draw contaminated groundwater. The impact assessment is shown in Table 12.31.

Table 12.31: Potential indirect impacts on contaminated land - additional for Option 2A

Receptor	Name	Likelihood	Magnitude	Impact
GE07	Inverness to Lossiemouth Fuel Pipeline	Likely	Severe	High
GE84	Sand Pit 3	Likely	Medium	Moderate
GE80	Sawmill – Tulloch Timber	Low Likelihood	Medium	Moderate/Low
GE98	Old Sand Pit	Low Likelihood	Medium	Moderate/Low
GE100	Sand Pit 5	Low Likelihood	Medium	Moderate/Low

Option 2B

- 12.7.44 This section presents the potential impacts specific for Option 2B which are additional to those reported as common to all route options (refer to paragraphs 12.7.3 to 12.7.32).

Geology

- 12.7.45 Option 2B is not expected to directly interact with the most eastern part of Kildrummie Kames SSSI landform. Therefore no impact is expected.
- 12.7.46 Option 2B follows the boundary of Blar nam Fiadh (low sensitivity) and there is a low likelihood of encountering peat deposits. This would result in a potential impact of Negligible significance.

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Hydrogeology

PWS

- 12.7.47 Option 2B would have potential impacts on the quality of six additional PWS. The impact assessment is shown in Table 12.32.

Table 12.32: Potential impacts on PWS quality - additional for Option 2B

Receptor	Sensitivity	Magnitude	Impact
GE123	Medium	High	Moderate/Substantial
GE117	Medium	Medium	Moderate
GE119	Medium	Medium	Moderate
GE121	Medium	Medium	Moderate
GE122	Medium	Medium	Moderate
GE115	Medium	Low	Slight/Moderate

- 12.7.48 Option 2B would have potential impacts on the yield of four additional PWS; GE117, GE121, GE122 and GE123. All would have potential impacts of Slight/Moderate significance, with the exception of GE123 where the potential impact would be of Moderate/Substantial significance.

GWDTE

- 12.7.49 Option 2B runs along the northern boundary of Blar nam Fiadh and slightly encroaches onto the extended BGS peat area (low sensitivity). Potential impacts are expected to be localised. These have been assessed as low to medium locally, but the remaining part of the site is not expected to be impacted. This would result in potential local impacts of Moderate significance, and Negligible significance overall.

SWFs

- 12.7.50 Option 2B would potentially impact on the quality of surface water (via groundwater) for three additional SWF; SWF 20 (Tributary of Balnagowan Burn), SWF 24 (Tributary of River Nairn) and SWF 31 (Auldearn Burn – Brightmony Tributary). These would have potential impacts of Moderate/Substantial significance, with the exception of SWF 20 which would have a potential impact of Moderate significance.
- 12.7.51 Option 2B would have three SWFs which have the potential to be impacted by a cutting deeper than 3m bgl; SWF 19 (Balnagowan Burn), SWF 26 (Auldearn Burn) and SWF 31 (Auldearn Burn – Brightmony Tributary). The impact assessment is shown in Table 12.33.

Table 12.33: Potential indirect impacts on surface water flow - additional for Option 2B

Receptor	Name	Sensitivity	Magnitude	Impact
SWF 26	Auldearn Burn	High	Medium	Substantial
SWF 31	Auldearn Burn - Brightmony Tributary	Medium	Medium	Moderate
SWF 19	Balnagowan Burn	Low	Medium	Slight/Moderate

Contaminated Land

- 12.7.52 Direct interaction may occur between Option 2B and the nine additional areas of potentially contaminated land sources as shown in Table 12.34.

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Table 12.34: Potential direct interaction with contaminated land - additional for Option 2B

Receptor	Name	Likelihood	Magnitude	Impact
GE65	Refuse Tip	High Likelihood	Severe	Very High
GE68	Tradespark Burial Ground	High Likelihood	Severe	Very High
GE58	Smithy 4	High Likelihood	Medium	High
GE64	Gravel Pit 9	High Likelihood	Medium	High
GE60	Ross Timber Products	High Likelihood	Medium	High
GE61	Gravel Pit 8	High Likelihood	Medium	High
GE66	Sand Pit/Gravel Pit	High Likelihood	Medium	High
GE67	Gravel Pit (Disused)	High Likelihood	Medium	High
GE84	Sand Pit 3	High Likelihood	Medium	High

12.7.53 The same pollutant linkages apply to these potentially contaminated land sources as those described in paragraphs 12.7.29 to 12.7.30.

12.7.54 Option 2B would have three additional potentially contaminated land sources that are expected to be impacted by a cutting greater than 3m bgl and which could draw contaminated groundwater. These include GE07 (Inverness to Lossiemouth Fuel Pipeline), GE80 (Sawmill - Tulloch Timber) and GE84 (Sand pit 3). All would have potential impacts of Moderate/Low significance, with the exception of GE07 which would have a potential impact of High significance.

Option 2C

12.7.55 This section presents the potential impacts specific for Option 2C which are additional to those reported as common to all route options (refer to paragraphs 12.7.3 to 12.7.32).

Geology

12.7.56 Option 2C is not expected to directly interact with the most eastern part of Kildrummie Kames SSSI landform. Therefore no impact is expected.

12.7.57 Option 2C follows the boundary of Blar nam Fiadh (low sensitivity) and there is a low likelihood of encountering peat deposits with all route options. This would result in a potential impact of Negligible significance.

Hydrogeology

PWS

12.7.58 Option 2C would potentially impact on the quality of two additional PWS; GE115 and GE117. These would have potential impacts of Slight/Moderate and Moderate, significance respectively.

12.7.59 Option 2C, would potentially impact on the yield of one additional PWS; GE117. This would have a potential impact of Slight/Moderate significance.

GWDTE

12.7.60 Option 2C runs along the northern boundary of Blar nam Fiadh and slightly encroaches onto the extended BGS peat area (low sensitivity). Potential impacts are expected to be localised. These have been assessed as low to medium locally, but the remaining part of the site is not expected to be impacted. This would result in potential local impacts of Moderate significance, and Negligible significance overall.

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SWFs

- 12.7.61 Option 2C would potentially impact on the quality of surface water (via groundwater), for six additional SWFs; SWF 20 (Tributary of Balnagowan Burn), SWF 24 (Tributary of the River Nairn), SWF 27 (Drains within Bognafuaran Wood), SWF 28 (Tributary of Auldearn Burn (1)), SWF 31 (Auldearn Burn – Brightmony Tributary) and SWF 35 (Drain, tributary of Auldearn Burn – Brightmony Tributary). These would have potential impacts of Moderate/Substantial significance, with the exception of SWF 20 which would have a potential impact of Moderate significance.
- 12.7.62 Option 2C would have three SWFs which may be impacted by a cutting deeper than 3m bgl; SWF 19 (Balnagowan Burn), SWF 26 (Auldearn Burn) and SWF 31 (Auldearn Burn - Brightmony Tributary). These would all have potential indirect impacts (via groundwater dewatering) on surface water flow of Moderate/Substantial significance, with the exception of SWF 19 which would have a potential impact of Slight/Moderate significance.

Contaminated Land

- 12.7.63 Direct interaction may occur between Option 2C and nine additional potentially contaminated land sources as shown in Table 12.35.

Table 12.35: Potential direct interaction with contaminated land - additional for Option 2C

Receptor	Name	Likelihood	Magnitude	Impact
GE65	Refuse Tip	High Likelihood	Severe	Very High
GE68	Tradespark Burial Ground	High Likelihood	Severe	Very High
GE58	Smithy 4	High Likelihood	Medium	High
GE60	Ross Timber Products	High Likelihood	Medium	High
GE61	Gravel Pit 8	High Likelihood	Medium	High
GE64	Gravel Pit 9	High Likelihood	Medium	High
GE66	Sand Pit/Gravel Pit	High Likelihood	Medium	High
GE67	Gravel Pit (Disused)	High Likelihood	Medium	High
GE134	Mill Dam	High Likelihood	Medium	High

- 12.7.64 The same pollutant linkages apply to these potentially contaminated land sources as those described in paragraphs 12.7.29 to 12.7.30.
- 12.7.65 Option 2C would have one additional contaminated land source (GE95 (Gravel Pit 13)) that is expected to be impacted by a cutting deeper than 3m bgl and which could draw contaminated groundwater. This would have a potential impact of Moderate/Low significance.

Option 2D

- 12.7.66 This section presents the potential impacts specific for Option 2D which are additional to those reported as common to all route options (refer to paragraphs 12.7.3 to 12.7.32).

Geology

- 12.7.67 Option 2D encroaches onto the most eastern side of Kildrummie Kames SSSI (high sensitivity). Locally, a low potential magnitude of impact would be expected, with a resulting local potential impact of Moderate significance on the landform.
- 12.7.68 Option 2D follows the boundary of Blar nam Fiadh (low sensitivity) and there is a low likelihood of encountering peat deposits with all route options. This would result in a potential impact of Negligible significance.

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Hydrogeology

PWS

- 12.7.69 Option 2D would potentially impact on the quality and yield of one additional PWS; GE118. This would have potential impacts of Moderate/Substantial and Substantial significance respectively.

GWDTE

- 12.7.70 Option 2D runs along the northern boundary of Blar nam Fiadh and slightly encroaches onto the extended BGS peat area (low sensitivity). Potential impacts are expected to be localised. These have been assessed as low to medium locally, but the remaining part of the site is not expected to be impacted. This would result in potential local impacts of Moderate significance, and Negligible significance overall.

SWFs

- 12.7.71 Option 2D would potentially impact on the quality of surface water (via groundwater), for five additional SWFs; SWF 20 (Tributary of Balnagowan Burn), SWF 27 (Drains within Bognafuaran Wood), SWF 30 (Tributary of Auldearn Burn (3)), SWF 31 (Auldearn Burn – Brightmony Tributary) and SWF 35 (Drain, tributary of Auldearn Burn – Brightmony Tributary). These would have potential impacts of Moderate/Substantial significance, with the exception of SWF 20 which would have a potential impact of Moderate significance.
- 12.7.72 Option 2D would have two SWFs which would be potentially impacted by a cutting deeper than 3m bgl. These include SWF 19 (Balnagowan Burn) and SWF 27 (Drains within Bognafuaran Wood), which would both have potential impacts of Slight/Moderate significance.

Contaminated Land

- 12.7.73 Direct interaction may occur between Option 2D and 12 additional areas of potentially contaminated land sources as shown in Table 12.36.

Table 12.36: Potential direct interaction with contaminated land - additional for Option 2D

Receptor	Name	Likelihood	Magnitude	Impact
GE65	Refuse Tip	High Likelihood	Severe	Very High
GE68	Tradespark Burial Ground	High Likelihood	Severe	Very High
GE72	Howford Refuse Tip	High Likelihood	Severe	Very High
GE58	Smithy 4	High Likelihood	Medium	High
GE60	Ross Timber Products	High Likelihood	Medium	High
GE61	Gravel Pit 8	High Likelihood	Medium	High
GE64	Gravel Pit 9	High Likelihood	Medium	High
GE66	Sand Pit/Gravel Pit	High Likelihood	Medium	High
GE67	Gravel Pit (Disused)	High Likelihood	Medium	High
GE77	Smithy 5	High Likelihood	Medium	High
GE79	Quarry	High Likelihood	Medium	High
GE95	Gravel Pit 13	High Likelihood	Medium	High

- 12.7.74 The same pollutant linkages apply to these potentially contaminated land sources as those described in paragraphs 12.7.29 to 12.7.30.

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- 12.7.75 Option 2D would have four additional potentially contaminated land sources that are expected to be impacted by a cutting greater than 3m bgl and which could draw contaminated groundwater. The impact assessment is shown in Table 12.37.

Table 12.37: Potential indirect impacts on contaminated land - additional for Option 2D

Receptor	Name	Likelihood	Magnitude	Impact
GE77	Smithy 5	Likely	Medium	Moderate
GE79	Quarry	Likely	Medium	Moderate
GE82	Newton of Park Refuse tip	Low Likelihood	Severe	Moderate
GE85	Gravel Pits	Low Likelihood	Medium	Moderate/Low

Option 2E

- 12.7.76 This section presents the potential impacts specific for Option 2E which are additional to those reported as common to all route options (refer to paragraphs 12.7.3 to 12.7.32).

Geology

- 12.7.77 Option 2E is not expected to directly interact with the most eastern part of the Kildrummie Kames SSSI landform. No impact is therefore expected on the geology of this site.
- 12.7.78 Option 2E does not follow the boundary of Blar nam Fiadh. No impact is therefore expected on the geology of this site.

Hydrogeology

PWS

- 12.7.79 Option 2E would have potential impacts on the quality of five additional PWS. The assessment is shown in Table 12.38.

Table 12.38: Potential impacts on PWS quality - additional for Option 2E

Receptor	Sensitivity	Magnitude	Impact on Quality
GE120	Medium	High	Moderate/Substantial
GE125	Medium	High	Moderate/Substantial
GE117	Medium	Medium	Moderate
GE119	Medium	Medium	Moderate
GE115	Medium	Low	Slight/Moderate

- 12.7.80 Option 2E would have potential impacts on the yield of two PWS; GE117 and GE120. These would have potential impacts of Slight/Moderate and Moderate/Substantial significance respectively.

GWDTE

- 12.7.81 Option 2E does not run along the northern boundary of Blar nam Fiadh. No impact is therefore expected on the hydrogeology of Blar nam Fiadh.

SWFs

- 12.7.82 Option 2E would potentially impact on the quality of surface water (via groundwater), of one additional SWF; SWF 24 (Tributary of River Nairn). This would have a potential impact of Moderate/Substantial significance.

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12.7.83 Option 2E would have two SWFs (SWF 19 (Balnagowan Burn) and SWF 26 (Auldearn Burn)) that are potentially at risk from a cutting deeper than 3m bgl. There would be a potential indirect impact (via groundwater dewatering) on surface water flow of Moderate and Moderate/Substantial significance, respectively.

Contaminated Land

12.7.84 Direct interaction may occur between Option 2E and the following two additional potentially contaminated land sources; GE57 (Blackcastle Quarry) and GE84 (Sand Pit 3). These would have potential impacts of High significance.

12.7.85 The same pollutant linkages apply to these potentially contaminated land sources as those described in paragraphs 12.7.29 to 12.7.30.

12.7.86 Option 2E would have seven additional potentially contaminated land sources that are expected to be impacted by a cutting greater than 3m bgl and which could draw contaminated groundwater. The impact assessment is shown in Table 12.39.

Table 12.39: Potential indirect impacts on contaminated land - additional for Option 2E

Receptor	Name	Likelihood	Magnitude	Impact
GE07	Inverness to Lossiemouth Fuel Pipeline	Likely	Severe	High
GE56	Gravel Pit 7	Likely	Medium	Moderate
GE57	Blackcastle Quarry	Likely	Medium	Moderate
GE84	Sand Pit 3	Likely	Medium	Moderate
GE80	Sawmill – Tulloch Timber (Nairn) Ltd	Low Likelihood	Medium	Moderate/Low
GE98	Old Sand Pit	Low Likelihood	Medium	Moderate/Low
GE100	Sand Pit 5	Low Likelihood	Medium	Moderate/Low

Option 2F

12.7.87 This section presents the potential impacts specific for Option 2F which are additional to those reported as common to all route options (refer to paragraphs 12.7.3 to 12.7.32).

Geology

12.7.88 Option 2F is not expected to directly interact with the most eastern part of the Kildrummie Kames SSSI landform. No impact is therefore expected on the geology of this site.

12.7.89 Option 2E does not follow the boundary of Blar nam Fiadh. No impact is therefore expected on the geology of this site.

Hydrogeology

PWS

12.7.90 Option 2F would potentially impact on the quality of six additional PWS. The impact assessment is shown in Table 12.40.

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Table 12.40: Potential impacts on PWS quality - additional for Option 2F

Receptor	Sensitivity	Magnitude	Impact on Quality
GE123	Medium	High	Moderate/Substantial
GE117	Medium	Medium	Moderate
GE119	Medium	Medium	Moderate
GE121	Medium	Medium	Moderate
GE122	Medium	Medium	Moderate
GE115	Medium	Low	Slight/Moderate

12.7.91 Option 2F would potentially impact on the yield of four additional PWS; GE117, GE121, GE122 and GE123. These would have potential impacts of Slight/Moderate significance, with the exception of GE123 which would have a potential impact of Moderate/Substantial significance.

GWDTE

12.7.92 Option 2F does not run along the northern boundary of Blar nam Fiadh. No impact is therefore expected on the hydrogeology of Blar nam Fiadh.

SWFs

12.7.93 Option 2F would potentially impact on the quality of surface water (via groundwater), for two additional SWFs; SWF 24 (Tributary of River Nairn) and SWF 31 (Auldearn Burn – Brightmony Tributary). These would have potential impacts of Moderate/Substantial significance.

12.7.94 Option 2F would have three SWFs (SWF 19 (Balnagowan Burn), SWF 26 (Auldearn Burn) and SWF 31 (Auldearn Burn – Brightmony Tributary)) which are located within the proximity of a cutting deeper than 3m bgl. There would be potential indirect impacts (via groundwater dewatering) on surface water flow of Moderate significance for SWF 19 and SWF 31 and Substantial significance for SWF 26.

Contaminated Land

12.7.95 Direct interaction may occur between Option 2F and the following two additional potentially contaminated land sources; GE57 (Blackcastle Quarry) and GE84 (Sand Pit 3). These would have potential impacts of High significance.

12.7.96 The same pollutant linkages apply to these potentially contaminated land sources as those described in paragraphs 12.7.29 to 12.7.30.

12.7.97 Option 2F would have five additional areas of potentially contaminated land that are expected to be impacted by a cutting greater than 3m bgl and which could draw contaminated groundwater. The impact assessment is shown in Table 12.41.

Table 12.41: Potential indirect impacts on contaminated land - additional for Option 2F

Receptor	Name	Likelihood	Magnitude	Impact
GE07	Inverness to Lossiemouth Fuel Pipeline	Likely	Severe	High
GE56	Gravel Pit 7	Likely	Medium	Moderate
GE57	Blackcastle Quarry	Likely	Medium	Moderate
GE80	Sawmill – Tulloch Timber (Nairn Ltd)	Low Likelihood	Medium	Moderate/Low
GE84	Sand Pit 3	Low Likelihood	Medium	Moderate/Low

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Option 2G

12.7.98 This section presents the potential impacts specific for Option 2G which are additional to those reported as common to all route options (refer to paragraphs 12.7.3 to 12.7.32).

Geology

12.7.99 Option 2G is not expected to directly interact with the most eastern part of the Kildrummie Kames SSSI landform. No impact is therefore expected on the geology of this site.

12.7.100 Option 2G does not follow the boundary of Blar nam Fiadh. No impact is therefore expected on the geology of this site.

Hydrogeology

PWS

12.7.101 Option 2G would potentially impact on the quality of two PWS; GE115 and GE117. These would have potential impacts of Slight/Moderate and Moderate, significance respectively.

12.7.102 Option 2G would potentially impact on the yield of one PWS; GE117. This would have a potential impact of Slight/Moderate significance.

GWDTE

12.7.103 Option 2G does not run along the northern boundary of Blar nam Fiadh. No impact is therefore expected on the hydrogeology of Blar nam Fiadh.

SWFs

12.7.104 Option 2G would potentially impact on the quality of surface water (via groundwater), for five additional SWFs; SWF 24 (Tributary of River Nairn), SWF 27 (Drains within Bognafuaran Wood), SWF 28 (Tributary of Auldearn Burn (1)), SWF 31 (Auldearn Burn – Brightmony Tributary) and SWF 35 (Drain, tributary of Auldearn Burn – Brightmony Tributary). These would all have potential impacts of Moderate/Substantial significance.

12.7.105 Option 2G would have three SWFs (SWF 19 (Balnagowan Burn), SWF 26 (Auldearn Burn) and SWF 31 (Auldearn Burn - Brightmony Tributary)) which are located within close proximity of a cutting deeper than 3m bgl. There would be potential indirect impacts (via groundwater dewatering) on surface water flow of Moderate/Substantial significance for SWF 26 and SWF 31 and Moderate significance for SWF 19.

Contaminated Land

12.7.106 Direct interaction may occur between Option 2G and the following two additional potentially contaminated land source; GE57 (Blackcastle Quarry) and GE134 (Mill Dam). These would have potential impacts of High significance.

12.7.107 The same pollutant linkages apply to these potentially contaminated land sources as those described in paragraphs 12.7.29 to 12.7.30.

12.7.108 Option 2G would have four additional areas of potentially contaminated land that are expected to be impacted by a cutting greater than 3m bgl and which could draw contaminated groundwater; GE07 (Inverness to Lossiemouth Fuel Pipeline), GE56 (Gravel Pit 7), GE57 (Blackcastle Quarry) and GE95 (Gravel Pit 13). These would have potential impacts of Moderate significance, with the exception of GE95 which would have a potential impact of Moderate/Low significance.

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Option 2H

12.7.109 This section presents the potential impacts specific for Option 2H which are additional to those reported as common to all route options (refer to paragraphs 12.7.3 to 12.7.32).

Geology

12.7.110 Option 2H encroaches onto the most eastern side of Kildrummie Kames SSSI landform (high sensitivity). The potential impact magnitude is expected to be locally low, resulting in a local potential impact of Moderate significance.

12.7.111 Option 2H does not follow the boundary of Blar nam Fiadh. No impact is therefore expected on the geology of this site.

Hydrogeology

PWS

12.7.112 Option 2H would potentially impact on the quality of five additional PWS. The impact assessment is shown in Table 12.42.

Table 12.42: Potential impacts on PWS quality - additional for Option 2H

Receptor	Sensitivity	Magnitude	Impact
GE120	Medium	High	Moderate/Substantial
GE125	Medium	High	Moderate/Substantial
GE117	Medium	Medium	Moderate
GE118	Medium	Medium	Moderate
GE119	Medium	Medium	Moderate

12.7.113 Option 2H would potentially impact on the yield of three PWS; GE117, GE118 and GE120. GE117 would have potential impacts of Slight/Moderate significance, whereas GE118 and GE120 would have potential impacts of Moderate and Moderate/Substantial significance respectively.

GWDTE

12.7.114 Option 2H does not run along the northern boundary of Blar nam Fiadh. No impact is therefore expected on the hydrogeology of Blar nam Fiadh.

SWFs

12.7.115 Option 2H would have no additional impacts on the quality of SWFs.

12.7.116 Option 2H would have one SWF (SWF 19 (Balnagowan Burn)) which is located within close proximity of a cutting deeper than 3m bgl. There would be a potential indirect impact (via groundwater dewatering) on surface water flow of Moderate significance.

Contaminated Land

12.7.117 Direct interaction may occur between Option 2H and three additional potentially contaminated land sources; GE57 (Blackcastle Quarry), GE72 (Howford Refuse Tip) and GE84 (Sand Pit 3). GE57 and GE84 would have potential impacts of High significance and GE72 would have a potential impact of Very High significance.

12.7.118 The same pollutant linkages apply to these potentially contaminated land sources as those described in paragraphs 12.7.29 to 12.7.30.

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- 12.7.119 Option 2H would have six additional potentially contaminated land sources that are expected to be impacted by a cutting greater than 3m bgl and which could draw contaminated groundwater; GE07 (Inverness to Lossiemouth Fuel Pipeline), GE56 (Gravel Pit 7), GE57 (Blackcastle Quarry), GE84 (Sand Pit 3), GE98 (Old Sand Pit) and GE100 (Sand Pit 5). These would have potential impacts of Moderate significance, with the exception of GE98 and GE100 which would have potential impacts of Moderate/Low significance.

Option 2I

- 12.7.120 This section presents the potential impacts specific for Option 2I which are additional to those reported as common to all route options (refer to paragraphs 12.7.3 to 12.7.32).

Geology

- 12.7.121 Option 2I encroaches onto the most eastern side of Kildrummie Kames SSSI landform (high sensitivity). The potential magnitude of impact would be expected to be locally low, resulting in a local potential impact of Moderate significance.
- 12.7.122 Option 2I does not follow the boundary of Blar nam Fiadh. No impact is therefore expected on the geology of this site.

Hydrogeology

PWS

- 12.7.123 Option 2I would have an additional potential impact on the quality and yield of one additional PWS; GE118. This would have a potential impact of Moderate/Substantial and Substantial significance, respectively.

GWDE

- 12.7.124 Option 2I does not run along the northern boundary of Blar nam Fiadh. No impact is therefore expected on the hydrogeology of Blar nam Fiadh.

SWFs

- 12.7.125 Option 2I would potentially impact on the quality of surface water (via groundwater), for four additional SWFs; SWF 27 (Drains within Bognafuaran Wood), SWF 30 (Tributary of Auldearn Burn (3)), SWF 31 (Auldearn Burn – Brightmony Tributary) and SWF 35 (Drain, tributary of Auldearn Burn – Brightmony Tributary). These would have potential impacts of Moderate/Substantial significance.
- 12.7.126 Option 2I would have two SWFs which are potentially impacted by a cutting greater than 3m bgl; SWF 19 (Balnagowan Burn) and SWF 27 (Drains at Bognafuaran Wood). For these, there would be potential indirect impacts (via groundwater dewatering) on surface water flow of Moderate and Slight/Moderate significance respectively.

Contaminated Land

- 12.7.127 Direct interaction may occur between Option 2I and the following five additional potentially contaminated land sources; GE57 (Blackcastle Quarry), GE72 (Howford Refuse Tip), GE77 (Smithy 5), GE79 (Quarry) and GE95 (Gravel Pit 13). These would have potential impacts of High significance, with the exception of GE72 which would have a potential impact of Very High significance.
- 12.7.128 The same pollutant linkages apply to these potentially contaminated land sources as those described in paragraphs 12.7.29 to 12.7.30.

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- 12.7.129 Option 2I would have six additional potentially contaminated land sources that are expected to be impacted by a cutting deeper than 3m bgl and which could draw contaminated groundwater. The impact assessment is shown in Table 12.43.

Table 12.43: Potential indirect impacts on contaminated land - additional for Option 2I

Receptor	Name	Likelihood	Magnitude	Impact
GE56	Gravel Pit 7	Likely	Medium	Moderate
GE57	Blackcastle Quarry	Likely	Medium	Moderate
GE77	Smithy 5	Likely	Medium	Moderate
GE79	Quarry	Likely	Medium	Moderate
GE82	Newton of Park Refuse Tip	Low Likelihood	Severe	Moderate
GE85	Gravel Pits	Low Likelihood	Medium	Moderate/Low

12.8 Compliance with Policies and Plans

- 12.8.1 An assessment of the compliance of the route options in relation to the policies and plans discussed in Section 12.3 (Policies and Plans) is presented for each section; Inverness to Gollanfield and the Nairn Bypass. Where impacts are the same for both sections this is identified and reported collectively.
- 12.8.2 It should be noted that in relation to SPP in respect of potential impacts on nationally designated sites (e.g. SSSIs) and Policy 28 (Sustainable Design), Policy 55 (Peat and Soils) and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP, the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme is considered to have a demonstrable overriding strategic benefit of national importance and as such there is scope to consider that there would be no conflict with these policies. The scheme is included in the Strategic Transport Projects Review (STPR) (Transport Scotland, 2008) which identifies a programme of strategic transport interventions necessary to support the future effective operation of Scotland's transport network. The Infrastructure Investment Plan (Scottish Government, 2011) also identifies investment in Scotland's transport as a key enabler for enhancing productivity and delivering sustainable growth, and has made a commitment to dual the A96 between Inverness and Aberdeen by 2030. The strategic benefits are also reflected in the HwLDP which states that key transport improvements must be delivered to support the development of the A96 corridor.

Geology

Inverness to Gollanfield

- 12.8.3 None of the route options would impact the geology and geomorphology features of Kildrummie Kames SSSI or the areas of peat which are known to occur in the area including at Kildrummie Kames SSSI, Blar nam Fiadh and the BGS peat area. Therefore no conflict is expected with the relevant section of SPP, Policy 57 (Natural, Built and Cultural Heritage), or Policy 55 (Peat and Soils) of the HwLDP.
- 12.8.4 Impacts on geology in the wider countryside (outwith designated sites) are expected to be low and as such Policy 62 (Geodiversity) of the HwLDP is not relevant.

Nairn Bypass

- 12.8.5 Options 2D, 2H and 2I have the potential to conflict with the relevant section of SPP and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP as these slightly encroach onto the eastern extent of the Kildrummie Kames SSSI. However, as noted in paragraph 12.8.2 there is scope to consider that there would be no conflict with these policies and further assessment on the full extent of the impacts on this site would be required to conclude

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whether or not the benefits of strategic and national importance outweigh these adverse impacts.

- 12.8.6 All of route options would have the potential to conflict with SPP policies relating to the protection of peatland and Policy 55 (Peat and Soils) of the HwLDP. This is as a result of potential impacts to peat deposits associated with the BGS peat area as all route options encroach into the western boundary of the area. A small area of peat deposits may need to be removed and disposed of off-site.
- 12.8.7 Further assessment would be required to determine the extent of peatland that would be lost and if it is demonstrated that unacceptable disturbance is unavoidable it would be necessary to demonstrate that the disturbance is outweighed by social, environmental or economic benefits (refer to paragraph 12.8.2). In addition, a peatland management plan would be required demonstrating how the impacts on peat have been minimised and mitigated. If the development is likely to result in the extraction of peat, the proposal is also required to demonstrate that its extraction would not adversely affect the integrity of any nearby European designated sites containing areas of peatland.
- 12.8.8 Impacts on geology in the wider countryside (outwith designated sites) are expected to be low and as such Policy 62 (Geodiversity) of the HwLDP is not relevant.

Mineral Resources

- 12.8.9 The compliance with policies and plans for mineral extraction is the same for both sections. The text below therefore represents both sections.
- 12.8.10 All of the route options have the potential to comply with the relevant sections of SPP and Policy 28 (Sustainable Design) and Policy 53 (Minerals) of the HwLDP.
- 12.8.11 For both sections this is due to the small footprint of the route options and the subsequent impact of Slight significance on mineral resources. Exploitation of sand and gravel has taken place in the surrounding landscape historically and the area has general mineral resource potential. Should significant mineral reserves be identified within the footprint of any of the route options, The Highland Council would support its extraction prior to development in order to avoid sterilisation of the reserve.

Hydrogeology

- 12.8.12 The compliance with policies and plans for hydrogeology is the same for both sections. The text below therefore represents both sections.
- 12.8.13 All of the route options have the potential to conflict with Policy 28 (Sustainable Design), Policy 30 (Physical Constraints), Policy 63 (Water Environment) and Policy 72 (Pollution) of the HwLDP. However, as noted in paragraph 12.8.2 there is scope to consider that there would be no conflict with Policy 28 (Sustainable Design) and further assessment on the full extent of the potential impacts on groundwater, PWS and SWFs would be required to conclude whether or not the benefits of strategic importance outweigh the adverse impacts.
- 12.8.14 The potential conflict with these policies is mainly due to potential impacts on water quality for a number of SWFs as well as groundwater, surface and groundwater flow and PWS. Appropriate measures would be required for all route options to show how pollution of surface and groundwater features can be appropriately avoided and if necessary mitigated and how PWS would not be disrupted or contaminated. Ground investigation data would be required to confirm impacts on surface and groundwater flow and, if confirmed, all route options are expected to conflict with Policy 63 (Water Environment).

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Contaminated Land

- 12.8.15 The compliance with policies and plans for contaminated land is the same for both sections. The text below therefore represents both sections.
- 12.8.16 All of the route options have the potential to conflict with Policy 30 (Physical Constraints) of the HwLDP.
- 12.8.17 A number of potential pollution sources, exposure and migration pathways have been identified for all route options as well as potential receptors that may be at risk. All route options would therefore require mitigation to ensure that the land is made suitable for its new use and unacceptable risks to human health and the wider environment are avoided, both during construction and once operational.

12.9 Potential Mitigation

- 12.9.1 For a DMRB Stage 2 Assessment the design has not been sufficiently developed to allow mitigation measures to be defined in detail at this stage. The objective of this section is to identify potential mitigation taking into account best practice, legislation and guidance, which would be developed and refined during the DMRB Stage 3 Assessment. As part of DMRB Stage 3, the design of the preferred option would be reviewed and, where possible, the preferred option would be further developed (pre-DMRB Stage 3 Assessment mitigation) to minimise impacts geology and soils.

Geology

- 12.9.2 Where impacts on geologically important features have been identified, further consideration with regards to engineering solutions which protect or preserve the feature concerned, would be required at DMRB Stage 3.
- 12.9.3 This would be an important consideration for the route options which impact on the eastern section of the Kildrummie Kames SSSI (Options 2D, 2H and 2I). To assist with this, a detailed geomorphological survey should be carried in the area of interest. Detailed discussions on the route option alignment and the minimisation of impact on the morphology and integrity of the main landforms should take place with a geomorphologist specialists and SNH. In particular, the following measures may need to be taken:
- the morphology of the affected landforms should be surveyed and recorded in detail prior to construction, to retain a record of the feature for future scientific evaluation; and
 - exposures produced by excavations into the landforms should be carefully recorded (including sediment sampling) by an appropriately qualified earth scientist to enable a better understanding of the nature and significance of these landforms.
- 12.9.4 Where peat may need to be excavated and removed from site, ground investigation should confirm the likelihood and the volume and type of peat deposits that may need to be removed. Should it be confirmed that peat deposits are to be excavated, removed and stored, any off-site removal required should be undertaken with reference to 'Development on Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste' (Scottish Renewables and SEPA, 2012).

Hydrogeology

- 12.9.5 Although further investigation is required, potential mitigation measures with regards to the groundwater environment and PWS are summarised below.

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Groundwater Quality

- 12.9.6 Information on current groundwater quality should be complemented by ground investigation data.
- 12.9.7 Chapter 13 (Road Drainage and the Water Environment) of this report, provides details on anticipated mitigation to address potential impacts on SWFs, including adherence to SEPA Pollution Prevention Guidelines (PPGs) during construction, and appropriate road drainage and treatment. These measures would also mitigate against water pollution risk to groundwater by reducing the potential for pollutant release and preventing any contaminated runoff produced by the works from entering groundwater via the unsaturated zone or via losing streams that may recharge directly into the bedrock aquifers.
- 12.9.8 All Sustainable Drainage Systems (SuDS) or detention/treatment basins should be lined and direct discharges to the groundwater environment (such as via soakaways) should be avoided, unless it can be demonstrated that no quality impacts would occur on the shallow groundwater body.
- 12.9.9 These mitigation measures would also serve to protect individual groundwater receptors such as PWS and SWFs from quality impacts during the construction and operational phases.

Groundwater Flow

- 12.9.10 A ground investigation should be carried out to confirm groundwater piezometric levels in relation to proposed depths of excavations along the route options. Based on this information, the screening of proposed road cuttings should be revised to confirm the portion(s) of the road which are expected to intercept groundwater and to confirm the magnitude of impact.
- 12.9.11 Should some excavation areas be confirmed to intercept groundwater, potential volumes of groundwater intercepted would need to be considered in the context of a potential groundwater abstraction Controlled Activities Regulations (CAR) licence(s) from SEPA under the requirements of The Water Environment (Controlled Activities) (Scotland) Regulations (2011), prior to the starting of the works.

PWS

- 12.9.12 PWS identified as being at risk should be surveyed and consultation with landowners should be undertaken to ensure all PWS networks have been identified. The survey would need to be complemented with ground investigation data described above in order to better estimate the sensitivity of local groundwater bodies from which the PWS are sourced.
- 12.9.13 If the impacts are confirmed, mitigation measures may include setting up of a monitoring scheme and/or provide an alternative suitable water supply.

Surface Water Flow

- 12.9.14 Potential impacts identified on surface water flows should be revisited based on the ground investigation data described above. Should the impacts be confirmed, consultations with SEPA should be initiated.

GWDTE

- 12.9.15 A detailed assessment on the hydrological/hydrogeological function of the peat bog sites identified at risks should be undertaken. This should include a detailed survey and complementary ground investigations to determine the degree and mechanisms of ecosystem and groundwater interactivity.

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- 12.9.16 Should a peat bog be confirmed to be impacted by embankments, the design of the embankments should be such that shallow groundwater flows are maintained across the route option.
- 12.9.17 Should a peat bog be confirmed to be impacted by cuttings, a groundwater disturbance assessment should be undertaken.

Contaminated Land

- 12.9.18 Where the risk to potential contaminated land sources has been assessed as equal to/or greater than Moderate/Low risk, mitigation measures are considered necessary.
- 12.9.19 In order to determine the nature and extent of contamination present, a ground investigation should be undertaken and this should include contaminated land testing. This may also be complemented for some targeted potentially contaminated land sources by a reconnaissance survey. Based on the ground contamination and survey findings, the risks highlighted would be better defined and would confirm the nature, depth and quantity of potential contaminated land.
- 12.9.20 Where significant contamination is confirmed, a full risk assessment should be undertaken as part of the DMRB Stage 3 Assessment and mitigation, if required, should be specified on a site specific basis. Mitigation measures may include removal of contaminated soils from site, consolidation for treatment ex-situ and/or treatment in situ.

12.10 Summary of Route Options

- 12.10.1 This section provides a summary of the impact assessment for each section; Inverness to Gollanfield and the Nairn Bypass, including those potential impacts which are common to all and those that vary between the route options.
- 12.10.2 A discussion of the potential residual impacts is also presented taking into account the potential mitigation measures outlined in Section 12.9 (Potential Mitigation).
- 12.10.3 An overall summary of potential impacts of Slight/Moderate or above significance, taking into account impacts on all aspects of geology and soils discussed in this assessment, is provided to highlight the key impacts and differences between the route options. It is also considered that this is the level of significance at which mitigation would be required.

Inverness to Gollanfield

Geology

- 12.10.4 The potential impacts in relation to geology are common to all of the route options and include potential impacts of Negligible significance on bedrock and drift deposits and potential impacts of Slight significance on mineral resources. No potential impacts are expected on the geological landform SSSI or peat deposits.
- 12.10.5 No mitigation measures are proposed in relation to the above impacts and as such, the residual significance of impacts would be expected to be the same as the potential impact significance detailed above.
- 12.10.6 In relation to compliance with planning policies and the impacts on geology, it is not expected that any of the route options would conflict with SPP, Policy 55 (Peat and Soils) or Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP.
- 12.10.7 All of the route options are expected to comply with SPP and Policy 28 (Sustainable Design) and Policy 53 (Minerals) of the HwLDP in relation to protection of mineral resources.

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Hydrogeology

Groundwater Quality

12.10.8 Potential impacts on groundwater quality are common to all route options and include potential impacts of Moderate/Substantial significance on Middle Old Red Sandstone, potential impacts of Moderate significance on superficial aquifers (Alluvium, Alturie Gravels Formation, Raised Marine and Raised Tidal Flat Deposits) and potential impacts of Slight/Moderate significance on superficial aquifers (Glacial Till and Peat).

12.10.9 The implementation of mitigation measures in relation to the protection of the water environment against pollution incidents have the potential to reduce the residual impacts in relation to groundwater quality to a significance of Slight or below for all aquifers and for all route options.

Groundwater Flow

12.10.10 All route options are expected to have potential impacts of Slight/Moderate significance on groundwater flow within superficial aquifers and potential impacts of Slight significance on groundwater flow within bedrock groundwater.

12.10.11 The residual significance would be confirmed following additional ground investigation data during the DMRB Stage 3 Assessment.

PWS

12.10.12 Table 12.44 provides a summary of the potential impacts for PWS.

Table 12.44: Summary of potential impacts on PWS (quality and yield) (Inverness to Gollanfield)

Significance	Quality/Yield	Option							
		1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Moderate	Quality	1	1	2	2	1	1	2	2
Slight/Moderate	Quality	-	-	1	1	-	-	1	1
	Yield	-	-	1	1	-	-	1	1
Overall Total	Quality	1	1	3	3	1	1	3	3
	Yield	-	-	1	1	-	-	1	1

12.10.13 All route options are expected to have potential impacts of Moderate significance on the quality of PWS GE107. Options 1A, 1A (MV), 1C and 1C (MV) are not expected to have any further impacts of Slight/Moderate significance or above on the quality and yield of PWS.

12.10.14 Options 1B, 1B (MV), 1D and 1D (MV) are expected to have additional impacts on the quality and yield of GE104 of Moderate and Slight/Moderate significance respectively. These options are also expected to have an additional impact on the quality of GE105 of Slight/Moderate significance.

12.10.15 Although there are differences between the route options, the implementation of mitigation measures in relation to the protection of the water environment against pollution incidents is expected to reduce the residual impacts in PWS quality and yield to a significance of Slight or below for all route options.

12.10.16 It should be noted that for PWS yield that the level of full mitigation required cannot yet be determined, as these will depend on the outcome of the landowner consultation and surveys to confirm which PWS are at risks and which ones may need a monitoring scheme and/or an

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alternative suitable water supply. This would be undertaken as part of the DMRB Stage 3 Assessment of the preferred option.

SWFs

12.10.17 Table 12.45 provides a summary of the potential impacts on surface water quality.

Table 12.45: Summary of potential impacts on surface water quality (Inverness to Gollanfield)

Significance	Option							
	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Moderate/Substantial	1	2	1	2	5	5	5	5
Moderate	14	14	14	14	14	14	14	14
Overall Total	15	16	15	16	19	19	19	19

12.10.18 All route options have potential indirect impacts (via groundwater) on surface water quality of Moderate significance for 14 SWFs, and potential impacts of Moderate/Substantial significance on Loch Flemington.

12.10.19 Options 1C, 1C (MV), 1D and 1D (MV) have four additional potential impacts of Moderate/Substantial significance and this is on SWF 07 (Drain at Allanfearn), SWF 09 (Tributary of Rough Burn), SWF 10 (Indirect tributary of Rough Burn (1)) and SWF 11 (Indirect tributary of Rough Burn (2)). Options 1A (MV) and 1B (MV) have one additional impact of Moderate/Substantial significance on SWF 09 (Tributary of Rough Burn).

12.10.20 Although the potential impact on the quality of surface waters is expected to vary between the route options, the implementation of mitigation measures in relation to the protection of the water environment against pollution incidents is expected to reduce the residual impacts in surface water quality to a significance of Slight or below for all options.

12.10.21 Based on the information available at this stage, all route options are expected to have a degree of impact on the surface water flows. Table 12.46 provides a summary of the impacts by route option on surface water flow.

Table 12.46: Summary of potential impacts on surface water flow (Inverness to Gollanfield)

Significance	Option							
	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Substantial	1	1	1	1	1	1	1	1
Moderate	2	2	2	2	4	3	4	3
Slight/Moderate	3	4	2	3	3	3	2	2
Overall Total	6	7	5	6	8	7	7	6

12.10.22 All route options would have potential impacts on SWF 16 (Tributary of Ardersier Burn), SWF 13 (Tributary 1 of 'Unnamed Burn – Castle Stuart to source (Tornagrain)' (1)) and SWF 18 (Indirect tributary drains of Ardersier Burn) of Substantial, Moderate and Slight/Moderate significance, respectively.

12.10.23 As shown in Table 12.46 there are a number of additional potential impacts in relation to surface water flow that are expected to vary between the route options. Overall, Option 1C is expected to have the greatest number of potential impacts on surface water flow, closely followed by Options 1A (MV), 1C (MV) and 1D. Option 1B is expected to have the least number of potential impacts on surface water flow.

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- 12.10.24 The potential impacts on surface water flows will be refined during the DMRB Stage 3 Assessment based on the ground investigations. However, should these impacts be confirmed, these would be expected to remain as residual impacts.

GWDTE

- 12.10.25 No direct impacts are expected on the hydrogeology of the Kildrummie Kames peat bog and associated deposits (Blar nam Fiadh and BGS Peat area).

Policies and Plans

- 12.10.26 In relation to compliance with planning policies and impacts on hydrogeology, without mitigation, all of the route options have the potential to conflict with Policy 28 (Sustainable Design), Policy 30 (Physical Constraints), Policy 63 (Water Environment) and Policy 72 (Pollution) of the HwLDP. However, there is scope to consider that as the route options are likely to deliver strategic benefits they would comply with Policy 28 (Sustainable Design) of the HwLDP.
- 12.10.27 With appropriate mitigation as outlined in Section 12.9 (Potential Mitigation), it is expected that all route options could comply with these policies. However, should further ground investigations confirm that any of the route options would be significantly detrimental to surface water and/or groundwater flow, and in the absence of suitable mitigation, a conflict with Policy 63 (Water Environment) of the HwLDP would be expected.

Contaminated Land

- 12.10.28 Table 12.47 provides a summary of the potential direct and indirect impacts on potential contaminated land sources.

Table 12.47: Summary of potential impacts on contaminated land (direct and indirect) (Inverness to Gollanfield)

Significance	Direct/Indirect Impact	Option							
		1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Very High	Direct	2	2	2	2	2	2	2	2
	Indirect	-	-	-	-	-	-	-	-
High	Direct	7	5	12	10	8	6	12	10
	Indirect	1	1	1	1	1	1	1	1
Moderate	Indirect	2	1	3	2	2	1	3	2
Moderate/Low	Indirect	4	4	3	3	3	3	1	1
Overall Total	Direct	9	7	14	12	10	8	14	12
	Indirect	7	6	7	6	6	5	5	4

- 12.10.29 Direct interaction may occur between with six potentially contaminated land sources and all of the route options. These would have common to all potential impacts of Very High significance; GE07 (Inverness to Lossiemouth Fuel Pipeline) and GE47 (Filing Station) and High significance; GE10 (Smithton Junction – Made Ground), GE11 (Milltown Mill Dam), GE31 (Dalcross Railway Station) and GE49 (Smithy 2).
- 12.10.30 Indirect impacts may occur in cutting areas likely to intercept groundwater which could draw contaminated groundwater towards the cutting. All of the route options would have the potential to indirectly impact on GE07 (Inverness to Lossiemouth Fuel Pipeline), and would be expected to have a potential impact of High significance.

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- 12.10.31 As shown in Table 12.47 there are a number of potential impacts in relation to the direct and indirect impacts associated with contaminated land sources that are expected to vary between the route options. Options 1B and 1D are expected to have the largest number of potential impacts in relation to direct interaction with contaminated land sources, closely followed by Options 1B (MV) and 1D (MV). Options 1A (MV) and 1C (MV) are expected to have the least number of direct potential impacts. Options 1A and 1B are expected to have the largest number of potential impacts for indirect impacts on contaminated land sources, with Option 1D (MV) expected to have the least number of indirect impacts.
- 12.10.32 Although the potential impacts associated with contaminated land sources are expected to vary between the route options, the implementation of mitigation measures in relation to contaminated land issues and direct/indirect impacts is expected to reduce residual impacts to a significance of Low or Very Low for all route options. Nevertheless, it should be noted that the level of full mitigation required for each route option cannot yet be determined as these will depend on the outcome of the ground investigation.
- 12.10.33 In relation to compliance with planning policies and impacts on contaminated land, without mitigation, all of the route options have the potential to conflict with Policy 30 (Physical Constraints) of the HwLDP. However, with appropriate mitigation as outlined in Section 12.9 (Potential Mitigation), it is expected that all the route options would comply with this policy.

Overall Summary of Potential Impacts

- 12.10.34 Table 12.48 provides an overall summary of the route options in relation to potential impacts of Slight/Moderate or above significance to highlight the key impacts and differences between the route options. It is also considered that this is the level of significance at which mitigation would be required. Table 12.48 combines the impact assessments for geology, hydrogeology, and contaminated land.

Table 12.48: Summary of potential impacts on geology and soils (Inverness to Gollanfield)

Significance	Option							
	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Substantial	3	3	3	3	3	3	3	3
Moderate/Substantial	10	9	15	14	15	13	19	17
Moderate	20	19	22	21	22	20	24	22
Slight/Moderate	9	10	9	10	8	8	7	7
Overall Total	42	41	49	48	48	44	53	49

- 12.10.35 Table 12.48 shows that overall Option 1D is expected to have the greatest impact on geology and soils closely followed by 1B, 1D (MV), 1B (MV) and 1C. Options 1A, 1A (MV) and 1C (MV) are expected to have the least impact on geology and soils overall.
- 12.10.36 It is expected that all of the potential impacts, with the exception of surface water and groundwater flow, can be reduced to Slight significance or below with adequate mitigation. In relation to impacts on flow it is expected that the potential impacts, if confirmed by the ground investigation, may have limited potential for mitigation and these impacts may remain as residual impacts. In relation to groundwater flow the potential impacts are expected to be common to all route options. The potential impacts on surface water flow do vary slightly between the route options, with Options 1C expected to have the greatest impact and Option 1B expected to have the least impact.

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Geology

- 12.10.37 The potential impacts in relation to geology are common to all of the route options, with the exception of the potential impacts on the geological landform Kildrummie Kames SSSI and the Blar nam Fiadh area of peat. The impacts common to all route options include potential impacts of Negligible significance on bedrock and drift deposits (except peat) and potential impacts of Slight significance on mineral resources and the BGS peat area. No impacts are expected on the Kildrummie Kames peat bog.
- 12.10.38 No mitigation measures are proposed in relation to the above impacts and as such the residual impact significance would be the same as the potential impact significance.
- 12.10.39 In relation to the Kildrummie Kames SSSI, potential impacts of Moderate significance are expected on the Kildrummie Kames SSSI for Options 2D, 2H and 2I. The implementation of mitigation measures in relation to the Kildrummie Kames SSSI is expected to reduce the residual impact to Slight significance for these route options.
- 12.10.40 In relation to the Blar nam Fiadh area of peat potential impacts of Negligible significance are expected for Options 2A, 2B, 2C and 2D. No mitigation measures are proposed in relation to this impact and as such the residual impact significance would be the same as the potential impact significance.
- 12.10.41 In relation to compliance with planning policies and impacts on geology, all of the route options have the potential to conflict with SPP and Policy 55 (Peat and Soils) in relation to impacts on areas of peat. Options 2D, 2H and 2I have the potential to conflict with SPP and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP in relation to impacts on the Kildrummie Kames SSSI. However, there is scope to consider that as the route options are likely to deliver strategic and social and economic benefits of national importance they would comply with these policies.
- 12.10.42 All of the route options are expected to comply with SPP and Policy 28 (Sustainable Design) and Policy 53 (Minerals) of the HwLDP in relation to protection of mineral resources.

Hydrogeology

Groundwater Quality

- 12.10.43 Potential impacts on groundwater quality are common to all route options and would include potential impacts of Moderate/Substantial significance on Upper Old Red Sandstone, potential impacts of Moderate significance on Superficial Aquifers (Alluvium, Alturie Gravels Formation, and Raised Tidal Flat Deposits) and potential impacts of Slight/Moderate significance on Superficial Aquifers (Glacial Till and Peat) and Auldearn Granite Pluton.
- 12.10.44 The implementation of mitigation measures in relation to the protection of the water environment against pollution incidents is expected to reduce the residual impacts in relation to groundwater quality to a significance of Slight or below for all aquifers and for all route options.

Groundwater Flow

- 12.10.45 All route options are expected to have potential impacts of Slight/Moderate significance on groundwater flow within superficial aquifers and potential impacts of Slight significance on groundwater flow within bedrock groundwater.
- 12.10.46 The residual significance would be confirmed following additional ground investigation data collected for the DMRB Stage 3 Assessment.

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PWS

12.10.47 Table 12.49 provides a summary of the potential impacts on the quality and yield of PWS.

Table 12.49: Summary of potential impacts on PWS (quality and yield) (Nairn Bypass)

Significance	PWS – Quality or Yield.	Option								
		2A	2B	2C	2D	2E	2F	2G	2H	2I
Substantial	Yield	-	-	-	1	-	-	-	-	1
Moderate/ Substantial	Quality	4	3	2	3	4	3	2	4	3
	Yield	3	3	2	2	3	3	2	3	2
Moderate	Quality	3	5	2	1	3	5	2	4	1
	Yield	1	1	1	1	1	1	1	2	1
Slight/ Moderate	Quality	1	1	1	-	1	1	1	-	-
	Yield	1	3	1	-	1	3	1	1	-
Total	Quality	8	9	5	4	8	9	5	8	4
	Yield	5	7	4	4	5	7	4	6	4

12.10.48 All route options would have potential impacts of Moderate/Substantial significance on the quality and yield of PWS GE112 and GE113, and potential impacts of Moderate significance on the quality and yield of PWS GE110.

12.10.49 There are a number of impacts in relation to quality and yield of PWS that are expected to vary between the route options. Options 2D and 2I are the only route options which have potential impacts of Substantial significance, and this is on the yield of PWS GE118. Options 2B and 2F are expected to have the greatest number of potential impacts on PWS quality and yield, closely followed by Options 2A, 2E and 2H. Options 2D and 2I are expected to have the least number of potential impacts on PWS quality and yield (although these impacts include one Substantial impact on PWS GE118).

12.10.50 Although there are differences between the route options, the implementation of mitigation measures in relation to the protection of the water environment against pollution incidents is expected to reduce the residual impacts in PWS quality and yield to a significance of Slight or below for all options.

12.10.51 It should be noted that for PWS yield that the level of full mitigation required cannot yet be determined, as these will depend on the outcome of the landowner consultation and surveys to confirm which PWS are at risks and which ones may need a monitoring scheme and/or an alternative suitable water supply. This would be undertaken as part of the DMRB Stage 3 Assessment of the preferred option.

SWFs

12.10.52 Table 12.50 provides a summary of the potential impacts on surface water quality.

Table 12.50: Summary of potential indirect impacts on surface water quality (Nairn Bypass)

Significance	Option								
	2A	2B	2C	2D	2E	2F	2G	2H	2I
Moderate/Substantial	1	2	5	4	1	2	5	-	4
Moderate	6	6	6	6	5	5	5	5	5
Slight/Moderate	1	1	1	1	1	1	1	1	1
Overall Total	8	9	12	11	7	8	11	6	10

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- 12.10.53 All of the route options would have potential indirect impacts (via groundwater) on the surface water quality of Moderate significance on five SWFs; SWF 19 (Balnagowan Burn), SWF 22 (Alton Burn) SWF 23 (River Nairn), SWF 26 (Auldearn Burn) and SWF 33 (Drain at Penick Farm). All route options would also have potential impacts of Slight significance on Loch Flemington.
- 12.10.54 There are a number of impacts in relation to quality of SWFs (via groundwater) that are expected to vary between the route options. Options 2C, 2D, 2G and 2I are expected to have the largest number of potential impacts on SWF quality (via groundwater). Options 2E and 2H are expected to have the least number of potential impacts on SWF quality (via groundwater).
- 12.10.55 Although the potential impact on the quality of surface waters is expected to vary between the route options, the implementation of mitigation measures in relation to the protection of the water environment against pollution incidents is expected to reduce the residual impacts in surface water quality to a significance of Slight or below for all route options.
- 12.10.56 Based on the information available at this stage, all route options are expected to have a degree of impact on the surface water flows. Table 12.51 provides a summary of the potential impacts by route option on surface water flow (via groundwater dewatering).

Table 12.51: Summary of potential indirect impacts on surface water flow (Nairn Bypass)

Significance	Option								
	2A	2B	2C	2D	2E	2F	2G	2H	2I
Substantial	-	1	-	-	-	1	-	-	-
Moderate/Substantial	1	-	2	-	1	-	2	-	-
Moderate	-	1	-	-	1	2	1	1	1
Slight/Moderate	1	1	1	2	-	-	-	-	1
Overall Total	2	3	3	2	2	3	3	1	2

- 12.10.57 There are no SWFs where the impact on flow is common to all options.
- 12.10.58 There potential impacts in relation to surface water flow are expected to only vary slightly between the route options. Options 2B and 2F are expected to have the greatest impact overall, with potential impacts on three SWFs, of which potential impacts on SWF 26 (Auldearn Burn) are of Substantial significance.
- 12.10.59 The potential impacts on surface water flows would be refined during the DMRB Stage 3 Assessment based on the ground investigations. However, should these impacts be confirmed, these are expected to remain as residual impacts.

GWDTE

- 12.10.60 Options 2A, 2B, 2C and 2D are expected to have potential impacts of Negligible significance on the extended BGS peat area and Blar nam Fiadh area of peat. The integrity of the Kildrummie Kames Peat Bog is not at risk with any of the route options, and no potential impact is expected on the marshy grassland near Moss-side from any of the route options.

Policies and Plans

- 12.10.61 In relation to compliance with planning policies and impacts on hydrogeology, without mitigation, all of the route options have the potential to conflict with Policy 28 (Sustainable Design), Policy 30 (Physical Constraints), Policy 63 (Water Environment) and Policy 72 (Pollution) of the HwLDP. However, there is scope to consider that as the route options are

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likely to deliver strategic benefits they would comply with Policy 28 (Sustainable Design) of the HwLDP.

- 12.10.62 With appropriate mitigation as outlined in Section 12.9 (Potential Mitigation), it is expected that all route options could comply with these policies. However, should further ground investigations confirm that any of the route options would be significantly detrimental to surface water and/or groundwater flow, and in the absence of suitable mitigation, a conflict with Policy 63 (Water Environment) of the HwLDP would be expected.

Contaminated Land

- 12.10.63 Table 12.52 provides a summary of the impact assessment for potentially contaminated land sources.

Table 12.52: Summary of potential impacts on contaminated land (direct and indirect) (Nairn Bypass)

Significance	Direct/Indirect	Option								
		2A	2B	2C	2D	2E	2F	2G	2H	2I
Very High	Direct	3	3	3	4	1	1	1	2	2
High	Direct	10	10	10	12	5	5	5	5	7
	Indirect	1	1	-	-	1	1	-	-	-
Moderate	Indirect	1	-	-	3	3	2	3	4	5
Moderate/Low	Indirect	3	2	1	1	3	2	1	2	1
Overall Total	Direct	13	13	13	16	6	6	6	7	9
	Indirect	5	3	1	4	7	5	4	6	6

- 12.10.64 For all route options, direct interaction is expected to occur between four potentially contaminated sites; GE06 (Aberdeen to Inverness Railway Line), GE07 (Inverness to Lossiemouth Fuel Pipeline), GE56 (Gravel Pit 7) and GE101 (Quarry (disused)). All would have potential impacts of High significance, with the exception of GE56 which has a potential impact of Very High significance. There are no impacts which are common to all in relation to potential indirect impacts on contaminated land.
- 12.10.65 There are a number of impacts in relation to contaminated land sources that are expected to vary between the options. Overall, Option 2D is expected to have the largest number of potential impacts for direct interactions with contaminated land sources, closely followed by Options 2A, 2B and 2C. Options 2E, 2F and 2G are expected to have the least number of potential direct impacts, closely followed by Options 2H and 2I. Option 2E is expected to have the largest number of potential indirect impacts on contaminated land sources, with Option 2C expected to have the least number of indirect impacts.
- 12.10.66 Although the potential impacts associated with contaminated land sources are expected to vary between the route options, the implementation of mitigation measures in relation to contaminated land issues and direct/indirect impacts is expected to reduce residual impacts to a significance of Low or Very Low for all route options. Nevertheless, it should be noted that the level of full mitigation required for each route option cannot yet be determined as these will depend on the outcome of the ground investigation.
- 12.10.67 In relation to compliance with planning policies and impacts on contaminated land, without mitigation, all of the route options have the potential to conflict with Policy 30 (Physical Constraints) of the HwLDP. However, with appropriate mitigation as outlined in Section 12.9 (Potential Mitigation), it is expected that all the route options would comply with this policy.

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Overall Summary of Potential Impacts

- 12.10.68 Table 12.53 provides an overall summary of the route options in relation to potential impacts of Slight/Moderate or above significance to highlight the key impacts and differences between the route options. It is also considered that this is the level of significance at which mitigation would be required. Table 12.53 combines the impact assessments for geology, hydrogeology, and contaminated land.

Table 12.53: Summary of potential impacts (Nairn Bypass)

Significance	Option								
	2A	2B	2C	2D	2E	2F	2G	2H	2I
Substantial	3	4	3	5	1	2	1	2	3
Moderate/Substantial	21	20	22	22	16	15	17	13	17
Moderate	12	14	10	13	14	16	13	18	15
Slight/Moderate	9	10	7	6	8	9	6	6	5
Overall Total	45	48	42	46	39	42	37	39	40

- 12.10.69 Table 12.53 shows that overall Option 2B is expected to have the greatest impact on geology and soils closely followed by 2A and 2D. Option 2G is expected to have the least impact on geology and soils overall, closely followed by Options 2E and 2H.
- 12.10.70 It is expected that all of the potential impacts, with the exception of surface water and groundwater flow, can be reduced to Slight significance or below with adequate mitigation. In relation to impacts on flow it is expected that the potential impacts, if confirmed by the ground investigation, may have limited potential for mitigation and these impacts may remain as residual impacts. In relation to groundwater flow the potential impacts are expected to be common to all route options. The potential impacts on surface water flow do vary slightly between the route options, with Options 2B, 2C, 2F and 2G expected to have the greatest impact and Option 2H expected to have the least impact.

12.11 Scope of DMRB Stage 3 Assessment

- 12.11.1 In accordance with DMRB Geology and Soils, further assessment of the preferred option should be undertaken to refine the identification of any significant impacts on geology and hydrogeology and where appropriate any particular environmental issues associated with contaminated land.
- 12.11.2 This should include the incorporation of ground investigation results into the finalisation of the assessment and determination of significance, landowner consultations on PWS and identification of more specific mitigation measures for PWS and contaminated land.

12.12 References

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13 Road Drainage and the Water Environment

13.1 Introduction

13.1.1 This chapter presents the DMRB Stage 2 Assessment of the expected impacts of each of the route options on Surface Water Features (SWFs) within the surface water environment. SWFs include physical entities such as watercourses, ponds or floodplains.

13.1.2 The assessment includes the following disciplines:

- Hydrology and Flood Risk: the assessment of potential impacts on the flow of water on or near the land surface, which is intrinsically linked to hydrogeology, water quality, geomorphology and ecology.
- Fluvial Geomorphology: the assessment of landforms associated with river channels and the sediment transport processes which form them.
- Water Quality: the assessment of potential impacts on various water quality attributes such as water quality/supply, dilution and removal of waste products and biodiversity.

13.1.3 The assessment is supported by the following appendices which are located in Part 6 (Appendices) of this report:

- Appendix A13.1: Summary of Geomorphology Site Visit.
- Appendix A13.2: Impact Assessment Tables.

13.1.4 The surface water environment is intrinsically linked to groundwater and ecological receptors. Potential impacts on groundwater and geomorphology, in the context of solid and drift geology and the potential indirect impact on SWFs (via groundwater dewatering), are considered separately in Chapter 12 (Geology and Soils) of this report. Whilst the relevant designations have been considered in this chapter, potential impacts on ecological receptors are considered in detail in Chapter 11 (Habitats and Biodiversity) of this report.

13.1.5 As described in Part 1 (The Scheme), Chapter 3 (Description of Route Options) of this report, the proposed scheme is divided into two sections; Inverness to Gollanfield and the Nairn Bypass. The information presented in Section 13.2 (Approach and Methods), Section 13.3 (Policies and Plans) and Section 13.9 (Potential Mitigation) is appropriate to both sections. The information presented in Section 13.4 (Baseline Conditions), Sections 13.5 to 13.7 (Impact Assessment), Section 13.8 (Compliance with Policies and Plans) and Section 13.10 (Summary of Route Options) is reported for each section and where appropriate under the headings Inverness to Gollanfield and the Nairn Bypass.

13.1.6 Section 13.11 provides details on the proposed scope for the DMRB Stage 3 Assessment and Section 13.12 provides a full list of references that are noted within this chapter.

13.2 Approach and Methods

Study Area

13.2.1 The study area for water quality was based on at least a 500m area around the outermost edge of all of the route options. However, for some categories of data, the search was extended to significantly greater distances, depending on the location of features such as water quality sampling stations or designated fisheries.

13.2.2 The study area for fluvial geomorphology included every SWF that would potentially be impacted from its source to sea or confluence with another SWF. Typically impacts would be looked at 500m upstream and downstream of a river crossing point; however the desk-

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study has encompassed the whole SWF in order to understand the overall geomorphological characteristics.

- 13.2.3 The study area for hydrology and flood risk included a 500m corridor around the outermost edge of all of the route options, but once features were identified the potential locations of the risk either up or downstream were used to extend the study area. This means an entire SWF could be under consideration.

Baseline Data

- 13.2.4 Baseline conditions were identified through a combination of consultation with statutory consultees, desk-based assessments and information obtained during a site walkover in September 2013.

- 13.2.5 For the desk-based assessment the following sources of information have been consulted:

- observations recorded by Jacobs' geomorphologists during site walkover;
- Ordnance Survey (OS) Mapping;
- Scottish Environment Protection Agency's (SEPA's) website (www.sepa.org.uk);
- SEPA's Indicative River and Coastal Flood Risk Map (www.sepa.org.uk/flooding/flood_extent_maps/view_the_map.aspx);
- SEPA's River Basin Management Plan Interactive Map (<http://gis.sepa.org.uk/rbmp>);
- National River Flow Archive data on the Centre for Ecology and Hydrology's website (www.ceh.ac.uk);
- aerial photography;
- historic maps (www.old-maps.co.uk);
- geological maps (www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html?src=topNav); and
- Flood Estimation Handbook CD Rom V3.00, 2009 (Centre for Ecology and Hydrology (CEH), 2009).

- 13.2.6 It should be noted that in relation to the Indicative River and Coastal Flood Risk Map, SEPA updated the data contained in the flood risk maps on 15 January 2014. The data used to inform this assessment was the previous version of the flood risk maps (downloaded in March 2013), which is no longer available on the SEPA website. An initial comparative review of these data sets showed no significant differences. The 2014 data is expected to be used for the DMRB Stage 3 Assessment.

- 13.2.7 A site walkover was undertaken in September 2013 in order to gain an understanding of the local topography, hydrological regime, sediment processes and characteristics of the water environment. Details on the observations from this site visit are presented in Part 6 (Appendices), Appendix A13.1 (Summary of Geomorphology Site Visit) of this report.

- 13.2.8 Consultation with SEPA and Scottish Natural Heritage (SNH) was undertaken in September 2013 to request relevant information on the potential impacts of the route options. The following data were also specifically requested from SEPA for the study area; existing water quality information for all SWFs, including water hardness, licensed surface water abstractions and discharges authorised under The Water Environment (Controlled Activities) (Scotland) Regulations, and records of flooding (river, groundwater, surface water, sewers, etc.). Further information on the consultation process is provided in Chapter 7 (Overview of Environmental Assessment) of this report.

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Impact Assessment

Methodology

- 13.2.9 Under DMRB Volume 11, Section 3, Part 10, Road Drainage and the Water Environment (HD45/09) (The Highways Agency et al., 2009) (hereafter referred to as HD45/09) the following procedures should be used to assess the potential impacts from road projects on the water environment:
- Methods A and B – Effects of Routine Runoff on Surface Waters.
 - Method C – Effects of Routine Runoff on Groundwater.
 - Method D – Pollution Impacts from Accidental Spillages.
 - Methods E and F – Assessing Flood Impact.
- 13.2.10 Paragraph 6.9 of HD45/09 further states that Methods A to F should be used to inform a Simple Assessment. However, for this assessment there are a number of route options and a number of the 'fixed' design details (e.g. in relation to drainage structures) are not currently available as the design has yet to be sufficiently developed. In addition, at this stage in the assessment there are practical limitations to undertaking detailed topographical surveys of relevant SWFs in the study area for all of the route options. As such hydraulic modelling has not been undertaken. Therefore, there is not sufficient information to allow the magnitude of impact to be assessed using the methods in HD45/09 and, as a result, it is not possible to undertake a full Simple Assessment.
- 13.2.11 If a Simple Assessment had been undertaken then a number of assumptions would have been required, which would have limited the accuracy and consequently the usefulness of the results. An alternative methodology has therefore been used in this assessment and is described below.

Hydrology and Flood Risk

- 13.2.12 Hydrology and flood risk has been assessed using desktop information sources including SEPA's online Indicative River and Coastal Flood Map (Scotland) (www.sepa.org.uk/flooding/flood_extent_maps/view_the_map.aspx) (hereafter referred to as SEPA flood map), which shows areas at risk of flooding in a 0.5% Annual Exceedance Probability (AEP) (1 in 200 year return period) or greater rainfall event. Catchment areas to the downstream of most of the route options have been derived using the Flood Estimation Handbook (CEH, 1999), to provide context for the qualitative assessment.
- 13.2.13 Using this information, a qualitative assessment has been undertaken to assess the potential impacts associated with the route options. The primary consideration has been the risk of flooding particularly where route options lead to the loss of floodplain or changes in watercourse morphology, or is constrained by watercourse crossings. During construction the assessment has considered the impacts of increased and faster runoff rates from a range of sources including soil compaction, sedimentation and disturbance to channel dimensions, which may impact on the hydraulic flow characteristics of a watercourse. During operation, the assessment has considered increased runoff to watercourses as a result of increased hardstanding within catchments, and alterations to runoff pathways and catchment severance.

Fluvial Geomorphology

- 13.2.14 HD45/09 does not outline a specific methodology to enable the geomorphological impacts to be evaluated, and there are no Interim Advice Notes (IAN) on the subject. Therefore, the assessment follows industry-accepted standards. The methodology adopted in this assessment was developed using the guidelines from Research and Development

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Programmes of the National Rivers Authority, Environment Agency and SNH including Environment Agency (1998) and Sear and Newson (2010).

- 13.2.15 The geomorphological assessment consisted of a desk-study and site visit. Existing data sources were analysed alongside field observations to determine the baseline geomorphological conditions in terms of the morphological structure of the river channel, sediment regime and fluvial processes.

Water Quality

- 13.2.16 The water quality assessment has comprised an assessment of the impacts of routine runoff on surface waters and/or groundwater and pollution impacts from spillages.
- 13.2.17 Methods A, B and D (refer to paragraph 13.2.9) are of specific relevance to surface water quality.
- 13.2.18 The assessment has followed the principles within HD45/09, but it has excluded the calculations relating to routine runoff (using the Highways Agency Risk Assessment Tool, known as HAWRAT) and spillage risk. This is because it was considered that these calculations would be more beneficially applied during the DMRB Stage 3 Assessment when a preferred option has been selected and when design information will be developed to a greater detail.
- 13.2.19 The assessment has been predominantly qualitative, based on valued expert judgement, taking into account the following:
- the route options that are likely to require the most treatment of soluble pollutants and settlement of sediments (determined by a number of parameters, including the area of highway to be drained, the size of the receiving SWFs and their relative capacity to dilute and disperse contaminants and spillages after mixing);
 - the route options that would discharge to the most sensitive receiving SWFs (i.e. those with low flow, obstructions or ecological designations);
 - the number and design of river crossings (e.g. culverts and/or channel realignments); and
 - the location of the route options in relation to surface Drinking Water Protection Areas or surface water abstraction points.

Impact Assessment

- 13.2.20 The assessment criteria for identifying the sensitivity of SWF attributes, estimating the magnitude of impact on these attributes and assessing the significance of the impact is set out in Tables 13.1, 13.2 and 13.3.

Sensitivity

- 13.2.21 The sensitivity of an attribute was categorised on a scale of 'very high' to 'low', in accordance with the criteria provided in Table 13.1 (based on Table A4.3 – Estimating the Importance of Water Environment Attributes from HD45/09) and professional judgement where appropriate. Attributes considered include hydrology and flood risk, fluvial geomorphology, water quality/supply, dilution and removal of waste products and biodiversity.

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Table 13.1 Typical indicators of the sensitivity of SWFs

Sensitivity	Criteria
Very High	<p>Attribute has a high quality and rarity on regional or national scale.</p> <p>Hydrology and Flood Risk: Floodplain or defence protecting more than 100 residential properties from flooding.</p> <p>Fluvial Geomorphology: A very high sensitive watercourse must show no or limited signs, of previous modification and/or be experiencing no morphological pressures at the current time.</p> <p><u>Sediment regime:</u> Watercourse appears to be in complete natural equilibrium. That is, it is operating as a sediment source, sink or transfer zone and is not undergoing excessive unnatural deposition and/or erosion. It may also be the case that such an environment supports a range of species and habitats which would be sensitive to a change in suspended sediment concentrations and turbidity such as migratory salmon or freshwater pearl mussels.</p> <p><u>Channel morphology:</u> Watercourse exhibits a natural range of morphological features such as pools and riffles, active gravel bars and varied river bank types, with no signs of modifications or morphological pressures.</p> <p><u>Natural fluvial processes:</u> A watercourse where there is a diverse range of fluvial processes which are free from any modification or anthropogenic influence, which would be highly vulnerable to changes as a result of modifications.</p> <p>Water Quality: Site is protected/designated under EC or UK habitat legislation (Special Area of Conservation (SAC), Special Protection Area (SPA), Sites of Special Scientific Interest (SSSI), Water Protection Zone (WPZ), Ramsar site or salmonid water). Water Framework Directive (WFD) overall status of 'High'. None or only limited anthropogenic pressures which are not significantly affecting the aims of the WFD. Water quality complies with Environmental Quality Standards (EQS). EC designated Salmonid/Cyprinid Fishery. Species protected under EC legislation. Watercourse widely used for recreation, directly related to its quality (e.g. swimming, salmon fishery).</p>
High	<p>Attribute has a high quality and rarity on local scale.</p> <p>Hydrology and Flood Risk: Floodplain or defence protecting between 1 and 100 residential properties or industrial premises from flooding.</p> <p>Fluvial Geomorphology:</p> <p><u>Sediment regime:</u> A highly sensitive watercourse appears to be in natural equilibrium. That is, it is operating as a sediment source, sink or transfer zone and is not undergoing excessive unnatural deposition and/or erosion. It may also be the case that such an environment supports a range of species and habitats which would be sensitive to a change in suspended sediment concentrations and turbidity such as migratory salmon or freshwater pearl mussels.</p> <p><u>Channel morphology:</u> Watercourse exhibits a natural range of morphological features such as pools and riffles, active gravel bars and varied river bank types, with very limited signs of modifications or morphological pressures.</p> <p><u>Natural fluvial processes:</u> A watercourse where there is a diverse range of fluvial processes which have very limited signs of modifications or anthropogenic influences, which would be highly vulnerable to changes in fluvial processes as a result of modifications.</p> <p>Water Quality: WFD overall status of 'Good'. Water quality complies with EQS. Major cyprinid fishery. Species protected under EC or UK legislation. Watercourse used for recreation.</p>
Medium	<p>Attribute has a medium quality and rarity on local scale.</p> <p>Hydrology and Flood Risk: Floodplain or defence protecting 10 or fewer industrial properties from flooding.</p> <p>Fluvial Geomorphology:</p> <p><u>Sediment regime:</u> Watercourse shows signs of modification and is recovering a natural equilibrium. That is, it is operating as a source, sink or transfer zone but may be undergoing elevated levels of deposition and/or erosion. It may also be the case that such an environment supports limited species and habitats which may be slightly sensitive to a change in suspended sediment concentrations and turbidity.</p> <p><u>Channel morphology:</u> Watercourse exhibits a limited range of morphological features such as pools and riffles, few active gravel bars and relatively uniform bank types, with signs of modifications and morphological pressures. There may be signs of recovery of morphological features, such as the development of berms within an over wide channel.</p> <p><u>Natural fluvial processes:</u> A watercourse where there is a limited range of fluvial processes which are influenced by modifications or anthropogenic influences, which would be vulnerable to changes in fluvial processes as a result of modifications.</p> <p>Water Quality: WFD overall status of 'Moderate'. Likely to exhibit a measurable degradation in water quality as a result of anthropogenic factors. May be subject to improvement plans by SEPA. Watercourse not widely used for recreation, or recreation use not directly related to quality.</p>

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Sensitivity	Criteria
Low	<p>Attribute has a low quality and rarity on local scale.</p> <p>Hydrology and Flood Risk: Floodplain with limited constraints and a low probability of flooding of residential and industrial properties.</p> <p>Fluvial Geomorphology:</p> <p><u>Sediment regime:</u> Watercourse that has a highly modified sediment regime. That is, the natural equilibrium of the watercourse as a source, sink or transfer zone has been changed by channel modifications or anthropogenic pressures. The watercourse may have insufficient capacity to recover its natural equilibrium and is stable acting as a transfer or sink of sediment. It may also be the case that such an environment does not support any significant species sensitive to changes in suspended solids concentration or turbidity.</p> <p><u>Channel morphology:</u> Watercourse exhibits no morphological diversity; uniform flow, gravel bars are absent and bank types uniform. May have been subject to past modification such as bank protection and culverting. Likely to be stable with insufficient capacity to develop morphological features.</p> <p><u>Natural fluvial processes:</u> A watercourse which shows no evidence of active fluvial processes and is not likely to be affected by modification to boundary conditions.</p> <p>Water Quality: WFD overall status of 'Poor' or 'Bad'. Highly likely to be affected by anthropogenic factors. Heavily engineered or artificially modified and may dry up during summer months. Fish sporadically present or restricted; no species of conservation concern. Not used for recreation purposes.</p>

Magnitude of Impact

13.2.22 Magnitude of impact for all attributes has been assessed on a scale of major, moderate, minor and negligible based on professional judgement guided by the criteria and typical examples shown in Table 13.2. The magnitude of impact is influenced by timing, scale, size and duration of change to the baseline conditions.

Table 13.2: Typical criteria for estimating the magnitude of impact on SWFs

Magnitude	Typical Examples
Major Adverse	<p>Results in loss of attribute and/or quality and integrity of the attribute.</p> <p>Hydrology and Flood Risk: Major changes to flow regime (low, mean and/or high flows – at the site, upstream and/or downstream). An alteration to a catchment area in excess of a 25% reduction or increase. Significant increase in the extent of "medium to high risk" areas (classified by the Risk Framework of Scottish Planning Policy (SPP) (Scottish Government, 2014) (hereafter referred to as SPP). This means there would be significantly more areas/properties at risk from flooding by the 0.5% or greater Annual Exceedance Probability (AEP) (1 in 200-year return period) flow.</p> <p>Fluvial Geomorphology:</p> <p><u>Sediment regime:</u> Major change to the natural equilibrium through modification, significantly changing the natural function of the watercourse (sediment source, sink or transfer zone). This may arise from a major increase in amount of fine sediment and turbidity.</p> <p><u>Channel morphology:</u> Major impacts on channel morphology through the removal of a wide range of morphological features and/or replacing a large extent of the natural bed and/or banks with artificial material. Major channel realignment significantly altering the natural channel planform and bank profiles typically in the loss of sinuosity, increased channel gradient and higher stream powers. This poses erosion risk problems due to the higher stream energy. Major realignment impacts on natural channel processes, which has knock-on effects on sediment regime, flow diversity and depositional features.</p> <p><u>Natural fluvial processes:</u> Major interruption to fluvial processes such as channel planform evolution or erosion and deposition.</p> <p>Water Quality: Major shift away from the baseline conditions. Equivalent to downgrading two WFD classes, e.g. from Good to Poor, or any change that downgrades a site in quality status as this does not comply with the WFD. Failure of both soluble and sediment-bound pollutants in HAWRAT and compliance failure with EQS values. Calculated risk of pollution from a spillage >2% annually. Loss or extensive change to a fishery or a designated nature conservation site.</p>
Moderate Adverse	<p>Results in effect on integrity of attribute, or loss of part of attribute.</p> <p>Hydrology and Flood Risk: Moderate shift away from baseline conditions and moderate changes to the flow regime. An alteration to a catchment area in excess of 10% but less than 25%. Moderate increase in the extent of "medium to high risk" areas. An increase in peak flood level (1% annual probability) >10 mm resulting in an increased risk of flooding to >100 residential properties or an increase of >50 mm resulting in an increased risk of flooding to 1-100 residential properties.</p>

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Magnitude	Typical Examples
Moderate Adverse	<p>Fluvial Geomorphology:</p> <p><u>Sediment regime:</u> Moderate change to the natural equilibrium through modification, partially changing the natural function of the watercourse (sediment source, sink or transfer zone). This may arise from a moderate increase in amount of fine sediment and turbidity.</p> <p><u>Channel morphology:</u> Moderate impact on channel morphology through the removal of a range of morphological features and/or replacing a medium extent of the natural bed and/or banks with artificial material. Channel realignment resulting in a moderate change in channel planform and bank profiles typically resulting in some loss of sinuosity, increased channel gradient and higher stream powers. Erosion risk may increase as a result of the increased gradient and stream power. The realignment will partially change natural channel processes, including sediment regime, flow diversity and depositional features.</p> <p><u>Natural fluvial processes:</u> Moderate interruption to fluvial processes such as channel planform evolution or erosion.</p> <p>Water Quality: Moderate shift from the baseline conditions that may be long-term or temporary. Equivalent to downgrading one WFD class, e.g. from Moderate to Poor. Failure of both soluble and sediment-bound pollutants in HAWRAT but compliance with EQS values. Calculated risk of pollution from a spillage >1% annually and <2% annually. Partial loss in productivity of a fishery.</p>
Minor Adverse	<p>Results in some measurable change in attributes quality or vulnerability.</p> <p>Hydrology and Flood Risk: Slight changes to the flow regime. An alteration to a catchment area in excess of 1% but less than 10%. Slight increase in the extent of “medium to high risk” areas. An increase in peak flood level (1% annual probability) >10 mm resulting in an increased risk of flooding to fewer than 10 industrial properties.</p> <p>Fluvial Geomorphology:</p> <p><u>Sediment regime:</u> Minor change to the natural equilibrium through modification, locally changing the natural function of the watercourse (sediment source, sink or transfer zone). This may arise from a slight increase in amount of fine sediment and turbidity.</p> <p><u>Channel morphology:</u> Limited impact on channel morphology, through removal of some morphological features and/or replacing a small extent of the natural bed and/or banks with artificial material. Minor realignments, typically localised around structures such as culverts and bridges having limited impact on channel planform, gradient, bank profiles and channel processes.</p> <p><u>Natural fluvial processes:</u> Slight change in fluvial processes operating in the river; any change is likely to be highly localised.</p> <p>Water Quality: Minor shift away from the baseline conditions. Equivalent to minor but measurable change within the WFD classification scheme. Failure of either soluble or sediment-bound pollutants in HAWRAT. Calculated risk of pollution from a spillage >0.5% annually and <1% annually.</p>
Negligible	<p>The proposed scheme is unlikely to affect the integrity of the water environment.</p> <p>Hydrology and Flood Risk: Negligible changes to the flow regime (i.e. changes that are within the monitoring errors). An alteration to a catchment area of less than 1% reduction or increase in area. Negligible change in the extent of “medium to high risk” areas.</p> <p>Fluvial Geomorphology:</p> <p><u>Sediment regime:</u> Negligible change to the natural equilibrium. Negligible amount of sediment released into the watercourse, with no noticeable change to the turbidity or bed substrate.</p> <p><u>Channel morphology:</u> No significant impact on channel morphology in the local vicinity of proposed site.</p> <p><u>Natural fluvial processes:</u> No change in fluvial processes operating in the river; any change is likely to be highly localised.</p> <p>Water Quality: No perceptible changes to water quality and no change within the WFD classification scheme. No risk identified by HAWRAT (Pass both soluble and sediment-bound pollutants). Risk of pollution from a spillage <0.5%.</p>
Minor Beneficial	<p>Results in some beneficial effect on attribute or a reduced risk of negative effect occurring.</p> <p>Hydrology and Flood Risk: Minor improvement over baseline conditions. It will involve a reduction in peak flood level (1% annual probability) >10 mm.</p> <p>Fluvial Geomorphology: Beneficial impacts will only arise on modified watercourse. The greatest improvement will occur on those that have a uniform morphology, acting as a transfer (larger watercourses) or sink (minor watercourses with limited flow and overgrown vegetation) of sediment and no signs of active fluvial processes.</p> <p><u>Sediment regime:</u> Slight improvement towards natural equilibrium, which is returning the function of the watercourse (sediment source, sink or transfer of sediment) to a natural one.</p> <p><u>Channel morphology:</u> Limited improvement to morphological diversity.</p> <p><u>Natural fluvial processes:</u> Slight change to fluvial processes which results in improved river forms and habitats.</p> <p>Water Quality: Minor improvement over baseline conditions. HAWRAT assessment of either soluble or sediment-bound pollutants becomes Pass from an existing site where the baseline</p>

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Magnitude	Typical Examples
	was a Fail condition. Calculated reduction in existing spillage risk by 50% or more (when existing spillage risk is <1% annually).
Moderate Beneficial	<p>Results in moderate improvement of attribute quality.</p> <p>Hydrology and Flood Risk: A measurable improvement over baseline conditions involving a reduction in peak flood level (1% annual probability) >50 mm.</p> <p>Fluvial Geomorphology:</p> <p><u>Sediment regime:</u> Moderate improvement towards natural equilibrium, which is returning the function of the watercourse (sediment source, sink or transfer of sediment) to a natural one.</p> <p><u>Channel morphology:</u> Moderate improvement to morphological diversity.</p> <p><u>Natural fluvial processes:</u> Moderate change to fluvial processes which results in improved river forms and habitats.</p> <p>Water Quality: A moderate improvement over baseline conditions, which may result in the upgrade of quality status in line with the requirements of the WFD. HAWRAT assessment of both soluble and sediment-bound pollutants becomes Pass from an existing site where the baseline was a Fail condition. Calculated reduction in existing spillage risk by 50% or more (when existing spillage risk is >1% annually).</p>
Major Beneficial	<p>Results in major improvement of attribute quality.</p> <p>Hydrology and Flood Risk: Major improvement over baseline conditions. The reduction in peak flood level (1% annual probability) is to be >100 mm.</p> <p>Fluvial Geomorphology:</p> <p><u>Sediment regime:</u> Major improvement towards natural equilibrium, which is returning the function of the watercourse (sediment source, sink or transfer of sediment) to a natural one.</p> <p><u>Channel morphology:</u> Major improvement to morphological diversity.</p> <p><u>Natural fluvial processes:</u> Major change to fluvial processes which results in improved river forms and habitats.</p> <p>Water Quality: Major improvement over baseline conditions, whereby the removal or likelihood of removal of existing pressures, results in a watercourse which meets the requirements of the WFD.</p>

Significance of Impact

- 13.2.23 The significance of an impact is a function of the sensitivity of an attribute and the magnitude of a predicted impact on that attribute. This impact can be neutral, beneficial or adverse. The assessment of significance has been carried out using the matrix set out in Table 13.3. In some instances, the use of this table creates two potential outcomes, requiring a choice to be made in the level of significance (e.g. the significance of impact on an attribute of high importance can be either Moderate or Large when the magnitude is moderate). Where this has occurred, professional judgement has been used to determine the most likely significance.

Table 13.3: Matrix for determination of impact significance

Magnitude \ Importance	Negligible	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

Mitigation

- 13.2.24 Potential mitigation measures to reduce impacts have been considered during this assessment and are discussed in Section 13.9 (Potential Mitigation).

Limitations to Assessment

- 13.2.25 There are certain limitations within each discipline with regards to the assessment methodologies, which resulted in a number of assumptions being made in the baseline

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assessment. It should be noted, however, that this DMRB Stage 2 Assessment is considered robust for the purposes of route option selection and that such limitations to the assessment are considered normal for a DMRB Stage 2 Assessment.

Hydrology and Flood Risk

- 13.2.26 Detailed topographic surveys of the route options and appropriate sections of SWFs will not be available until after the preferred option is selected. There is a limited level of data available for water and riverbed levels at the key crossings and therefore no numeric analysis has been undertaken. However, in order to provide a more robust assessment, information obtained from site visit observations, surrounding land use and any downstream designations have been taken into consideration.

Fluvial Geomorphology

- 13.2.27 The site surveys which informed this assessment took place in September 2013 after a relatively long time of little precipitation. As a result flow was not visible in most of the SWF channels either due to overgrown vegetation or lack of precipitation. Vegetation growth and water levels are two parameters which vary through the seasons and therefore fluvial processes and changes to the morphology of the channel cannot be fully captured in one site visit. However, the predominant sediment regime and stability of the SWFs has been determined through the features observed, in combination with a desk-based assessment using aerial photography. There are limitations to this approach in that land use can change following a field study, or after the aerial photography has been taken, and this can affect the river planform, channel cross section and the volume of sediment supplied.

Water Quality

- 13.2.28 No chemistry spot sampling was undertaken as this would provide only a 'snap-shot' of chemical water quality and would not provide an accurate indication of long-term ecological health. However, in order to provide a more robust assessment, information obtained from site visit observations, surrounding land use and any downstream designations have been taken into consideration during the assessment.

13.3 Policies and Plans

- 13.3.1 The national, regional and local planning policies and guidance relevant to road drainage and the water environment are identified in this section. An assessment of the compliance of the route options in relation to these policies is provided in Section 13.8 (Compliance with Policies and Plans).

National Planning Policy and Guidance

- 13.3.2 National planning policy on a variety of themes is contained within SPP (Scottish Government, 2014). In terms of the impact of proposals on road drainage and the water environment, SPP is focussed on:
- supporting development that will contribute to sustainable economic growth and to high quality sustainable places;
 - taking into account the implications of development for water, air and soil quality;
 - improving the natural environment and the sustainable use and enjoyment of it; and
 - promoting flood avoidance, flood reduction and Sustainable Drainage Systems (SuDS).
- 13.3.3 SPP encourages planning authorities to take a precautionary approach to flood risk from all sources (coastal, fluvial (watercourse), pluvial (surface water), groundwater, sewers and blocked culverts)) when preparing development plans and determining planning applications.

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13.3.4 Circulars and Planning Advice Notes (PANs) published by the Scottish Government provide further guidance on specific topics. Documents of relevance to road drainage and the water environment are summarised in Part 6 (Appendices), Appendix A7.1(Policies and Plans) of this report and are listed below:

- PAN 60: Planning For Natural Heritage (Scottish Executive, 2000);
- PAN 61: Planning and Sustainable Urban Drainage Systems (Scottish Executive, 2001);
- PAN 69: Planning and Building Standards Advice on Flooding (Scottish Executive, 2004); and
- PAN 79: Water and Drainage (Scottish Executive, 2006).

Regional and Local Planning Policy and Guidance

13.3.5 The Highland-wide Local Development Plan (HwLDP) (The Highland Council, 2012) (hereafter referred to as HwLDP) is the land-use Plan which will guide the development and investment in the region over the next 20 years. The relevant policies in relation to road drainage and the water environment include:

- Policy 28: Sustainable Design;
- Policy 30: Physical Constraints;
- Policy 63: Water Environment;
- Policy 64: Flood Risk;
- Policy 66: Surface Water Drainage; and
- Policy 72: Pollution.

13.3.6 The HwLDP has a number of supporting supplementary guidance notes, and those of relevance to road drainage and the water environment include:

- Flood Risk and Drainage Impact Assessment Supplementary Guidance (adopted January 2013) (The Highland Council, 2013a);
- Physical Constraints Supplementary Guidance (adopted March 2013) (The Highland Council, 2013b); and
- Sustainable Design Guide Supplementary Guidance (adopted January 2013) (The Highland Council, 2013c).

13.3.7 The details of these policies and guidance are summarised in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.

Review of Planning Policies

13.3.8 The key aspects of the relevant planning policies are discussed in this section in relation to their relevance for hydrology and flood risk, fluvial geomorphology and water quality.

Hydrology and Flood Risk

13.3.9 SPP advises that development should be prevented if it would have a significant probability of being affected by flooding or would increase the probability of flooding elsewhere. In undeveloped and sparsely developed areas, SPP considers that medium to high risk areas (i.e. those with an annual probability of watercourse, tidal or coastal flooding greater than 0.5% (1:200)) are generally not suitable for additional development. However, exceptions may arise if a location is essential for operational reasons, including transport, and an alternative lower risk location is not achievable. Such infrastructure should be designed and constructed to remain operational during floods. Where built development is permitted in

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medium to high risk areas, appropriate measures to manage flood risk will be required and the loss of flood storage capacity mitigated to produce a neutral or better outcome.

- 13.3.10 Policy 30 (Physical Constraints) of the HwLDP refers to the Physical Constraints Supplementary Guidance (The Highland Council, 2013b) which identifies a list of constraints to development in Highland, one of which being areas at medium to high risk of flooding. Where a proposed development is affected by any of the constraints detailed in the guidance, the development must demonstrate compatibility with the constraint or outline appropriate mitigation measures. Further detail is provided in Policy 64 (Flood Risk) of the HwLDP, which states that development proposals should avoid areas susceptible to flooding. Development proposals within or bordering medium to high flood risk areas will need to demonstrate compliance with SPP through the submission of suitable information which may take the form of a Flood Risk Assessment. Where flood management measures are required, natural methods such as restoration of floodplains, wetlands and water bodies should be incorporated, or adequate justification should be provided as to why they are impracticable.
- 13.3.11 SPP and Policy 66 (Surface Water Drainage) of the HwLDP advises that all proposed developments should be drained by SuDS with appropriate long-term maintenance arrangements in order to have a neutral or better effect on the risk of flooding both on and off the site.
- 13.3.12 SPP also states that the construction of new culverts should be avoided and existing culverts should be opened where possible.

Fluvial Geomorphology

- 13.3.13 There are no relevant planning policies relating to fluvial geomorphology.

Water Quality

- 13.3.14 Policy 28 (Sustainable Design) of the HwLDP requires development to be designed with sustainability in mind. As such, developments will be assessed on a number of criteria including the extent to which they impact on freshwater systems. Developments which are judged to be significantly detrimental in terms of these criteria will not accord with the HwLDP, unless there are no suitable alternatives, if there is an overriding strategic benefit to the development or if satisfactory mitigation is incorporated. All development proposals must demonstrate compatibility with the Sustainable Design Guide Supplementary Guidance (The Highland Council, 2013c) which requires development to minimise its impact on the environment.
- 13.3.15 Policy 30 (Physical Constraints) of the HwLDP refers to the Physical Constraints Supplementary Guidance (The Highland Council, 2013b) which identifies a list of constraints to development in Highland. Where a proposed development is affected by any of the constraints detailed in the guidance, the development must demonstrate compatibility with the constraint or outline appropriate mitigation measures. One of the constraints identified is waters within 15m that are identified on the SEPA Register of Protected Areas. This includes Groundwater Drinking Water Protected Areas which cover a large proportion of Scotland including the area of the route options.
- 13.3.16 Policy 63 (Water Environment) of the HwLDP states that The Highland Council will support proposals for development that do not compromise the objectives of the Water Framework Directive (2000/60/EC).
- 13.3.17 Policy 72 (Pollution) of the HwLDP requires any development that may result in significant water pollution to provide a detailed assessment report on the levels, character and transmission and receiving environment of potential pollution to show how the pollution can be appropriately avoided and if necessary mitigated. Major Developments and

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developments that are subject to an Environmental Impact Assessment (EIA) are expected to follow a robust project environmental management process, following the approach set out in the following guidance note 'Construction Environmental Management Process for Large Scale Projects' (The Highland Council, 2010) or a similar approach.

13.4 Baseline Conditions

- 13.4.1 The SWFs in the study area have been identified using 1:25,000 OS scale mapping.
- 13.4.2 During a site visit undertaken in September 2013, baseline conditions were noted and described for the majority of SWFs identified in the study area. Where visits were not possible, a desk-study approach was used to identify the baseline conditions. Full baseline descriptions along with photographs (where available) from the site visit can be found in Part 6 (Appendices), Appendix A13.1 (Summary of Geomorphology Site Visit) of this report.
- 13.4.3 The SWFs and areas at risk of flooding within the study area are shown on Figures 13.1 to 13.9.
- 13.4.4 Tables 13.4 and 13.5 provide a description of the baseline conditions for each SWF identified within the study area for each section; Inverness to Gollanfield and the Nairn Bypass. The table also assigns a level of sensitivity to each attribute, based on the criteria outlined in Table 13.1.

Table 13.4: Sensitivity of each attribute of a SWF (Inverness to Gollanfield)

SWF	Attribute	Indicator of Quality	Sensitivity
SWF 01 Inshes Burn	Hydrology and flood risk	Not identified on SEPA flood map. Small watercourse.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Channel choked with vegetation. Extensive channel realignment. Trapezoidal cross section. Reinforced banks.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: urban/residential; agriculture/forestry upstream.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: road drainage and diffuse urban/rural sources.	Medium
	Biodiversity	WFD overall ecological status: not classified. 'Moderate' equivalent assumed. Fisheries status: not designated.	Medium
SWF 02 Scretan Burn	Hydrology and flood risk	SEPA map indicates flood risk to a small area of agricultural land.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Channel choked with vegetation. Extensive channel realignment.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture and urban/residential.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: road drainage and diffuse rural/urban sources.	Medium
	Biodiversity	WFD overall ecological status: not classified. 'Moderate' equivalent assumed. Fisheries status: not designated.	Medium

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SWF	Attribute	Indicator of Quality	Sensitivity
SWF 03 Cairnlaw Burn	Hydrology and flood risk	SEPA map indicates flood risk to agricultural land and some properties.	Medium
	Fluvial geomorphology	WFD hydromorphology parameter status: Moderate. Predominantly cobble bed, depositional features. Diversity of flow types. Morphological alterations for mixed farming.	Medium
	Water quality/supply	WFD overall chemical status: Pass (2008). Surrounding land-use: agriculture, some urban/residential.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: road drainage and diffuse rural/urban sources.	Medium
	Biodiversity	WFD overall ecological status: Moderate (2008). Fisheries status: not designated.	Medium
SWF 04 Tributary of Cairnlaw Burn (1)	Hydrology and flood risk	No SEPA flood map information. Flowing through residential areas as an open watercourse therefore it is likely that it may pose risk to properties.	Medium
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Extensive channel realignment and culverted.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture, some urban/residential.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: road drainage and diffuse rural/urban sources.	Medium
	Biodiversity	WFD overall ecological status: not classified. 'Moderate' equivalent assumed. Fisheries status: not designated.	Medium
SWF 05 Tributary of Cairnlaw Burn (2)	Hydrology and flood risk	Not identified on SEPA flood map. Small watercourse.	Medium
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Natural planform which does not appear to have modifications, which is unique to the local area. Good riparian zone coverage.	High
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: woodland/forestry and agriculture.	Medium
	Dilution and removal of waste products	Relatively small catchment. Potential additional pollutant sources: diffuse rural sources and hotel.	Low
	Biodiversity	WFD overall ecological status: not classified. 'Moderate' equivalent assumed. Fisheries status: not designated.	Medium
SWF 06 Kenneth's Black Well	Hydrology and flood risk	SEPA map indicates flood risk to agricultural land and some properties.	Medium
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Extensive channel realignment and culverted in places. Fragmented riparian zone.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture; urban/residential and forestry upstream.	Medium

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SWF	Attribute	Indicator of Quality	Sensitivity
SWF 06 Kenneth's Black Well	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural/urban sources and road drainage.	Medium
	Biodiversity	WFD overall ecological status: not classified. 'Moderate' equivalent assumed. Fisheries status: not designated.	Medium
SWF 07 Drain at Allanfearn	Hydrology and flood risk	Not identified on SEPA flood map. Small watercourse.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Artificial watercourse with no natural channel or bank features (overdeep and trapezoidal cross section). Channel choked with vegetation.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture/urban/residential.	Medium
	Dilution and removal of waste products	Relatively small catchment. Potential additional pollutant sources: diffuse rural sources, road drainage and urban/residential.	Low
	Biodiversity	WFD overall ecological status: not classified. 'Moderate' equivalent assumed. Fisheries status: not designated.	Medium
SWF 08 Fiddler's Burn	Hydrology and flood risk	Not identified on SEPA flood map.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Extensive channel realignment. Channel choked with vegetation.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture; urban/residential and forestry upstream.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources, road drainage and urban/residential.	Medium
	Biodiversity	WFD overall ecological status: not classified. 'Moderate' equivalent assumed. Fisheries status: not designated.	Medium
SWF 09 Tributary of Rough Burn	Hydrology and flood risk	SEPA map indicates flood risk to agricultural land and some properties.	Medium
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Lack of riparian zone. Choked with vegetation. Extensive channel realignment and overdeepened.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture; forestry upstream.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources and road drainage.	Medium
	Biodiversity	WFD overall ecological status: not classified. 'Good' equivalent assumed. Fisheries status: not designated.	High

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SWF	Attribute	Indicator of Quality	Sensitivity
SWF 10 Indirect tributary of Rough Burn (1)	Hydrology and flood risk	Not identified on SEPA flood map. Small watercourse, which feeds into SWF 12 which is at risk.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Lack of riparian zone. Choked with vegetation. Extensive channel realignment.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture and woodland/forestry.	Medium
	Dilution and removal of waste products	Relatively small catchment. Potential additional pollutant sources: diffuse rural sources.	Low
	Biodiversity	WFD overall ecological status: Not classified. 'Good' equivalent assumed. Fisheries status: not designated.	High
SWF 11 Indirect tributary of Rough Burn (2)	Hydrology and flood risk	Not identified on SEPA flood map. Small watercourse.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Lack of riparian zone. Choked with vegetation. Extensive channel realignment and overdeepened.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture and woodland/forestry.	Medium
	Dilution and removal of waste products	Relatively small catchment. Potential additional pollutant sources: diffuse rural sources.	Low
	Biodiversity	WFD overall ecological status: not classified. 'Good' equivalent assumed. Fisheries status: not designated.	High
SWF 12 Rough Burn	Hydrology and flood risk	SEPA map indicates flood risk to agricultural land.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: Good Bedrock and cobble bed. Natural planform along most of channel, including waterfalls, however modifications present downstream of A96 and a sluice in upper reaches. Choked with vegetation in places.	Medium
	Water quality/supply	WFD overall chemical status: Pass (2008). Surrounding land-use: agriculture; forestry upstream.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources and road drainage.	Medium
	Biodiversity	WFD overall ecological status: Good (2008). Fisheries status: not designated.	High
	SWF 13 Tributary of 'Unnamed Burn - Castle Stuart to source (Tornagrain)' (1)	Hydrology and flood risk	Not identified on SEPA flood map.
Fluvial geomorphology		WFD hydromorphology parameter status: not classified. Reprofiled banks. Choked with vegetation. Extensive channel realignment.	Low

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SWF	Attribute	Indicator of Quality	Sensitivity
SWF 13 Tributary of 'Unnamed Burn - Castle Stuart to source (Tornagrain)' (1)	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture; some woodland/forestry.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources.	Medium
	Biodiversity	WFD overall ecological status: not classified. 'Good' equivalent assumed. Fisheries status: not designated.	High
SWF 14 Unnamed Burn - Castle Stuart to source (Tornagrain)	Hydrology and flood risk	SEPA map indicates flood risk to agricultural land.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Varied riparian zone cover. Lack riparian zone in places. Extensive channel realignment. Reprofiled banks.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture; some woodland/forestry upstream.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources.	Medium
	Biodiversity	WFD overall ecological status: not classified. 'Good' equivalent assumed. Fisheries status: not designated.	High
SWF 15 Tributary of 'Unnamed Burn - Castle Stuart to source (Tornagrain)' (2)	Hydrology and flood risk	Not identified on SEPA flood map.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Extensive channel realignment. Reprofiled banks. Overdeep. Channel choked with vegetation.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture; some woodland/forestry.	Medium
	Dilution and removal of waste products	Relatively small catchment. Potential additional pollutant sources: diffuse rural sources.	Low
	Biodiversity	WFD overall ecological status: not classified. 'Good' equivalent assumed. Fisheries status: not designated.	High
	SWF 16 Tributary of Ardersier Burn	Hydrology and flood risk	SEPA map indicates flood risk to agricultural land and Inverness airport.
Fluvial geomorphology		WFD hydromorphology parameter status 'Mid Coul to source': Good. WFD hydromorphology parameter status for 'sea to Mid Coul' (Heavily Modified Water Body): Bad. Extensive channel realignment. Culverting for air transport in Heavily Modified Water Body.	Low

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SWF	Attribute	Indicator of Quality	Sensitivity
SWF 16 Tributary of Ardersier Burn	Water quality/supply	WFD overall chemical status (Mid Coul to source): Pass (2008). WFD overall chemical status (sea to Mid Coul): Pass (2008). Surrounding land-use: agriculture; some forestry towards the top of the catchment; Inverness Airport in the lower catchment. Potential for historic contaminants from disused railway.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources, aircraft fuel and associated pollutants.	Medium
	Biodiversity	WFD overall ecological status (Mid Coul to source): Moderate (2008). WFD overall ecological potential (sea to Mid Coul): Moderate (2008). Fisheries status: not designated.	Medium
SWF 17 Drains at Culblair	Hydrology and flood risk	Not identified on SEPA flood map. Small watercourse, which feeds into SWF 16 which is at risk.	Medium
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Lack of riparian zone. Artificial drain – no natural channel or bank features.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture and Inverness Airport.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources, aircraft fuel and associated pollutants.	Medium
	Biodiversity	WFD overall ecological status: not classified. 'Moderate' equivalent assumed. Fisheries status: not designated.	Medium
SWF 18 Indirect tributary drains of Ardersier Burn	Hydrology and flood risk	SEPA map indicates flood risk to agricultural land.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Lack of riparian zone. Hard bank reinforcement in places. Extensive channel realignment. Channel choked with vegetation.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture and Inverness Airport.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources, aircraft fuel and associated pollutants.	Medium
	Biodiversity	WFD overall ecological status: not classified. 'Moderate' equivalent assumed. Fisheries status: not designated.	Medium
Loch Flemington	Hydrology and flood risk	Shallow loch. It is believed to be a naturally controlled loch with a complex outflow system with significant surface groundwater interactions. Whilst not a flood risk additional discharges could upset equilibrium.	Low

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SWF	Attribute	Indicator of Quality	Sensitivity
Loch Flemington	Water quality/supply	Shallow eutrophic lake that has historic water quality issues. Water quality poor due to lack of through flow and eutrophication. Water quality is being managed and monitored by CEH.	Low
	Dilution and removal of waste products	Glacially formed lake that lacks a natural surface water outflow (key factor of historic eutrophication). Some discharges diverted away from Loch as part of eutrophication management.	Low
	Biodiversity	Shallow eutrophic lake that experienced fish deaths in 1990s. Special Protection Area (SPA).	Very High
Groundwater	Vulnerability	WFD overall quality of aquifer classified as 'Good'.	High

Table 13.5: Sensitivity of each attribute of a SWF (Nairn Bypass)

SWF	Attribute	Indicator of Quality	Sensitivity
SWF 19 Balnagowan Burn	Hydrology and flood risk	SEPA map indicates flood risk to agricultural land.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: Bad. Lack of riparian zone. Extensive channel realignment. Channel choked with vegetation.	Low
	Water quality/supply	WFD overall chemical status: Pass (2008). Surrounding land-use: agriculture.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources and road drainage.	Medium
	Biodiversity	WFD overall ecological status: Bad (2008). Fisheries status: not designated.	Low
SWF 20 Tributary of Balnagowan Burn	Hydrology and flood risk	Not identified on SEPA flood map.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Extensive channel realignment. Lack of riparian zone in places. Channel choked with vegetation.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture; forestry upstream.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources and road drainage.	Medium
	Biodiversity	WFD overall ecological status: not classified. 'Bad' equivalent assumed. Fisheries status: not designated.	Low
SWF 21 Field ditch tributaries of Balnagowan Burn	Hydrology and flood risk	Not identified on SEPA flood map.	Low
	Fluvial geomorphology	WFD morphology parameter status: not classified. Artificial watercourse through forestry. Channel choked with vegetation.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: woodland/forestry and agriculture.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources.	Medium
	Biodiversity	WFD overall ecological status: not classified. 'Bad' equivalent assumed. Fisheries status: not designated.	Low

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SWF	Attribute	Indicator of Quality	Sensitivity
SWF 22 Alton Burn	Hydrology and flood risk	Flood risk to numerous properties in Nairn and agricultural land. SEPA flood map indicates active floodplain with the potential to affect properties.	High
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Lack of riparian zone. Extensive channel realignment. Channel choked with vegetation.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture, rural grassland; some urban/residential downstream.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources and road drainage.	Medium
	Biodiversity	WFD overall ecological status: not classified. 'Bad' equivalent assumed. Fisheries status: not designated.	Low
SWF 23 River Nairn	Hydrology and flood risk	SEPA map indicates flood risk to agricultural land and properties.	High
	Fluvial geomorphology	WFD hydromorphology parameter status for River Nairn – Moray Firth to River Farnack confluence: Good. Natural planform with few modifications. Dynamic geomorphology displaying braiding which is unique on national scale. Variety of flow types and in-channel habitats. Good riparian zone coverage.	Very High
	Water quality/supply	WFD overall chemical status: Pass (2008). Surrounding land-use: agriculture; some woodland/forestry; urban/residential downstream (Nairn).	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources and road drainage.	Medium
	Biodiversity	WFD overall ecological status: Good (2008) Fisheries status: Salmonid waters under Freshwater Fish Directive (2006/44/EC).	Very High
SWF 24 Tributary of the River Nairn	Hydrology and flood risk	SEPA map indicates flood risk to agricultural land.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Extensive channel realignment. Lack of riparian zone in places. Modifications such as embankment and culverts present. Channel choked with vegetation.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture; woodland/forestry upstream.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources and road drainage.	Medium
	Biodiversity	WFD overall ecological status: not classified. 'Good' equivalent assumed. Fisheries status: Salmonid waters (associated water body of the River Nairn) under the Freshwater Fish Directive (2006/44/EC).	Very High

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SWF	Attribute	Indicator of Quality	Sensitivity
SWF 25 Indirect tributary of the River Nairn	Hydrology and flood risk	Not identified on SEPA flood map. Small watercourse.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Natural planform however watercourse very short.	Medium
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture; woodland/forestry upstream.	Medium
	Dilution and removal of waste products	Relatively small catchment. Potential additional pollutant sources: diffuse rural sources.	Low
	Biodiversity	WFD overall ecological status: not classified. 'Good' equivalent assumed. Fisheries status: not designated.	High
SWF 26 Auldearn Burn	Hydrology and flood risk	SEPA map indicates flood risk to agricultural land and residential properties.	High
	Fluvial geomorphology	WFD hydromorphology parameter status: Moderate. Varied morphological features and flow. Lack of riparian zone in places. Extensive channel realignment. Channel choked with vegetation in places.	Medium
	Water quality/supply	WFD overall chemical status: Pass (2008). Surrounding land-use: agriculture; some grassland/woodland.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources and road drainage.	Medium
	Biodiversity	WFD overall ecological status: Moderate (2008). Fisheries status: Salmonid waters (associated water body of the River Nairn) under the Freshwater Fish Directive (2006/44/EC).	Very High
SWF 27 Drains within Bognafuaran Wood	Hydrology and flood risk	Not identified on SEPA flood map. Small watercourse.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Likely to be artificial. Channel choked with vegetation.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture and woodland/forestry.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources and road drainage.	Medium
	Biodiversity	WFD overall ecological status: not classified. 'Moderate' equivalent assumed. Fisheries status: not designated.	Medium
SWF 28 Tributary of Auldearn Burn (1)	Hydrology and flood risk	Not identified on SEPA flood map. Small watercourse.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Some channel realignment and culverted.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture.	Medium
	Dilution and removal of waste products	Relatively small catchment. Potential additional pollutant sources: diffuse rural sources.	Low

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SWF	Attribute	Indicator of Quality	Sensitivity
SWF 28 Tributary of Auldearn Burn (1)	Biodiversity	WFD overall ecological status: not classified. 'Moderate' equivalent assumed. Fisheries status: not designated.	Medium
SWF 29 Tributary of Auldearn Burn (2)	Hydrology and flood risk	Not identified on SEPA flood map. Small watercourse.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Artificial watercourse with straight planform. Lack of riparian zone.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture.	Medium
	Dilution and removal of waste products	Relatively small catchment. Potential additional pollutant sources: diffuse rural sources.	Low
SWF 30 Tributary of Auldearn Burn (3)	Biodiversity	WFD overall ecological status: not classified. 'Moderate' equivalent assumed. Fisheries status: not designated.	Medium
	Hydrology and flood risk	Not identified on SEPA flood map. Small watercourse.	Low
	Fluvial geomorphology	WFD morphology parameter status: not classified. Artificial watercourse with straight planform. Overdeep channel.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture.	Medium
	Dilution and removal of waste products	Relatively small catchment. Potential additional pollutant sources: diffuse rural sources.	Low
SWF 31 Auldearn Burn - Brightmony Tributary	Biodiversity	WFD overall ecological status: not classified. 'Moderate' equivalent assumed. Fisheries status: Not designated.	Medium
	Hydrology and flood risk	SEPA map indicates flood risk to agricultural land and some downstream properties.	Medium
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Comprised mainly of artificial watercourses. Lack of riparian zone. Channel choked with vegetation. Reprofiled banks in places.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture and woodland/forestry.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources and road drainage.	Medium
SWF 32 Drain at Brae of Brightmony	Biodiversity	WFD overall ecological status: not classified. 'Moderate' equivalent assumed. Fisheries status: not designated.	Medium
	Hydrology and flood risk	Not identified on SEPA flood map. Small watercourse.	Low
SWF 32 Drain at Brae of Brightmony	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Artificial watercourse with straight planform Lack of riparian zone in places and culverted in places.	Low

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SWF	Attribute	Indicator of Quality	Sensitivity
SWF 32 Drain at Brae of Brightmony	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture and woodland/forestry.	Medium
	Dilution and removal of waste products	Relatively small catchment. Potential additional pollutant sources: diffuse rural sources.	Low
	Biodiversity	WFD overall ecological status: not classified. 'Moderate' equivalent assumed. Fisheries status: not designated.	Medium
SWF 33 Drain at Penick Farm	Hydrology and flood risk	Not identified on SEPA flood map. Small watercourse.	Low
	Fluvial geomorphology	WFD hydromorphology parameter status: not classified. Artificial watercourse with straight planform. Culverted.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture.	Medium
	Dilution and removal of waste products	Relatively small catchment. Potential additional pollutant sources: diffuse rural sources.	Low
	Biodiversity	WFD overall ecological status: not classified. 'Moderate' equivalent assumed. Fisheries status: not designated.	Medium
SWF 34 Tributary of Auldearn Burn (4)	Hydrology and flood risk	SEPA map indicates flood risk to agricultural land.	Low
	Fluvial geomorphology	WFD morphology parameter status: not classified. Extensive channel realignment. Channel choked with vegetation in places.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture; some grassland/woodland.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources and road drainage.	Medium
	Biodiversity	WFD overall ecological status: not classified. 'Moderate' equivalent assumed. Fisheries status: not designated.	Medium
SWF 35 Drain, tributary of Auldearn Burn - Brightmony Tributary	Hydrology and flood risk	Not identified on SEPA flood map. Small watercourse.	Low
	Fluvial geomorphology	WFD morphology parameter status: not classified. Extensive channel realignment. Channel choked with vegetation in places.	Low
	Water quality/supply	WFD overall chemical status: not classified. 'Pass' assumed. Surrounding land-use: agriculture and woodland/forestry.	Medium
	Dilution and removal of waste products	Potential additional pollutant sources: diffuse rural sources.	Medium
	Biodiversity	Relatively small catchment. Potential additional pollutant sources: diffuse rural sources.	Low
Groundwater	Vulnerability	WFD overall quality of aquifer classified as 'Good'.	High

13.5 Impact Assessment: Introduction

- 13.5.1 This section provides an introduction to the impact assessment of the route options within Section 13.6 (Impact Assessment: Inverness to Gollanfield) and Section 13.7 (Impact Assessment: Nairn Bypass).
- 13.5.2 The potential impacts detailed in Section 13.6 and 13.7 are reported in line with the following:
- Potential impacts represent those which could result from the construction or operation of the route options.
 - Potential impacts are described without mitigation, and therefore represent a worst-case scenario. Potential mitigation measures are considered in Section 13.9 (Potential Mitigation). Mitigation to reduce these impacts will be developed for the preferred option during the DMRB Stage 3 Assessment.
 - The assessment of impacts includes those that are common to all route options and those that vary between the route options. The potential impacts that are common to all have been based on the level of significance. This means that although there may be some differences in the activity that will lead to a particular impact, if that impact will be of the same significance regardless of which route option was selected, it is said to be common to all.
 - Due to the number of SWFs potentially impacted by each of the route options, only impacts of Moderate and above significance have been reported in the assessment tables. This has been done to highlight the key impacts of route options. Full details of the impact assessment are included within Part 6 (Appendices), Appendix A13.2 (Impact Assessment Tables) of this report.
 - Loch Flemington has been scoped out of the assessment for both construction and operational impacts. This is because it is located on the other side of a ridge (relief of land slopes down towards location of route options) and therefore, the loch would not be affected during construction or operation. Groundwater has also been scoped out of the assessment for operational impacts as there are currently no proposals to discharge to groundwater.
- 13.5.3 To provide context to the impact assessment, an overview of the potential impacts during the construction and operation of road schemes in relation to hydrology and flood risk, fluvial geomorphology and water quality are discussed below.

Construction Impacts

- 13.5.4 Construction impacts are generally short-term. However, some potential construction impacts such as deposition of sediments can have longer-term impacts. Construction impacts are likely to be more intense than during the long-term operational phase due to the heightened concentration of activities occurring in or near the SWFs.

Hydrology and Flood Risk

- 13.5.5 Potential construction impacts in relation to hydrology and flood risk include:
- increased runoff from soil compaction due to works traffic, sedimentation and disturbance/unintentional changes to channel dimensions, which may impact on the hydraulic flow characteristics of a SWF;
 - temporary SWF diversions to facilitate culvert or bridge construction and any associated temporary works;
 - diversions and re-direction of SWFs through constructed realignments or into pre-earthwork ditches;

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- temporary attenuation features at drainage outfalls; and
- temporary arrangements to control runoff.

Fluvial Geomorphology

13.5.6 Potential construction impacts in relation to fluvial geomorphology include:

- Alterations to channel morphology during the construction of crossing structures, such as bridges or culverts, and associated channel modifications and the release of sediment.
- Sediment release during in-channel works, site clearance operations and earthworks in the vicinity of SWFs. This could result in reduced morphological diversity due to smothering of channel bed by sediment, an increase in turbidity and loss of active features such as gravel deposits.

13.5.7 The majority of these impacts would worsen with intense or prolonged rainfall events during the construction phase.

Water Quality

13.5.8 Potential construction impacts in relation to water quality include:

- siltation of SWFs during soil-stripping, compound preparation, soil storage and other earthworks, due to loosening of sediment;
- water pollution from silt-laden runoff (and enhanced nutrient loading) if allowed to drain untreated;
- spillage or accidental release of oils, fuels and chemicals from mobile or stationary plant, resulting in adverse impacts to water quality and freshwater ecology;
- erosion and sedimentation can result from construction works and adversely impact water quality; and
- disturbance of potentially contaminated land with potential drainage pathways to surface waters.

Operational Impacts

13.5.9 Operational impacts are generally long-term or permanent and would influence the SWFs after the proposed scheme is complete.

Hydrology and Flood Risk

13.5.10 Potential operational impacts on hydrology and flood risk include:

- Introduction of new impermeable areas to the catchment area could potentially increase the volume and peak flow of surface runoff, as less would be lost to infiltration into the ground. The road and its drainage system may also act as a barrier to water movement within current catchments. In addition, a road scheme can potentially result in rain falling in one catchment being discharged to another via the road drainage system.
- Impacts of SWF crossings on surface hydrology could occur through alteration of the physical flow and water level regimes.
- Channel realignments could potentially change the discharge regime. However, with appropriate design in terms of hydraulic considerations, these realignments would not affect surface water hydrology unless the realignment significantly changes the catchment area.
- Where a route option crosses a floodplain on embankment, there would be a potential loss of flood storage volume.

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Fluvial Geomorphology

13.5.11 Potential operational impacts on fluvial geomorphology include:

- Road drainage can lead to increased discharge which may increase geomorphological activity within the channel. This could result in an increase in turbidity, greater sediment transport downstream, increased erosion of the channel bed and banks with morphological diversity being reduced or improved depending on sediment supply. In addition, the outfall structures alter the structure and material of the banks locally damaging the morphology of the river banks. They may also cause scour of the river banks by locally altering fluvial processes and increasing sediment supply.
- SWF crossings can cause an alteration to patterns of sediment transfer and deposition, and lead to loss of morphological features due to the land claim required for the footprint (e.g. bridge piers and embankments). Culverting can enhance sediment transfer at high flows, but cause sediment to accumulate at low flows if the gradient is lower or width wider than the natural channel. Where culverting increases the channel gradient, the scour of the bed and banks at culvert outlets often occurs, leading to an increase in the supply of sediment downstream. Morphological diversity is lost due to the artificial bed and banks of the culvert, and they prevent future lateral and vertical adjustment of the river.
- Channel realignment can cause a major change in the sediment regime and natural fluvial processes, increasing the rate of sediment supply, transfer downstream or deposition dependant on the design. The initial channel shape is typically devoid of morphological diversity. However realignments offer an opportunity to restore the watercourse locally, improving its morphology.

Water Quality

13.5.12 Potential operational impacts on water quality include:

- Where increases in traffic volumes are anticipated, these could lead to an increase in the volume of contaminated road runoff entering the drainage system and downstream SWFs. There are a wide range of pollutants found in road runoff which may have an effect on the receiving waters and associated ecology. These include suspended solids and contaminants bound to them (such as metals and phosphorus), biodegradable organic materials (such as debris and grass cuttings), diffuse sources with high levels of nutrients (nitrogen and phosphorus), de-icing salt (chloride), and oil and related compounds.
- Culverting could potentially change the morphological diversity and sediment regime, which may also have associated impacts on water quality by releasing previously locked contaminants into the water. New or extended culverts may also have an impact on water quality due to oxygen sags caused by the lack of light, which restricts aquatic plant photosynthesis, and rapid microbiological degradation of biodegradable matter.
- Channel realignments could potentially change the sediment regime, resulting in increased effects of erosion or deposition, and this could have an associated impact on water quality by mobilising suspended solids and releasing previously 'locked' contaminants. Changes in turbulence can also affect atmospheric oxygenation of the water.

13.6 Impact Assessment: Inverness to Gollanfield

13.6.1 This section describes the potential impacts of Moderate and above significance that are specific to the Inverness to Gollanfield section. Impacts that are common to all route options are discussed, followed by those impacts which are additional to these, for each route option.

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13.6.2 Tables 13.6 and 13.7 provide a summary of the construction works/operational structures for each route option. This information has been used to determine the magnitude of potential impact, which when combined with the sensitivity of the attribute, is used to determine the significance of the potential impact. However, at this stage, because the likely nature of the construction activities is not yet available, the relative magnitude of the potential impact is assessed on the broad nature and extent of the channel engineering required.

Table 13.6: Proposed construction works/operational structures within, over and adjacent to SWFs (Inverness to Gollanfield)

SWF	Construction Activity	Option							
		1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
SWF 01 Inshes Burn	No works within, over or adjacent to SWF								
SWF 02 Scretan Burn	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓
	Construction of culverts (No.)	1	1	1	1	1	1	1	1
	Part channel realignment (No.)	1	1	1	1	1	1	1	1
	Construction of outfalls (No.)	1	1	1	1	1	1	1	1
SWF 03 Cairnlaw Burn	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓
	Construction of culverts (No.)	1	1	1	1	1	1	1	1
	Part channel realignment (No.)	1	1	1	1	1	1	1	1
	Construction of outfalls (No.)	1	1	1	1	1	1	1	1
SWF 04 Tributary of Cairnlaw Burn (1)	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓
SWF 05 Tributary of Cairnlaw Burn (2)	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓
	Construction of culverts (No.)	1	1	1	1	1	1	1	1
	Part channel realignment (No.)	1	1	1	1	-	-	-	-
	Construction of outfalls (No.)	1	1	1	1	1	1	1	1
SWF 06 Kenneth's Black Well	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓
	Construction of culverts (No.)	1	1	1	1	1	1	1	1
	Part channel realignment (No.)	1	1	1	1	1	1	1	1
	Construction of outfalls (No.)	-	-	-	-	1	1	1	1
SWF 07 Drains at Allanfean	Construction of carriageway	-	-	-	-	✓	✓	✓	✓
	Construction of culverts (No.)	-	-	-	-	1	1	1	1
	Part channel realignment (No.)	-	-	-	-	1	1	1	1
SWF 08 Fiddler's Burn	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓
	Construction of culverts (No.)	2	2	2	2	1	1	1	1
	Part channel realignment (No.)	1	1	1	1	1	1	1	1
	Construction of outfalls (No.)	2	2	2	2	-	-	-	-
SWF 09 Tributary of Rough Burn	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓
	Construction of culverts (No.)	1	3	1	3	1	1	1	1
	Part channel realignment (No.)	-	1	-	1	-	1	-	1
	Construction of outfalls (No.)	2	1	2	1	1	1	1	1
SWF 10 Indirect tributary of Rough Burn (1)	Construction of carriageway	-	-	-	-	-	✓	-	✓

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SWF	Construction Activity	Option							
		1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
SWF 11 Indirect tributary of Rough Burn (2)	Construction of carriageway	-	✓	-	✓	✓	✓	✓	✓
	Construction of culverts (No.)	-	-	-	-	-	1	-	1
	Part channel realignment (No.)	-	1	-	1	-	-	-	-
SWF 12 Rough Burn	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓
	Construction of bridge	✓	-	✓	-	✓	-	✓	-
	Construction of culverts (No.)	-	1	-	1	-	1	-	1
	Part channel realignment (No.)	-	1	-	1	-	1	-	1
SWF 13 Tributary of 'Unnamed Burn - Castle Stuart to source (Tornagrain)' (1)	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓
	Construction of culverts (No.)	1	1	1	1	1	1	1	1
	Construction of outfalls (No.)	1	1	1	1	1	1	1	1
SWF 14 Unnamed Burn - Castle Stuart to source (Tornagrain)	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓
	Construction of culverts (No.)	2	2	2	3	2	2	2	3
	Part channel realignment (No.)	1	1	-	-	1	1	-	-
SWF 15 Tributary of 'Unnamed Burn - Castle Stuart to source (Tornagrain)' (2)	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓
	Construction of culverts (No.)	1	1	1	1	1	1	1	1
	Part channel realignment (No.)	1	1	-	-	1	1	-	-
	Construction of outfalls (No.)	-	-	1	1	-	-	1	1
SWF 16 Tributary of Ardersier Burn	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓
	Construction of culverts (No.)	1	1	1	1	1	1	1	1
	Part channel realignment (No.)	✓	✓	✓	✓	✓	✓	✓	✓
	Construction of outfalls (No.)	1	1	1	1	1	1	1	1
SWF 17 Drains at Culblair	Construction of carriageway	-	-	✓	✓	-	-	✓	✓
SWF 18 Indirect tributary drains of Ardersier Burn	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓
	Construction of culverts (No.)	1	1	1	1	1	1	1	1
	Part channel realignment (No.)	1	1	1	1	1	1	1	1
	Construction of outfalls (No.)	2	2	2	2	2	2	2	2
Groundwater	Carriageway	✓	✓	✓	✓	✓	✓	✓	✓

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Table 13.7: Summary of construction works/operational structures (Inverness to Gollanfield)

Construction and Operational Activities	Option							
	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Number of times carriageway would be constructed over/adjacent.	13	14	14	15	15	16	16	17
Number of bridges.	1	0	1	0	1	0	1	0
Number of culverts.	13	16	13	17	13	15	13	16
Number of part channel realignments.	9	12	7	10	9	11	7	9
Number of outfalls.	11	10	12	11	9	9	10	10
Total number of in-channel activities*	33	38	32	38	31	35	30	35
Number of SWFs requiring in-channel activities*.	11	13	11	13	12	14	12	14
Impermeable area draining to outfalls (ha).	33.37	32.83	32.82	32.23	31.81	31.67	31.28	31.08
Number of SWFs receiving new routine road runoff during operation.	8	8	9	9	8	8	9	9

*Construction of outfalls and culverts and part channel realignments are classed as in-channel works.

Impacts Common to all Route Options

- 13.6.3 This section presents the potential impacts of Moderate and above significance that are common to all route options within the Inverness to Gollanfield section.

Hydrology and Flood Risk

- 13.6.4 The following potential impacts are common to all route options in relation to hydrology and flood risk:

- SWF 03 (Cairnlaw Burn) and SWF 05 (Tributary of Cairnlaw Burn (2)) would have potential impacts of Moderate significance during construction.
- SWF 06 (Kenneth's Black Well) would have a potential impact of Moderate significance during construction and operation as a result of the route option alignment passing through the floodplain mainly following the existing A96 Aberdeen – Inverness Trunk Road (hereafter referred to as existing A96).
- SWF 16 (Tributary of Ardersier Burn) would have a potential impact of Large significance during construction and operation. The operational impact relates to the ongoing increased flood risk surrounding the airport.

Fluvial Geomorphology

- 13.6.5 The following potential impacts are common to all route options in relation to fluvial geomorphology:

- SWF 05 (Tributary of Cairnlaw Burn (2)) would have a potential impact of Large significance during construction and operation due to its high geomorphological sensitivity and the construction of one culvert and other in-channel works.
- SWF 03 (Cairnlaw Burn) and SWF 14 (Unnamed Burn – Castle Stuart to source (Tornagrain)) would have potential impacts of Moderate significance during construction and operation. For SWF 03, this is due to its medium geomorphological sensitivity and the construction of one culvert and other in-channel works. For SWF 14 this is due to its

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low geomorphological sensitivity and the construction of two or three culverts and for Options 1A, 1A (MV), 1C and 1C (MV) other in-channel works.

Water Quality

13.6.6 Table 13.8 shows the potential impacts that are common to all route options in relation to construction impacts on water quality.

Table 13.8: Potential impacts during construction for water quality attributes - common to all route options (Inverness to Gollanfield)

SWF	Water Quality Attribute	Significance of Impact
SWF 02 Scretan Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 03 Cairnlaw Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 04 Tributary of Cairnlaw Burn (1)	Water quality/supply	Moderate
	Dilution and removal of waste products	Moderate
	Biodiversity	Moderate
SWF 05 Tributary of Cairnlaw Burn (2)	Water quality/supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large
SWF 06 Kenneth's Black Well	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 08 Fiddler's Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 09 Tributary of Rough Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 13 Tributary of 'Unnamed Burn – Castle Stuart to source (Tornagrain)' (1)	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 14 Unnamed Burn – Castle Stuart to source (Tornagrain)	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 15 Tributary of 'Unnamed Burn – Castle Stuart to source (Tornagrain)' (2)	Water quality/supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large
SWF 16 Tributary of Ardersier Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 18 Indirect tributary drains of Ardersier Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
Groundwater	Vulnerability	Large

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- 13.6.7 With the exception of SWF 04 and groundwater, the potential impacts are due to in-channel construction works in addition to construction of the carriageway. The potential impacts on SWF 04 and groundwater are due to the construction of carriageway only (refer to Table 13.6).
- 13.6.8 The dilution and removal of waste products attribute of SWF 05 and SWF 15 would have potential impacts of Moderate significance in comparison to the other attributes, due to the low importance of this attribute for these SWFs.
- 13.6.9 Table 13.9 provides details of the potential impacts that are common to all route options in relation to operational impacts on water quality. These potential impacts are due to direct discharges of road runoff into SWFs.

Table 13.9: Potential impacts during operation for water quality attributes - common to all route options (Inverness to Gollanfield)

SWF	Water Quality Attribute	Significance of Impact
SWF 02 Scretan Burn	Water Quality/Supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 03 Cairnlaw Burn	Water Quality/Supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 05 Tributary of Cairnlaw Burn (2)	Water Quality/Supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large
SWF 09 Tributary of Rough Burn	Water Quality/Supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 13 Tributary of 'Unnamed burn - Castle Stuart to source (Tornagrain)' (1)	Water Quality/Supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 16 Tributary of Ardersier Burn	Water Quality/Supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 18 Indirect tributary drains of Ardersier Burn	Water Quality/Supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large

- 13.6.10 The dilution and removal of waste products attribute of SWF 05 would have a potential impact of Moderate significance in comparison to the other attributes due to the low importance of this attribute for this SWF.

Option 1A

- 13.6.11 This section presents the potential impacts of Moderate and above significance that are specific for Option 1A and which are additional to those reported as common to all route options (refer to paragraphs 13.6.4 to 13.6.10).

Hydrology and Flood Risk

- 13.6.12 There are no additional potential impacts in relation to hydrology and flood risk for Option 1A.

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Fluvial Geomorphology

- 13.6.13 During construction and operation, Option 1A would have a potential impact of Moderate significance on the fluvial geomorphology of SWF 08 (Fiddler's Burn). This is due to the construction of two culverts and other in-channel works.

Water Quality

- 13.6.14 During construction, Option 1A would have potential impacts of Moderate significance for all three water quality attributes of SWF 12 (Rough Burn). This is due to the construction of the carriageway and a bridge over this SWF (refer to Table 13.6).
- 13.6.15 During operation, Option 1A would have potential impacts of Large significance for all three water quality attributes of SWF 08 (Fiddlers Burn). These potential impacts are due to direct discharges of road runoff into this SWFs.

Option 1A (MV)

- 13.6.16 This section presents the potential impacts of Moderate and above significance that are specific for Option 1A (MV) and which are additional to those reported as common to all route options (refer to paragraphs 13.6.4 to 13.6.10).

Flood risk

- 13.6.17 There are no additional potential impacts in relation to hydrology and flood risk for Option 1A (MV).

Fluvial Geomorphology

- 13.6.18 During construction and operation, Option 1A (MV) would have potential impacts of Moderate significance on the fluvial geomorphology of SWF 08 (Fiddler's Burn), SWF 09 (Tributary of Rough Burn) and SWF 12 (Rough Burn).
- 13.6.19 These potential impacts relate to in-channel works and specifically the construction of two culverts for SWF 08, three culverts for SWF 09, and one culvert for SWF 12. Although SWF 12 has a lower number of culverts, its medium geomorphological sensitivity, in comparison to the low sensitivity of SWF 08 and SWF 09, means that this SWF would also result in a potential impact of Moderate significance.

Water Quality

- 13.6.20 Table 13.10 provides details of the potential impacts for Option 1A (MV) in relation to construction impacts on water quality.

Table 13.10: Potential impacts during construction for water quality attributes - additional for Option 1A (MV)

SWF	Water Quality Attribute	Significance of Impact
SWF 11 Indirect tributary of Rough Burn (2)	Water quality/supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large
SWF 12 Rough Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large

- 13.6.21 These potential impacts are due to the construction of the carriageway and in-channel construction works (refer to Table 13.6).

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13.6.22 The dilution and removal of waste products attribute of SWF 11 would have a potential impact of Moderate significance in comparison to the other attributes due to the low importance of this attribute for this SWF.

13.6.23 During operation, Option 1A (MV) would have the same potential additional impacts as Option 1A. Please refer to paragraph 13.6.15 for a description of the potential impacts.

Option 1B

13.6.24 This section presents the potential impacts of Moderate and above significance that are specific for Option 1B and which are additional to those reported as common to all route options (refer to paragraphs 13.6.4 to 13.6.10).

Hydrology and Flood risk

13.6.25 There are no additional potential impacts in relation to hydrology and flood risk for Option 1B.

Fluvial Geomorphology

13.6.26 During construction and operation, Option 1B would have a potential impact of Moderate significance on fluvial geomorphology for SWF 08 (Fiddler's Burn). This is due to the construction of two culverts and other in-channel works.

Water Quality

13.6.27 Table 13.11 provides details of the potential impacts for Option 1B in relation to construction impacts on water quality. The potential impacts are due to the construction of the carriageway (SWF 12 and SWF 17) and a bridge over SWF 12 (refer to Table 13.6).

Table 13.11: Potential impacts during construction for water quality attributes - additional for Option 1B

SWF	Water Quality Attribute	Significance of Impact
SWF 12 Rough Burn	Water quality/supply	Moderate
	Dilution and removal of waste products	Moderate
	Biodiversity	Moderate
SWF 17 Drains at Culblair	Water quality/supply	Moderate
	Dilution and removal of waste products	Moderate
	Biodiversity	Moderate

13.6.28 Table 13.12 provides details of the potential impacts for Option 1B in relation to operational impacts on water quality. These potential impacts are due to direct discharges of road runoff into these SWFs.

Table 13.12: Potential impacts during operation for water quality attributes - additional for Option 1B

SWF	Water Quality Attribute	Significance of Impact
SWF 08 Fiddler's Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 15 Tributary of 'Unnamed Burn – Castle Stuart to source (Tornagrain)' (2)	Water quality/supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large

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- 13.6.29 The dilution and removal of waste products attribute of SWF 15 would have potential impacts of Moderate significance in comparison to the other attributes due to the low importance of this attribute for this SWF.

Option 1B (MV)

- 13.6.30 This section presents the potential impacts of Moderate and above significance that are specific for Option 1B (MV) and which are additional to those reported as common to all route options (refer to paragraphs 13.6.4 to 13.6.10).

Hydrology and Flood risk

- 13.6.31 There are no additional potential impacts in relation to hydrology and flood risk for Option 1B (MV).

Fluvial Geomorphology

- 13.6.32 During construction and operation, Option 1B (MV) would have potential impacts of Moderate significance on the fluvial geomorphology of SWF 08 (Fiddler's Burn), SWF 09 (Tributary of Rough Burn) and SWF 12 (Rough Burn).

- 13.6.33 These potential impacts relate to in-channel works and specifically the construction of two culverts for SWF 08, three culverts for SWF 09, and one culvert for SWF 12. Although SWF 12 has a lower number of culverts, its medium geomorphological sensitivity, in comparison to the low sensitivity of SWF 08 and SWF 09, means that this SWF would also result in a potential impact of Moderate significance.

Water Quality

- 13.6.34 Table 13.13 provides details of the potential impacts for Option 1B (MV) in relation to construction impacts on water quality.

Table 13.13: Potential impacts during construction for water quality attributes - additional for Option 1B (MV)

SWF	Water Quality Attribute	Significance of Impact
SWF 11 Indirect tributary of Rough Burn (2)	Water quality/supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large
SWF 12 Rough Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 17 Drains at Culblair	Water quality/supply	Moderate
	Dilution and removal of waste products	Moderate
	Biodiversity	Moderate

- 13.6.35 With the exception of SWF 17, the potential impacts are due to in-channel construction works in addition to construction of the carriageway. The potential impacts on SWF 17 are due to the construction of carriageway only (refer to Table 13.6).

- 13.6.36 The dilution and removal of waste products attribute of SWF 11 would have a potential impact of Moderate significance in comparison to the other attributes due to the low importance of this attribute for this SWF.

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13.6.37 During operation, Option 1B (MV) would have the same potential additional impacts in relation to water quality as Option 1B. Please refer to paragraphs 13.6.28 and 13.6.29 for a description of the potential impacts.

Option 1C

13.6.38 This section presents the potential impacts of Moderate and above significance that are specific for Option 1C and which are additional to those reported as common to all route options (refer to paragraphs 13.6.4 to 13.6.10).

Hydrology and Flood risk

13.6.39 There are no additional potential impacts in relation to hydrology and flood risk for Option 1C.

Fluvial Geomorphology

13.6.40 There are no additional potential impacts of Moderate or above significance in relation to fluvial geomorphology for Option 1C.

Water Quality

13.6.41 Table 13.14 provides details of the potential impacts for Option 1C in relation to construction impacts on water quality.

Table 13.14: Potential impacts during construction for water quality attributes - additional for Option 1C

SWF	Water Quality Attribute	Significance of Impact
SWF 07 Drains at Allanfean	Water quality/supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large
SWF 11 Indirect tributary of Rough Burn (2)	Water quality/supply	Moderate
	Biodiversity	Moderate
SWF 12 Rough Burn	Water quality/supply	Moderate
	Dilution and removal of waste products	Moderate
	Biodiversity	Moderate

13.6.42 For SWF 07 the potential impacts are due to in-channel construction works in addition to the construction of carriageway. For SWF 11 the potential impacts are due to the construction of carriageway and for SWF 12 the potential impacts are due to the construction of carriageway and a bridge (refer to Table 13.6).

13.6.43 The dilution and removal of waste products attribute of SWF 07 would have a potential impact of Moderate significance in comparison to the other attributes due to the low importance of this attribute for this SWF.

13.6.44 During operation, Option 1C would have potential impacts of Large significance on all three water quality attributes for SWF 06 (Kenneth's Black Well), due to the direct discharges of road runoff to this SWF.

Option 1C (MV)

13.6.45 This section presents the potential impacts of Moderate and above significance that are specific for Option 1C (MV) and which are additional to those reported as common to all route options (refer to paragraphs 13.6.4 to 13.6.10).

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Hydrology and Flood risk

- 13.6.46 There are no additional potential impacts in relation to hydrology and flood risk for Option 1C (MV).

Fluvial Geomorphology

- 13.6.47 During construction and operation, Option 1C (MV) would have a potential impact of Moderate significance on the fluvial geomorphology of SWF 12 (Rough Burn). This is due to its medium geomorphological sensitivity and the construction of one culvert.

Water Quality

- 13.6.48 Table 13.15 provides details of the potential impacts for Option 1C (MV) in relation to construction impacts on water quality.

Table 13.15: Potential impacts during construction for water quality attributes- additional for Option 1C (MV)

SWF	Water Quality Attribute	Significance of Impact
SWF 07 Drains at Allanfeearn	Water quality/supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large
SWF 10 Indirect tributary of Rough Burn (1)	Water quality/supply	Moderate
	Biodiversity	Moderate
SWF 11 Indirect tributary of Rough Burn (2)	Water quality/supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large
SWF 12 Rough Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large

- 13.6.49 With the exception of SWF 10, these potential impacts are due to in-channel construction works in addition to the construction of carriageway. For SWF 10 the potential impacts are due to the construction of carriageway only (refer to Table 13.6).
- 13.6.50 The dilution and removal of waste products attribute of SWF 07 and SWF 11 would have potential impacts of Moderate significance in comparison to the other attributes due to the low importance of this attribute for these SWFs.
- 13.6.51 During operation, Option 1C (MV) would have the same potential additional impacts as Option 1C. Please refer to paragraph 13.6.44 for a description of the potential impacts.

Option 1D

- 13.6.52 This section presents the potential impacts of Moderate and above significance that are specific for Option 1D and which are additional to those reported as common to all route options (refer to paragraphs 13.6.4 to 13.6.10).

Hydrology and Flood risk

- 13.6.53 There are no additional potential impacts in relation to hydrology and flood risk for Option 1D.

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Fluvial Geomorphology

- 13.6.54 There are no additional potential impacts of Moderate or above significance in relation to fluvial geomorphology for Option 1D.

Water Quality

- 13.6.55 Table 13.16 provides details of the potential impacts for Option 1D in relation to construction impacts on water quality.

Table 13.16: Potential impacts during construction for water quality attributes - additional for Option 1D

SWF	Water Quality Attribute	Significance of Impact
SWF 07 Drains at Allanfearn	Water Quality/Supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large
SWF 11 Indirect tributary of Rough Burn (2)	Water Quality/Supply	Moderate
	Biodiversity	Moderate
SWF 12 Rough Burn	Water Quality/Supply	Moderate
	Dilution and removal of waste products	Moderate
	Biodiversity	Moderate
SWF 17 Drains at Culblair	Water Quality/Supply	Moderate
	Dilution and removal of waste products	Moderate
	Biodiversity	Moderate

- 13.6.56 The potential impacts on SWF 07 are due to in-channel construction works in addition to the construction of carriageway. The potential impacts on SWF 11 and SWF 17 are due to the construction of carriageway only and the potential impacts on SWF 12 are due to the construction of carriageway and a bridge (refer to Table 13.6).
- 13.6.57 The dilution and removal of waste products attribute of SWF 07 would have a potential impact of Moderate significance in comparison to the other attributes, due to the low importance of this attribute for this SWF.
- 13.6.58 Table 13.17 provides details of the potential impacts for Option 1D in relation to operational impacts on water quality. These potential impacts are due to direct discharges of road runoff into these SWFs.

Table 13.17: Potential impacts during operation for water quality attributes - additional for Option 1D

SWF	Water Quality Attribute	Significance of Impact
SWF 06 Kenneth's Black Well	Water Quality/Supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 15 Tributary of 'Unnamed Burn – Castle Stuart to source (Tornagrain)' (2)	Water Quality/Supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large

- 13.6.59 The dilution and removal of waste products attribute of SWF 15 would have potential impacts of Moderate significance in comparison to the other attributes due to the low importance of this attribute for this SWF.

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Option 1D (MV)

13.6.60 This section presents the potential impacts of Moderate and above significance that are specific for Option 1D (MV) and which are additional to those reported as common to all route options (refer to paragraphs 13.6.4 to 13.6.10).

Hydrology and Flood risk

13.6.61 There are no additional potential impacts in relation to hydrology and flood risk for Option 1D (MV).

Fluvial Geomorphology

13.6.62 During construction and operation, Option 1D (MV) would have a potential impact of Moderate significance on fluvial geomorphology for SWF 12 (Rough Burn). This is due to its medium geomorphological sensitivity and the construction of one culvert.

Water Quality

13.6.63 Table 13.18 provides details of the potential impacts for Option 1D (MV) in relation to construction impacts on water quality.

Table 13.18: Potential impacts during construction for water quality attributes - additional for Option 1D (MV)

SWF	Water Quality Attribute	Significance of Impact
SWF 07 Drains at Allanfearn	Water Quality/Supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large
SWF 10 Indirect tributary of Rough Burn (1)	Water Quality/Supply	Moderate
	Biodiversity	Moderate
SWF 11 Indirect tributary of Rough Burn (2)	Water Quality/Supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large
SWF 12 Rough Burn	Water Quality/Supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 17 Drains at Culblair	Water Quality/Supply	Moderate
	Dilution and removal of waste products	Moderate
	Biodiversity	Moderate

13.6.64 With the exception of SWF 10 and SWF 17, the potential impacts are due to in-channel construction works in addition to the construction of the carriageway. The potential impacts on SWF 10 and SWF 17 are due to the construction of the carriageway only (refer to Table 13.6).

13.6.65 The dilution and removal of waste products attribute of SWF 07 and SWF 11 would have potential impacts of Moderate significance in comparison to the other attributes due to the low importance of this attribute for these SWFs.

13.6.66 During operation, Option 1D (MV) would have the same potential additional impacts as Option 1D. Please refer to paragraph 13.6.58 to 13.6.59 for a description of the potential impacts.

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13.7 Impact Assessment: Nairn Bypass

13.7.1 This section describes the potential impacts of Moderate or above significance that are specific to the Nairn Bypass section. Impacts that are common to all route options are discussed, followed by those impacts which are additional to these for each route option.

13.7.2 Tables 13.19 and 13.20 provide a summary of the construction works/operational structures for each route option. This information has been used to determine the magnitude of impact, which when combined with the sensitivity of the attribute, is used to determine the significance of the potential impact. However, at this stage, because the likely nature of the construction activities is not available, the relative magnitude of impact is assessed on the broad nature and extent of the channel engineering required.

Table 13.19: Proposed construction works/operational structures within, over and adjacent to SWFs (Nairn Bypass)

SWF	Construction Activity	Option								
		2A	2B	2C	2D	2E	2F	2G	2H	2I
SWF 19 Balnagowan Burn	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Construction of culverts (No.)	1	1	1	1	1	1	1	1	1
	Construction of outfalls (No.)	1	1	1	1	1	1	1	1	1
SWF 20 Tributary of Balnagowan Burn	Construction of carriageway	✓	✓	✓	✓	-	-	-	-	-
	Construction of culverts (No.)	1	1	1	1	-	-	-	-	-
	Construction of outfalls (No.)	1	1	1	1	-	-	-	-	-
	Part channel realignment (No.)	1	1	1	1	-	-	-	-	-
SWF 21 Field ditch tributaries of Balnagowan Burn	Construction of carriageway	✓	✓	✓	✓	-	-	-	-	-
SWF 22 Alton Burn	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Construction of culverts (No.)	1	1	1	1	2	2	2	2	2
	Construction of outfalls (No.)	-	-	-	-	1	1	1	1	1
	Part channel realignment (No.)	1	1	1	-	2	2	2	2	2
SWF 23 River Nairn	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Construction of bridge (No.)	1	1	1	1	1	1	1	1	1
	Construction of outfalls (No.)	1	1	1	1	1	1	1	1	1
SWF 24 Tributary of the River Nairn	Construction of carriageway	✓	✓	✓	-	✓	✓	✓	-	-
	Construction of culverts (No.)	1	1	1	-	1	1	1	-	-
	Construction of outfalls (No.)	1	1	1	2	1	1	1	1	2
	Part channel realignment (No.)	1	1	1	-	1	1	1	-	-
SWF 25 Indirect tributary of the River Nairn	Construction of carriageway	-	-	-	✓	-	-	-	✓	✓
	Part channel realignment (No.)	-	-	-	-	-	-	-	1	-
SWF 26 Auldearn Burn	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Construction of culverts (No.)	1	1	2	2	1	1	2	1	2
	Construction of outfalls (No.)	3	2	1	1	3	2	1	3	1
	Part channel realignment (No.)	3	2	2	1	3	2	2	3	1
SWF 27 Drains within Bognafuaran Wood	Construction of carriageway	-	-	✓	✓	-	-	✓	-	✓

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SWF	Construction Activity	Option								
		2A	2B	2C	2D	2E	2F	2G	2H	2I
SWF 28 Tributary of Auldearn Burn (1)	Construction of carriageway	-	-	✓	-	-	-	✓	-	-
	Construction of culverts (No.)	-	-	2	-	-	-	2	-	-
	Part channel realignment (No.)			1				1		
SWF 29 Tributary of Auldearn Burn (2)	No works within, over or adjacent to SWF									
SWF 30 Tributary of Auldearn Burn (3)	Construction of carriageway	-	-	-	✓	-	-	-	-	✓
	Construction of culverts (No.)	-	-	-	1	-	-	-	-	1
	Part channel realignment (No.)	-	-	-	1	-	-	-	-	1
SWF 31 Auldearn Burn - Brightmony Tributary	Construction of carriageway	-	✓	✓	✓	-	✓	✓	-	✓
	Construction of culverts (No.)	-	1	2	2	-	1	2	-	2
	Construction of outfalls (No.)	-	1	2	2	-	1	2	-	2
	Part channel realignment (No.)	-	1	2	2	-	1	2	-	2
SWF 32 Drain at Brae of Brightmony	No works within, over or adjacent to SWF									
SWF 33 Drain at Penick Farm	No works within, over or adjacent to SWF									
SWF 34 Tributary of Auldearn Burn (4)	No works within, over or adjacent to SWF									
SWF 35 Drain, tributary of Auldearn Burn - Brightmony Tributary	Construction of carriageway	-	✓	✓	✓	-	✓	✓	-	✓
	Construction of culverts (No.)	-	-	1	1	-	-	1	-	1
	Part channel realignment (No.)	-	1	1	1	-	1	1	-	1
Loch Flemington	No works within, over or adjacent to SWF									
Groundwater	Construction of carriageway	✓	✓	✓	✓	✓	✓	✓	✓	✓

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Table 13.20: Summary of construction works and operational structures (Nairn Bypass)

Construction and Operational Activities/Features	Option								
	2A	2B	2C	2D	2E	2F	2G	2H	2I
Number of times carriageway would be constructed over/adjacent.	7	9	11	11	5	7	9	5	9
Number of bridges.	1	1	1	1	1	1	1	1	1
Number of culverts.	5	6	11	9	5	6	11	4	9
Number of part channel realignments.	6	7	9	6	6	6	9	6	7
Number of outfalls.	7	7	7	8	7	7	7	7	8
Total number of in-channel activities*	18	20	27	23	18	19	27	17	24
Number of SWFs requiring in-channel activities*.	6	8	9	9	5	7	8	6	8
Impermeable area draining to outfalls (ha).	32.72	29.63	30.98	33.41	33.54	31.31	31.8	34.64	37.42
Number of SWFs receiving new routine road runoff during operation.	5	6	6	6	5	6	6	5	6

*Construction of outfalls and culverts and part channel realignments are classed as in-channel works.

Impacts Common to all Route Options

- 13.7.3 This section presents the impacts of Moderate or above significance that are common to all route options within the Nairn Bypass section.

Hydrology and Flood Risk

- 13.7.4 There is a potential impact of Large significance common to all route options for flood risk. This relates to construction impacts on SWF 23 (River Nairn). This potential impact reduces to Moderate significance during operation. This relates to the likely construction activities in close proximity to SWF 23 creating a restriction to the floodplain which is likely to take up a greater area during the construction phase.

Fluvial Geomorphology

- 13.7.5 There is a potential impact of Moderate significance common to all route options on fluvial geomorphology. This relates to the construction impacts on SWF 23 (River Nairn). This is due to the likely construction activities related to the construction of a bridge combined with very high geomorphological sensitivity of this SWF.

Water Quality

- 13.7.6 Table 13.21 shows the potential impacts that are common to all route options in relation to construction impacts on water quality.

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Table 13.21: Potential impacts during construction for water quality attributes - common to all route options (Inverness to Gollanfield)

SWF	Water Quality Attribute	Significance of Impact
SWF 19 Balnagowan Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate
SWF 22 Alton Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate
SWF 23 River Nairn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Very Large
SWF 24 Tributary of the River Nairn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Very Large
SWF 26 Auldearn Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Very Large
Groundwater	Vulnerability	Large

13.7.7 The potential impacts are due to in-channel construction works in addition to the construction of the carriageway (refer to Table 13.19).

13.7.8 The potential impacts on biodiversity for SWF 23, SWF 24 and SWF 26 of Very Large significance is due to the very high sensitivity of this attribute for these SWFs. The potential impacts of Moderate significance for biodiversity in comparison to the other attributes for SWF 19 and SWF 22 are due to the low importance of this attribute in these SWFs.

13.7.9 Table 13.22 provides details of the potential impacts that are common to all route options in relation to operational impacts on water quality. These potential impacts are due to direct discharges of road runoff into these SWFs.

Table 13.22: Potential impacts during operation for water quality attributes - common to all route options (Inverness to Gollanfield)

SWF	Water Quality Attribute	Significance of Impact
SWF 19 Balnagowan Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate
SWF 23 River Nairn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Very Large
SWF 24 Tributary of the River Nairn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Very Large
SWF 26 Auldearn Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Very Large

13.7.10 The potential impacts of Very Large significance on biodiversity for SWF 23, SWF 24 and SWF 26 are due to the very high sensitivity of this attribute for these SWFs. The potential

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impacts of Moderate significance for biodiversity in comparison to the other attributes for SWF 19 are due to the low importance of this attribute in this SWF.

Option 2A

- 13.7.11 This section presents the potential impacts of Moderate and above significance that are specific for Option 2A and which are additional to those reported as common to all route options (refer to paragraphs 13.7.4 to 13.7.10).

Hydrology and Flood risk

- 13.7.12 During construction and operation, Option 2A would have potential impacts of Very Large and Large significance on flood risk for SWF 22 (Alton Burn) and SWF 26 (Auldearn Burn), respectively.

- 13.7.13 The potential impacts on SWF 22 are due to presence of embankments in the floodplain and the proximity of residential properties downstream in the Tradespark area. The potential impacts on SWF 26 are due to the construction of Nairn East Junction A in the floodplain.

Fluvial Geomorphology

- 13.7.14 During construction and operation, Option 2A would have a potential impact of Large significance on fluvial geomorphology for SWF 26 (Auldearn Burn). This is due to its medium geomorphological sensitivity and the construction of one culvert and other in-channel works.

Water Quality

- 13.7.15 Table 13.23 provides details of the additional potential impacts for Option 2A in relation to construction impacts on water quality.

Table 13.23: Potential impacts during construction for water quality attributes - additional for Option 2A

SWF	Water Quality Attribute	Significance of Impact
SWF 20 Tributary of Balnagowan Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate
SWF 21 Field ditch tributaries of Balnagowan Burn	Water quality/supply	Moderate
	Dilution and removal of waste products	Moderate

- 13.7.16 The potential impacts are due to the construction of the carriageway (SWF 20 and SWF 21) and in-channel construction works (SWF 20) (refer to Table 13.19).
- 13.7.17 The biodiversity attribute of SWF 20 would have a potential impact of Moderate significance in comparison to the other attributes due to the low importance of this attribute for this SWF.
- 13.7.18 During operation, Option 2A would have potential impacts of Large significance for the water quality/supply and dilution attributes and Moderate significance for the biodiversity attribute of SWF 20 (Tributary of Balnagowan Burn). This is due to direct discharges of road runoff into this SWF.
- 13.7.19 The biodiversity attribute of SWF 20 would have potential impacts of Moderate significance in comparison to the other attributes, due to the low importance of this attribute for these SWFs.

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Option 2B

- 13.7.20 This section presents the potential impacts of Moderate and above significance that are specific for Option 2B and which are additional to those reported as common to all route options (refer to paragraphs 13.7.4 to 13.7.10).

Hydrology and Flood risk

- 13.7.21 During construction and operation, Option 2B would have potential impacts of Very Large, Large and Moderate significance on flood risk for SWF 22 (Alton Burn), SWF 26 (Auldearn Burn) and SWF 31 (Auldearn Burn – Brightmony Tributary), respectively.

- 13.7.22 These potential impacts are due to the presence of embankments in the floodplain and the proximity of housing downstream in the Tradespark area (SWF 22), the construction of Nairn East Junction B in the floodplain (SWF 26) or the route option alignment crossing of the floodplain with the potential to impact on a small number of residential properties at the east end of Auldearn (SWF 31).

Fluvial Geomorphology

- 13.7.23 During construction and operation, Option 2B would have potential impacts of Moderate significance on fluvial geomorphology for SWF 26 (Auldearn Burn). This is due to its medium geomorphological sensitivity and the construction of one culvert and other in-channel works.

Water Quality

- 13.7.24 Table 13.24 provides details of the additional potential impacts for Option 2B in relation to construction impacts on water quality.

Table 13.24: Potential impacts during construction for water quality attributes - additional for Option 2B

SWF	Water Quality Attribute	Significance of Impact
SWF 20 Tributary of Balnagowan Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate
SWF 21 Field ditch tributaries of Balnagowan Burn	Water quality/supply	Moderate
	Dilution and removal of waste products	Moderate
SWF 31 Auldearn Burn - Brightmony Tributary	Water Quality/Supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 35 Drain, tributary of Auldearn Burn – Brightmony Tributary	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate

- 13.7.25 With the exception of SWF 21, the potential impacts are due to construction of the carriageway and in-channel construction works. For SWF 21 the impacts are related to construction of the carriageway only (refer to Table 13.19).

- 13.7.26 The biodiversity attribute of SWF 20 and SWF 35 would have a potential impact of Moderate significance in comparison to the other attributes due to the low importance of this attribute for these SWFs.

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- 13.7.27 Table 13.25 provides details of the additional potential impacts for Option 2B in relation to operational impacts on water quality. These impacts are due to direct discharges of road runoff into these SWFs.

Table 13.25: Potential impacts during operation for water quality attributes - additional for Option 2B

SWF	Water Quality Attribute	Significance of Impact
SWF 20 Tributary of Balnagowan Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate
SWF 31 Auldearn Burn - Brightmony Tributary	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large

- 13.7.28 The biodiversity attribute of SWF 20 would have a potential impact of Moderate significance in comparison to the other attributes, due to the low importance of this attribute for this SWF.

Option 2C

- 13.7.29 This section presents the potential impacts of Moderate and above significance that are specific for Option 2C and which are additional to those reported as common to all route options (refer to paragraphs 13.7.4 to 13.7.10).

Hydrology and Flood risk

- 13.7.30 During construction and operation, Option 2C would have potential impacts of Very Large or Moderate significance on flood risk for SWF 22 (Alton Burn), SWF 26 (Auldearn Burn) and SWF 31 (Auldearn Burn - Brightmony tributary).
- 13.7.31 SWF 22 would have a potential impact of Very Large significance due to the presence of embankments in the floodplain and the proximity of residential properties downstream in the Tradespark area.
- 13.7.32 SWF 26 and SWF 31 would have potential impacts of Moderate significance due to the crossing of the floodplain with an embankment and culverts (SWF 26) or the route option alignment crossing of the floodplain and the potential to impact a small number of residential properties to the south-east of Auldearn (SWF 31).

Fluvial Geomorphology

- 13.7.33 During construction and operation, Option 2C would have potential impacts of Large or Moderate significance on the fluvial geomorphology of SWF 26 (Auldearn Burn), SWF 28 (Tributary of Auldearn Burn (1)) and SWF 31 (Auldearn Burn – Brightmony Tributary).
- 13.7.34 SWF 26 would have a potential impact of Large significance due to its medium geomorphological sensitivity and the construction of two culverts and other additional in-channel works. SWF 28 and SWF 31 would have potential impacts of Moderate significance due to their low sensitivity and the construction of two culverts and other in-channel works.

Water Quality

- 13.7.35 Table 13.26 provides details of the additional potential impacts for Option 2C in relation to construction impacts on water quality.

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Table 13.26: Potential impacts during construction for water quality attributes - additional for Option 2C

SWF	Water Quality Attribute	Significance of Impact
SWF 20 Tributary of Balnagowan Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate
SWF 21 Field ditch tributaries of Balnagowan Burn	Water quality/supply	Moderate
	Dilution and removal of waste products	Moderate
SWF 27 Drains within Bognafuaran Wood	Water quality/supply	Moderate
	Dilution and removal of waste products	Moderate
	Biodiversity	Moderate
SWF 28 Tributary of Auldearn Burn (1)	Water quality/supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large
SWF 31 Auldearn Burn – Brightmony Tributary	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 35 Drain, tributary of Auldearn Burn – Brightmony Tributary	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate

13.7.36 The potential impacts on SWF 20, SWF 28, SWF 31 and SWF 35 are due to in-channel construction works in addition to the construction of the carriageway. The potential impacts on SWF 21 and SWF 27 are due to the construction of carriageway only (refer to Table 13.19).

13.7.37 The biodiversity attribute of SWF 20 and SWF 35 and the dilution and removal of waste products attribute of SWF 28 would have potential impacts of Moderate significance in comparison to the other attributes, due to the low importance of these attributes for these SWFs.

13.7.38 Table 13.27 provides details of the additional potential impacts for Option 2C in relation to operational impacts on water quality. These impacts are due to direct discharges of road runoff into these SWFs.

Table 13.27: Potential impacts during operation for water quality attributes - additional for Option 2C

SWF	Water Quality Attribute	Significance of Impact
SWF 20 Tributary of Balnagowan Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate
SWF 31 Auldearn Burn - Brightmony Tributary	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large

13.7.39 The biodiversity attribute of SWF 20 would have potential impacts of Moderate significance in comparison to the other attributes, due to the low importance of this attribute for this SWF.

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Option 2D

13.7.40 This section presents the potential impacts of Moderate and above significance that are specific for Option 2D and which are additional to those reported as common to all route options (refer to paragraphs 13.7.4 to 13.7.10).

Hydrology and Flood risk

13.7.41 During construction and operation, Option 2D would have potential impacts of Very Large or Moderate significance on flood risk for SWF 22 (Alton Burn), SWF 26 (Auldearn Burn) and SWF 31 (Auldearn Burn - Brightmony Tributary).

13.7.42 SWF 22 would have a potential impact of Very Large significance due to the presence of embankments in the floodplain and the proximity of residential properties downstream in the Tradespark area.

13.7.43 SWF 26 and SWF 31 would have potential impacts of Moderate significance due to the crossing of the floodplain with an embankment and culverts (SWF 26) or due to the route option alignment crossing of the floodplain and the potential to impact a small number of properties to the south-east of Auldearn (SWF 31).

Fluvial Geomorphology

13.7.44 During construction and operation, Option 2D would have potential impacts of Large and Moderate significance on the fluvial geomorphology of SWF 26 (Auldearn Burn) SWF 31 (Auldearn Burn – Brightmony Tributary), respectively. These potential impacts relate to in-channel works and the construction of two culverts. SWF 26 is expected to have potential impacts of Large significance due to its medium geomorphological sensitivity in comparison to the low sensitivity of SWF 31.

Water Quality

13.7.45 Table 13.28 provides details of the additional potential impacts for Option 2D in relation to construction impacts on water quality.

Table 13.28: Potential impacts during construction for water quality attributes - additional for Option 2D

SWF	Water Quality Attribute	Significance of Impact
SWF 20 Tributary of Balnagowan Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate
SWF 21 Field ditch tributaries of Balnagowan Burn	Water quality/supply	Moderate
	Dilution and removal of waste products	Moderate
SWF 25 Indirect tributary of the River Nairn	Water quality/supply	Moderate
	Biodiversity	Moderate
SWF 27 Drains within Bognafuaran Wood	Water quality/supply	Moderate
	Dilution and removal of waste products	Moderate
	Biodiversity	Moderate
SWF 30 Tributary of Auldearn Burn (3)	Water quality/supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large
SWF 31 Auldearn Burn - Brightmony Tributary	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large

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SWF	Water Quality Attribute	Significance of Impact
SWF 35 Drain, tributary of Auldearn Burn – Brightmony Tributary	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate

13.7.46 The potential impacts on SWF 20, SWF 30, SWF 31 and SWF 35 are due to in-channel construction works in addition to the construction of the carriageway. The potential impacts on SWF 21, SWF 25, SWF 27, are due to the construction of carriageway only (refer to Table 13.19).

13.7.47 The biodiversity attribute of SWF 20 and SWF 35 and the dilution and removal of waste products attribute of SWF 30 would have potential impacts of Moderate significance in comparison to the other attributes, due to the low importance of these attributes for these SWFs.

13.7.48 Table 13.29 provides details of the additional potential impacts for Option 2D in relation to operational impacts on water quality. These impacts are due to direct discharges of road runoff into these SWFs.

Table 13.29: Potential impacts during operation for water quality attributes - additional for Option 2D

SWF	Water Quality Attribute	Significance of Impact
SWF 20 Tributary of Balnagowan Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate
SWF 31 Auldearn Burn - Brightmony Tributary	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large

13.7.49 The biodiversity attribute of SWF 20 would have potential impacts of Moderate significance in comparison to the other attributes, due to the low importance of this attribute for this SWF.

Option 2E

13.7.50 This section presents the potential impacts of Moderate and above significance that are specific for Option 2E and which are additional to those reported as common to all route options (refer to paragraphs 13.7.4 to 13.7.10).

Hydrology and Flood risk

13.7.51 During construction and operation, Option 2E would have potential impacts of Large significance on flood risk for SWF 22 (Alton Burn) and SWF 26 (Auldearn Burn).

13.7.52 These potential impacts are due to the presence of a culverted crossing of the floodplain (SWF 22) or the construction of Nairn East Junction A in the floodplain and the crossing of the SWF and floodplain by embankment and culvert (SWF 26).

Fluvial Geomorphology

13.7.53 During construction and operation, Option 2E would have potential impacts of Moderate and Large significance on the fluvial geomorphology of SWF 22 (Alton Burn) and SWF 26 (Auldearn Burn), respectively.

13.7.54 These potential impacts relate to in-channel works and specifically the construction of two culverts for SWF 22 and one culvert for SWF 26. SWF 26 is expected to have potential

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impacts of Large significance due to its medium geomorphological sensitivity in comparison to the low sensitivity of SWF 22.

Water Quality

- 13.7.55 Option 2E has no additional potential construction impacts in relation to water quality.
- 13.7.56 During operation, Option 2E would have potential impacts of Large significance for the water quality/supply and dilution attributes and Moderate significance for the biodiversity attribute of SWF 22 (Alton Burn). This is due to direct discharges of road runoff into this SWF.
- 13.7.57 The biodiversity attribute of SWF 22 would have potential impacts of Moderate significance in comparison to the other attributes, due to the low importance of this attribute for this SWF.

Option 2F

- 13.7.58 This section presents the potential impacts of Moderate and above significance that are specific for Option 2F and which are additional to those reported as common to all route options (refer to paragraphs 13.7.4 to 13.7.10).

Hydrology and Flood risk

- 13.7.59 During construction and operation, Option 2F would have potential impacts of Large or Moderate significance on flood risk for SWF 22 (Alton Burn), SWF 26 (Auldearn Burn) and SWF 31 (Auldearn Burn – Brightmony Tributary).
- 13.7.60 SWF 22 and SWF 26 would have potential impacts of Large significance due to the presence of a culverted crossing of the floodplain (SWF 22) or the construction of Nairn East Junction B in the floodplain (SWF 26).
- 13.7.61 SWF 31 would have a potential impact of Moderate significance due to the route option alignment crossing of the floodplain and the potential to impact on a small number of properties to the east of Auldearn.

Fluvial Geomorphology

- 13.7.62 During construction and operation, Option 2F would have potential impacts of Moderate significance on the fluvial geomorphology of SWF 22 (Alton Burn) and SWF 26 (Auldearn Burn).
- 13.7.63 These potential impacts relate to in-channel works and specifically the construction of two culverts for SWF 22 and one culvert for SWF 26. SWF 26 is expected to have potential impacts of Large significance due to its medium geomorphological sensitivity in comparison to the low sensitivity of SWF 22.

Water Quality

- 13.7.64 Table 13.30 provides details of the additional potential impacts for Option 2F in relation to construction impacts on water quality.

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Table 13.30: Potential impacts during construction for water quality attributes - additional for Option 2F

SWF	Water Quality Attribute	Significance of Impact
SWF 31 Auldearn Burn - Brightmony Tributary	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 35 Drain, tributary of Auldearn Burn – Brightmony Tributary	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate

- 13.7.65 The potential impacts for SWF 31 and SWF 35 are due to the in-channel construction works in addition to the construction of carriageway (refer to Table 13.19).
- 13.7.66 The biodiversity attribute of SWF 35 would have a potential impact of Moderate significance in comparison to the other attributes due to the low importance of this attribute for this SWF.
- 13.7.67 Table 13.31 provides details of the additional potential impacts for Option 2F in relation to operational impacts on water quality. These potential impacts are due to direct discharges of road runoff into these SWFs.

Table 13.31: Potential impacts during operation for water quality attributes - additional for Option 2F

SWF	Water Quality Attribute	Significance of Impact
SWF 22 Alton Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate
SWF 31 Auldearn Burn - Brightmony Tributary	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large

- 13.7.68 The biodiversity attribute of SWF 22 would have potential impacts of Moderate significance in comparison to the other attributes due to the low importance of this attribute for these SWFs.

Option 2G

- 13.7.69 This section presents the potential impacts of Moderate and above significance that are specific for Option 2G and which are additional to those reported as common to all route options (refer to paragraphs 13.7.4 to 13.7.10).

Hydrology and Flood risk

- 13.7.70 During construction and operation, Option 2G would have potential impacts of Large or Moderate significance on flood risk for SWF 22 (Alton Burn), SWF 26 (Auldearn Burn) and SWF 31 (Auldearn Burn – Brightmony Tributary).
- 13.7.71 SWF 22 would have a potential impact of Large significance due to the presence of a culverted crossing of the floodplain.
- 13.7.72 SWF 26 and SWF 31 would have potential impacts of Moderate significance due to the crossing of the floodplain with an embankment and culverts (SWF 26) or the route option alignment crossing of the floodplain with the potential to impact a small number of properties to the south-east of Auldearn (SWF 31).

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Fluvial Geomorphology

- 13.7.73 During construction and operation, Option 2G would have potential impacts of Large or Moderate significance on the fluvial geomorphology of SWF 22 (Alton Burn), SWF 26 (Auldearn Burn), SWF 28 (Tributary of Auldearn Burn 1) and SWF 31 (Auldearn Burn - Brightmony Tributary).
- 13.7.74 SWF 26 would have a potential impact of Large significance due to its medium geomorphological sensitivity, in-channel works and specifically the construction of two culverts.
- 13.7.75 SWF 22, SWF 28 and SWF 31 would have potential impacts of Moderate significance due to their low geomorphological sensitivity, in-channel works and specifically the construction of two culverts.

Water Quality

- 13.7.76 Table 13.32 provides details of the additional potential impacts for Option 2G in relation to construction impacts on water quality.

Table 13.32: Potential impacts during construction for water quality attributes - additional for Option 2G

SWF	Water Quality Attribute	Significance of Impact
SWF 27 Drains within Bognafuaran Wood	Water quality/supply	Moderate
	Dilution and removal of waste products	Moderate
	Biodiversity	Moderate
SWF 28 Tributary of Auldearn Burn (1)	Water quality/supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large
SWF 31 Auldearn Burn - Brightmony Tributary	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 35 Drain, tributary of Auldearn Burn – Brightmony Tributary	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate

- 13.7.77 With the exception of SWF 27, the potential impacts are due to in-channel construction works in addition to the construction of carriageway. The potential impacts on SWF 27 are due to the construction of carriageway only (refer to Table 13.19).
- 13.7.78 The biodiversity attribute of SWF 35 and the dilution and removal of waste products attribute of SWF 28 would have potential impacts of Moderate significance in comparison to the other attributes, due to the low importance of these attributes for these SWFs.
- 13.7.79 Table 13.33 provides details of the additional potential impacts for Option 2G in relation to operational impacts on water quality. These potential impacts are due to direct discharges of road runoff into these SWFs.

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Table 13.33: Potential impacts during operation for water quality attributes - additional for Option 2G

SWF	Water Quality Attribute	Significance of Impact
SWF 22 Alton Burn	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate
SWF 31 Auldearn Burn – Brightmony tributary	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large

13.7.80 The biodiversity attribute of SWF 22 would have potential impacts of Moderate significance in comparison to the other attributes, due to the low importance of this attribute for this SWF.

Option 2H

13.7.81 This section presents the potential impacts of Moderate and above significance that are specific for Option 2H and which are additional to those reported as common to all route options (refer to paragraphs 13.7.4 to 13.7.10).

Hydrology and Flood risk

13.7.82 During construction and operation, Option 2H would have potential impacts of Large significance on flood risk for SWF 22 (Alton Burn) and SWF 26 (Auldearn Burn). These potential impacts are due to the presence of a culverted crossing of the floodplain (SWF 22) or the construction of Nairn East Junction C in the floodplain (SWF 26).

Fluvial Geomorphology

13.7.83 During construction and operation, Option 2H would have potential impacts of Moderate significance on the fluvial geomorphology of SWF 22 (Alton Burn) and SWF 25 (Indirect tributary of the River Nairn) and potential impacts of Large significance on SWF 26 (Auldearn Burn).

13.7.84 These potential impacts relate to in-channel works and specifically the construction of two culverts for SWF 22, the partial channel realignment of SWF 25 and one culvert for SWF 26. SWF 25 and SWF 26 have a medium geomorphological sensitivity so although they have fewer culverts than SWF 22 they are expected to have potential impacts of Moderate or Large significance. SWF 26 is also expected to have greater in-channel construction works relating to channel realignments, which further contributes to the Large impact significance.

Water Quality

13.7.85 Table 13.34 provides details of the additional potential impacts for Option 2H in relation to construction impacts on water quality.

Table 13.34: Potential impacts during construction for water quality attributes - additional for Option 2H

SWF	Water Quality Attribute	Significance of Impact
SWF 25 Indirect tributary of the River Nairn	Water quality/supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large

13.7.86 The potential impacts are due to the in-channel construction works in addition to the construction of carriageway (refer to Table 13.19).

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- 13.7.87 The dilution and removal of waste products attribute for SWF 25 would have potential impacts of Moderate significance in comparison to the other attributes, is due to the low importance of this attributes for this SWFs.
- 13.7.88 During operation, Option 2H would have potential impacts of Large significance for the water quality/supply and dilution attributes and Moderate significance for the biodiversity attribute of SWF 22 (Alton Burn). This is due to direct discharges of road runoff into this SWF.
- 13.7.89 The biodiversity attribute of SWF 22 would have a potential impact of Moderate significance in comparison to the other attributes due to the low importance of this attribute for this SWF.

Option 2I

- 13.7.90 This section presents the potential impacts of Moderate and above significance that are specific for Option 2I and which are additional to those reported as common to all route options (refer to paragraphs 13.7.4 to 13.7.10).

Hydrology and Flood risk

- 13.7.91 During construction and operation, Option 2I would have potential impacts of Large or Moderate significance on flood risk for SWF 22 (Alton Burn), SWF 26 (Auldearn Burn) and SWF 31 (Auldearn Burn – Brightmony Tributary).
- 13.7.92 SWF 22 would have a potential impact of Large significance due to the presence of a culverted crossing of the floodplain.
- 13.7.93 SWF 26 and SWF 31 would have potential impacts of Moderate significance, due to the crossing of the floodplain with an embankment and culverts (SWF 26) or the route option alignment crossing of the floodplain with the potential to impact a small number of properties to the south-east of Auldearn (SWF 31).

Fluvial Geomorphology

- 13.7.94 During construction and operation, Option 2I would have potential impacts of Large or Moderate significance on flood risk for SWF 22 (Alton Burn), SWF 26 (Auldearn Burn) and SWF 31 (Auldearn Burn – Brightmony Tributary).
- 13.7.95 SWF 26 would have a potential impact of Large significance due to its medium geomorphological sensitivity and the construction of two culverts and other in-channel works.
- 13.7.96 SWF 22 and SWF 31 would have potential impacts of Moderate significance due their low geomorphological sensitivity and the construction of two culverts and other in-channel works.

Water Quality

- 13.7.97 Table 13.35 provides details of the additional potential impacts for Option 2I in relation to construction impacts on water quality.

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Table 13.35: Potential impacts during construction for water quality attributes - additional for Option 2I

SWF	Water Quality Attribute	Significance of Impact
SWF 25 Indirect tributary of the River Nairn	Water quality/supply	Moderate
	Biodiversity	Moderate
SWF 27 Drains within Bognafuaran Wood	Water quality/supply	Moderate
	Dilution and removal of waste products	Moderate
	Biodiversity	Moderate
SWF 30 Tributary of Auldearn Burn (3)	Water quality/supply	Large
	Dilution and removal of waste products	Moderate
	Biodiversity	Large
SWF 31 Auldearn Burn – Brightmony Tributary	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large
SWF 35 Drain, tributary of Auldearn Burn – Brightmony Tributary	Water quality/supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate

- 13.7.98 With the exception of SWF 25 and SWF 27, the potential impacts are due to in-channel construction works in addition to the construction of carriageway. The potential impacts on SWF 25 and SWF 27 are due to the construction of the carriageway only (refer to Table 13.19).
- 13.7.99 The biodiversity attribute of SWF 35 and the dilution and removal of waste products attribute for SWF 30 would have potential impacts of Moderate significance in comparison to the other attributes, due to the low importance of these attributes for these SWFs.
- 13.7.100 Table 13.36 provides details of the additional potential impacts for Option 2I in relation to operational impacts on water quality. These potential impacts are due to direct discharges of road runoff into these SWFs.

Table 13.36: Potential impacts during operation for water quality attributes - additional for Option 2I

SWF	Water Quality Attribute	Significance of Impact
SWF 22 Alton Burn	Water Quality/Supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Moderate
SWF 31 Auldearn Burn – Brightmony tributary	Water Quality/Supply	Large
	Dilution and removal of waste products	Large
	Biodiversity	Large

- 13.7.101 The biodiversity attribute of SWF 22 would have a potential impact of Moderate significance in comparison to the other attributes, due to the low importance of this attribute for this SWF.

13.8 Compliance with Policies and Plans

- 13.8.1 An assessment of the compliance of the route options in relation to the policies and plans mentioned in Section 13.3 (Policies and Plans) is presented in this section for each discipline. Each discipline presents the assessment for each section; Inverness to Gollanfield and the Nairn Bypass. Where impacts are the same for both sections this is identified and reported collectively. There are no relevant policies and plans in relation to fluvial geomorphology.

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Hydrology and Flood Risk

- 13.8.2 The compliance with policies and plans for hydrology and flood risk is the same for both sections. The text below therefore relates to both sections; Inverness to Gollanfield and the Nairn Bypass.
- 13.8.3 All the route options have the potential to conflict with the relevant sections of SPP and Policy 30 (Physical Constraints) and Policy 64 (Flood Risk) of the HwLDP.
- 13.8.4 For both sections this is mainly a result of potential flood risk impacts of Moderate or Large significance during construction and operation.
- 13.8.5 Appropriate measures would therefore be required for all route options to manage flood risk, and mitigation would be required to produce a neutral or better outcome. Refer to Section 13.9 (Potential Mitigation) for further details.
- 13.8.6 SuDS and an appropriate long-term maintenance arrangement of the drainage system would need to be included in the design, otherwise it is likely that all route options would also have the potential to conflict with Policy 66 (Surface Water Drainage) of the HwLDP. Refer to Section 13.9 (Potential Mitigation) for further details.
- 13.8.7 All of the route options include new culverts and therefore have the potential to conflict with SPP in this regard.

Water Quality

- 13.8.8 The compliance with policies and plans for water quality is the same for both sections. The text below therefore relates to both sections.
- 13.8.9 All of the route options have the potential to conflict with Policy 28 (Sustainable Design), Policy 30 (Development Constraints), Policy 63 (Water Environment) and Policy 72 (Pollution) of the HwLDP.
- 13.8.10 For both sections, this is mainly a result of potential construction and operational impacts to water quality of Moderate or Large (Inverness to Gollanfield), or Moderate, Large or Very Large (Nairn Bypass) significance to a number of SWFs as well as one groundwater feature (construction only). During construction these potential impacts are a result of in-channel works and the construction of the carriageway, and during operation these potential impacts are a result of the direct discharges of road runoff.
- 13.8.11 Appropriate measures would therefore be required for all route options to show how pollution of surface and groundwater features could be appropriately avoided and if necessary mitigated. Refer to Section 13.9 (Potential Mitigation) for further details.
- 13.8.12 There is scope to consider that there would be no conflict with Policy 28 (Sustainable Design) of the HwLDP due to the expected overriding strategic benefits of the route options. The A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme is included in the Strategic Transport Projects Review (STPR) (Transport Scotland, 2008) which identifies a programme of strategic transport interventions necessary to support the future effective operation of Scotland's transport network. The Infrastructure Investment Plan (Scottish Government, 2011) also identifies investment in Scotland's transport as a key enabler for enhancing productivity and delivering sustainable growth, and has made a commitment to dual the A96 between Inverness and Aberdeen by 2030. The strategic benefits of the route options are also reflected in the HwLDP which states that key transport improvements must be delivered in order to support the development of the A96 corridor. However, further assessment on the full extent of the impacts would be required to conclude whether or not the strategic benefits outweigh these adverse impacts.

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13.9 Potential Mitigation

13.9.1 For a DMRB Stage 2 Assessment the design has not been sufficiently developed to allow mitigation measures to be defined in detail at this stage. The objective of this section is to identify potential mitigation taking into account best practice, legislation and guidance, which would be developed and refined during the DMRB Stage 3 Assessment. As part of DMRB Stage 3, the design of the preferred option would be reviewed and, where possible, the preferred option would be further developed (pre-DMRB Stage 3 Assessment mitigation) to minimise impacts on the water environment.

Construction

13.9.2 All of the route options are likely to require the same types of construction activities and as such there are no activities that are unique to one specific route option. However, the extent of the works within/adjacent to each SWF, and the SWFs that are impacted, are different for each of the route options. Therefore, the level of mitigation that is required during construction is different for each route option, and this should be developed for the preferred option during the DMRB Stage 3 Assessment.

13.9.3 None of the route options are expected to require mitigation measures over and above good practice activities. Mitigation measures during construction that are relevant to all of the route options include:

- Undertaking potentially polluting activities (e.g. concrete batching and mixing) away from watercourses, ditches and surface water drains.
- Watercourse crossing works to be undertaken using appropriate methods to reduce the risk of pollution.
- Appropriate method of working for outfall construction including adherence to SG-28 Good Practice Guide: Construction of Outfalls (SEPA, 2007).
- Site sewage disposal to follow good practice and any service diversions to be carried out using good engineering practices.
- Minimising the duration and spatial extent of works and ensuring adequate sediment control measures are in place around the works.
- Progressive rehabilitation of exposed areas throughout the construction period as soon as possible after the work has been completed to reduce the risk of sediment release and additional runoff into the channel.
- Installation of temporary treatment ponds, where required, to ensure the protection of water quality throughout construction. Details regarding any temporary construction treatment ponds should be agreed with SEPA prior to commencement of construction. Guidance detailed in The SuDS Manual C697 (Construction Industry Research and Information Association (CIRIA), 2007) should be followed relating to temporary Sustainable Drainage Systems (SuDS).
- During temporary construction works, consideration should be given to flood impacts. For example, construction yards and storage areas should be located above the floodplain, and the aim will be for temporary construction works to be resistant to flood impacts in order to prevent movement or damage during potential flooding events.
- Develop a Pollution Prevention Plan, identifying appropriate storage of oils, fuels and chemicals and including spillage response measures, prior to construction.
- Prepare appropriate Method Statements for working with and storing oils and chemicals in line with the requirements of the Water Environment (Oil Storage) (Scotland) Regulations 2006.
- Contractor to prepare and implement a Construction Environmental Management Plan (CEMP), to be approved by SEPA prior to commencement of works.

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- Design an Environmental Incident Control Plan (EICP) to ensure protective measures are implemented to deal with both normal and emergency situations.
- Follow SEPA's pollution prevention guidance.
- Install temporary treatment facilities, in agreement with SEPA and CIRIA C697 guidance.
- Develop a permanent drainage system early in construction.
- For any in-channel works, apply for Controlled Activities Regulations (CAR) licence(s) from SEPA under the requirements of The Water Environment (Controlled Activities) (Scotland) Regulations (2011).

Operation

Hydrology and Flood Risk

- 13.9.4 Where floodplain is lost or connectivity reduced, compensatory flood storage should be provided, where possible, to remove any increase in flood risk. Appropriate attenuation of surface runoff through correctly sized SuDS would also limit flood risk from the introduced impermeable area.
- 13.9.5 Culverts and bridges should be designed to cause no increase in water level and if embankments are required in the floodplain the provision of flood culverts or permeable fill materials should be considered.
- 13.9.6 On-going inspections and maintenance of structures to them keep clear of blockages.

Fluvial Geomorphology

- 13.9.7 In-channel works including outfalls, culverts and realignments should be correctly positioned and designed, through consultation with a geomorphologist or appropriately qualified person, in order to limit the potential for scour. The location and design of in-channel structures should be such that there would be no significant alteration to flow patterns which may lead to turbulence and/or excessive deflection of flow towards the bed or banks of the channel. In-channel structures should not project out into the channel and should not be located where flow converges with river banks causing higher shear stresses or where active bank erosion is occurring.
- 13.9.8 Where channel realignment is proposed the following principles should be followed where possible. Minimise the length of the realignment, maintain gradient of watercourse and increase sinuosity of channel, create low flow channel to narrow channel and reduce siltation potential. In some cases, channel realignment can be an opportunity to improve the geomorphology of the watercourse, particularly if it has previously undergone high impact realignment.
- 13.9.9 Follow best practice identified in the Culvert Design and Operation Guide C689 (CIRIA, 2010), DMRB, Volume 4, Section 2, HA107/04; Design of Culvert and Outfall Details (The Highways Agency et al., 2004) and SEPA's WAT-SG-28 Good Practice Guide: Intakes and Outfalls (SEPA, 2008).

Water Quality

- 13.9.10 All of the route options would include a number of outfalls that would discharge routine road runoff and it is likely that some form of SuDS treatment would be needed for these outfalls. The treatment efficiencies and degree of settlement required would be dependent on the sensitivity of the receiving watercourse, the annual average daily traffic (AADT) and the impermeable area draining to the outfall. A suitable form of treatment for routine runoff prior to outfall would be required and the outfall and method of treatment should be appropriately maintained.

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13.10 Summary of Route Options

- 13.10.1 This section provides a summary of the impact assessment and includes those impacts which are common to all and those that vary between the options for construction and operation.
- 13.10.2 As noted above, due to the number of SWFs potentially impacted, only impacts of Moderate or above significance have been summarised to provide comparison of the main differences between the route options. Full details of the impact assessment are contained within Part 6 (Appendices), Appendix A13.2 (Impact Assessment Tables) of this report.
- 13.10.3 A discussion of the potential residual impacts is included taking into account the potential mitigation measures outlined in Section 13.9 (Potential Mitigation). However, as a detailed assessment of residual impacts has not been completed at this stage (due to the stage of the design and mitigation development), where possible only an indication of residual significance has been provided.

Inverness to Gollanfield

Hydrology and Flood Risk

- 13.10.4 All route options would have potential impacts of Moderate significance during construction for SWF 03 (Cairnlaw Burn) and SWF 05 (Tributary of Cairnlaw Burn (2)) and potential impacts during construction and operation of Moderate and Large significance for SWF 06 (Kenneth's Black Well) and SWF 16 (Tributary of Ardersier Burn), respectively.
- 13.10.5 For all route options, the greatest impacts are likely to occur during construction, with the additional runoff from exposed surfaces and greater in-channel restrictions. With appropriate mitigation, including suitably sized culverts, and through the provision of compensatory flood storage and temporary measures during the construction period, it is likely that the potential impacts can be reduced to Slight or less residual significance during both construction and operation.
- 13.10.6 In relation to compliance with planning policies, with appropriate mitigation as detailed in Section 13.9 (Potential Mitigation), it is expected that all the route options could comply with Policy 30 (Physical Constraints), Policy 64 (Flood Risk) and Policy 66 (Surface Water Drainage) of the HwLDP. However, due to the construction of new culverts is likely that all route option would conflict with SPP in this regard.

Fluvial Geomorphology

- 13.10.7 The route options with the lowest potential impact on geomorphology are those with the minimum number of in-channel works and that cross the minimum number of SWFs with medium or high sensitivity.
- 13.10.8 Table 13.37 provides a summary of the potential impacts of Moderate significance of above in relation to fluvial geomorphology for construction and operation.

Table 13.37: Summary of potential construction and operational impacts on fluvial geomorphology (Inverness to Gollanfield)

Significance	Option							
	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Large	2	2	2	2	2	2	2	2
Moderate	6	10	6	10	4	6	4	6
Total	8	12	8	12	6	8	6	8

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- 13.10.9 During construction and operation, all route options are expected to have a potential impact of Large significance on SWF 05 (Tributary of Cairnlaw Burn (2)) and potential impacts of Moderate significance on SWF 03 (Cairnlaw Burn) and SWF 14 (Unnamed Burn – Castle Stuart to source (Tornagrain)).
- 13.10.10 The route options that involve the variant at Morayston (Options 1A (MV), 1B (MV), 1C (MV) and 1D (MV)) are generally expected to have the greatest overall potential impacts on fluvial geomorphology. This is mainly due to the construction of a culvert for SWF 12 (Rough Burn), which has medium sensitivity, as opposed to a bridge in Options 1A, 1B, 1C and 1D.
- 13.10.11 Overall, Options 1A (MV) and 1B (MV) are expected to have the greatest geomorphological potential impacts. This is due to these route options having the largest number of in-channel works compared with the other routes options. Options 1C and 1D are expected to have the least geomorphological potential impacts, with construction and operational impacts that are common to all and no other significant potential impacts over and above these. These options also have the least number of in-channel works.
- 13.10.12 With appropriate mitigation, some of the construction impacts may be reduced to the level of significance below what they are currently assigned. However, most of the geomorphological impacts are unavoidable due to the need for the introduction of artificial material within the channel or realignment of the channel, which will alter the natural fluvial processes, sediment regime and channel morphology. Appropriate mitigation as set out in Section 13.9 (Potential Mitigation) would include consultation with a geomorphologist, which may enable the magnitude of potential impacts to be minimised. In some cases this may reduce the significance of impacts to the level below what they are currently assigned, but mostly the significance of these impacts would remain the same with or without mitigation. In some cases, channel realignment can be an opportunity to improve geomorphology of the SWF, particularly if it has previously undergone high impact realignment.
- 13.10.13 There are no relevant planning policies for fluvial geomorphology.

Water Quality

- 13.10.14 Tables 13.38 and 13.39 provide an overall summary of the potential impacts of Moderate significance or above in relation to water quality during construction and operation.
- 13.10.15 For all route options, the greatest number of potential impacts of Large and Moderate significance would occur during construction, as a result of the likely construction activities impacting more SWFs than the operational activities.
- 13.10.16 Table 13.38 provides a summary of the potential impacts of Moderate or above significance for construction. This combines the impacts for all water quality attributes (water quality/supply, dilution and removal of waste products and biodiversity). Please note that impacts on groundwater are not included in Table 13.38.

Table 13.38: Summary of potential impacts on water quality during construction (Inverness to Gollanfield)

Significance	Option							
	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Large	31	36	31	36	33	39	33	38
Moderate	8	6	11	9	11	9	14	12
Total	39	42	42	45	44	48	47	50

- 13.10.17 During construction there are 31 potential impacts of Large significance and five of Moderate significance common to all route options for twelve SWFs. These impacts are common to all

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route options because all would require similar works within these SWFs (e.g. some form of in-channel work). There are also potential impacts on groundwater of Large significance common to all route options.

- 13.10.18 Options 1C (MV) and 1D (MV) are expected to have the greatest number of potential construction impacts of Large significance, with Option 1D (MV) expected to have the greatest number of potential impacts which are of Moderate or above significance. These potential impacts are mainly due to these route options involving in-channel works within the greatest number of SWFs.
- 13.10.19 Options 1A and 1B are expected to have the least number of potential construction impacts of Large significance, with Option 1A expected to have the least number of potential impacts which are of Moderate or above significance. These potential impacts are mainly due to these route options involving in-channel works within the fewest number of SWFs.
- 13.10.20 Potential impacts during construction would be short-term and, with appropriate mitigation in place, the magnitude of impact arising from the construction of the carriageway on water quality attributes is expected to be reduced to a residual magnitude of minor adverse (or less) for all route options. Impacts with minor adverse magnitude can vary in significance from Neutral to Large, depending upon the sensitivity of the SWF. However, as additional mitigation can be put in place where required, it is expected that residual adverse construction impacts of Moderate to Large significance could be avoided for all route options.
- 13.10.21 Table 13.39 provides a summary of the potential impacts of Moderate or above significance during operation.

Table 13.39: Summary of potential impacts on water quality during operation (Inverness to Gollanfield)

Significance	Option							
	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Large	23	23	25	25	23	23	25	25
Moderate	1	1	2	2	1	1	2	2
Total	24	24	27	27	24	24	27	27

- 13.10.22 During operation there are 20 potential impacts of Large significance on water quality for seven SWFs common to all the route options. These impacts are common to all route options because all would involve direct discharges of road runoff into these SWFs.
- 13.10.23 Options 1B, 1B (MV), 1D and 1D (MV) are expected to have the greatest number of potential impacts of Large significance, and the largest number of potential impacts which are of Moderate or above significance. These impacts would result from discharges of routine road runoff into the greatest number of SWFs, of which some are the most sensitive SWFs (water quality attributes of medium importance/sensitivity or above).
- 13.10.24 Options 1A, 1A (MV), 1C and 1C (MV) are expected to have the least number of potential impacts of Large significance and least number of overall potential impacts of Moderate or above significance. This is due to these options discharging into the lowest number of SWFs.
- 13.10.25 With the adoption of appropriate treatment measures, the magnitude of impact arising during operation (from the discharge of routine road runoff into receiving SWFs) would be reduced from those presented above. The magnitude of these impacts will vary dependent on the impermeable area draining to the SWF, the dilution capacity of the receiving SWF and the sensitivity/importance of that SWF. However, as the drainage design will need to be appropriate to the particular characteristics of the area drained and the receiving SWF, it is

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expected that adverse residual impacts of Moderate to Large significance could be avoided for all route options.

- 13.10.26 In relation to compliance with planning policies, with appropriate mitigation as detailed in Section 13.9 (Potential Mitigation), it is expected that all of the route options would comply with SPP and Policy 28 (Sustainable Design), Policy 30 (Development Constraints), Policy 63 (Water Environment) and Policy 72 (Pollution) of the HwLDP.

Nairn Bypass

Hydrology and Flood Risk

- 13.10.27 Table 13.40 provides a summary of the potential impacts of Moderate significance or above for hydrology and flood risk in relation to construction and operation.

Table 13.40: Summary of potential construction and operational impacts on hydrology and flood risk (Nairn Bypass)

Significance	Option								
	2A	2B	2C	2D	2E	2F	2G	2H	2I
Very Large	2	2	2	2	-	-	-	-	-
Large	3	3	1	1	5	5	3	5	3
Moderate	1	3	5	5	1	3	5	1	5
Total	6	8	8	8	6	8	8	6	8

- 13.10.28 All the route options would have potential impacts of Large significance on SWF 23 (River Nairn) during construction. This reduces to a potential impact of Moderate significance during operation. Given the nature of the river and crossing location, detailed consideration of the design and construction techniques will offer opportunities to reduce the significance of impact.
- 13.10.29 One of the main differences between the route options relates to the route option alignments through the floodplain of SWF 22 (Alton Burn) which gives rise to potential impacts of Very Large significance for Options 2A, 2B, 2C and 2D and potential impacts of Large significance for Options 2E, 2F, 2G, 2H and 2I. Mitigation such as permeable fill or flood culverts in the embankment could reduce the significance of impacts for Options 2A, 2B, 2C and 2D to at least Moderate significance during operation, although the construction impacts may be more difficult to reduce. However, it is likely that lower residual impacts would be achieved with less mitigation effort with Options 2E, 2F, 2G, 2H and 2I for both construction and operation. These could potentially be reduced to residual impacts of Slight significance.
- 13.10.30 There are also differences between the route options in their impacts on SWF 26 (Auldearn Burn). Options 2A, 2B, 2E, 2F and 2H have potential impacts of Large significance on this SWF and this is mainly due to the construction of the Nairn East Junction in the floodplain. Options 2C, 2D, 2G and 2I would have potential impacts of Moderate significance on this SWF and this is mainly due to the crossing of the floodplain on embankment and with culverts. Compensatory flood storage is likely to be required in all cases, but to a greater extent in Options 2A, 2B, 2E, 2F and 2H as the junction area would encroach on the floodplain to a greater degree than the embankments. Mitigation such as permeable fill or flood culverts in the embankment could reduce the significance of impact for Options 2C, 2D, 2G and 2I to a residual significance of Slight. At this stage the residual impacts for Options 2A, 2B, 2E, 2F and 2H cannot be determined, and it is expected that the location of compensatory flood storage may prove difficult in this area.
- 13.10.31 In relation to compliance with planning policies, with appropriate mitigation as outlined in Section 13.9 (Potential Mitigation), it is expected that all the route options would comply with Policy 30 (Physical Constraints), Policy 64 (Flood Risk) and Policy 66 (Surface Water Drainage) of the HwLDP. Although this may be more difficult for Options 2A, 2B, 2E, 2F and

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2H in relation to the flood risk impacts on SWF 26 due to the construction of the Nairn East junction. Due to the construction of new culverts is likely that all route option would conflict with SPP in this regard.

Fluvial Geomorphology

- 13.10.32 The route options with the lowest potential impact on fluvial geomorphology are those with the minimum number of in-channel works and that cross the minimum number of SWFs with medium or high sensitivity.
- 13.10.33 Table 13.41 provides an overall summary of the potential impacts of Moderate significance or above for fluvial geomorphology during construction and operation.

Table 13.41: Summary of potential fluvial geomorphology impacts (Nairn Bypass)

Significance	Option								
	2A	2B	2C	2D	2E	2F	2G	2H	2I
Large	2	-	2	2	2	-	2	2	2
Moderate	1	3	5	3	3	5	7	5	5
Total	3	3	7	5	5	5	9	7	7

- 13.10.34 All route options would have potential impacts of Moderate significance on SWF 23 (River Nairn). These potential impacts occur during construction and relate to the construction of a bridge across this SWF combined with its very high geomorphological sensitivity.
- 13.10.35 Options 2A, 2C, 2D, 2E, 2G, 2H and 2I result in potential impacts of Large significance during construction and operation on SWF 26 (Auldearn Burn); the greatest impact on a single SWF of the Nairn Bypass. This is because these route options have the greatest number of in-channel works (e.g. culverts and/or realignments) proposed on this SWF and the medium sensitivity of the SWF.
- 13.10.36 Overall, Option 2G has the greatest number of potential impacts that are Moderate or above significance. This is closely followed by Options 2C, 2H and 2I. Options 2A and 2B have the least number of potential impacts that are Moderate or above significance, closely followed by Options 2D, 2E and 2F.
- 13.10.37 With appropriate mitigation, some of the construction impacts may be reduced to the level of significance below what they are currently assigned. However, most of the geomorphological impacts are unavoidable due to the need for the introduction of artificial material within the channel or realignment of the channel, which will alter the natural fluvial processes, sediment regime and channel morphology. Appropriate mitigation as set out in Section 13.9 (Potential Mitigation) would include consultation with a geomorphologist, which may enable the magnitude of potential impacts to be minimised. In some cases this may reduce the significance of impacts to the level below what they are currently assigned, but mostly the significance of these impacts would remain the same with or without mitigation. In some cases, channel realignment can be an opportunity to improve geomorphology of the SWF, particularly if it has previously undergone high impact realignment.
- 13.10.38 There are no relevant planning policies for fluvial geomorphology.

Water Quality

- 13.10.39 Tables 13.42 and 13.43 provide an overall summary of the potential impacts of Moderate or above significance in relation to water quality during construction and operation.
- 13.10.40 For all route options, the greatest number of potential impacts of Very Large, Large and Moderate significance on water quality attributes would occur during construction, as a result of the likely construction activities impacting more SWFs than the operational activities.

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- 13.10.41 Table 13.42 provides a summary of the potential impacts of Moderate or above significance on SWFs for construction. This combines the potential impacts for all water quality attributes (water quality/supply, dilution and removal of waste products and biodiversity). Please note the potential impacts on groundwater are not included in the table.

Table 13.42: Summary of potential impacts on water quality during construction (Nairn Bypass)

Significance	Option								
	2A	2B	2C	2D	2E	2F	2G	2H	2I
Very Large	3	3	3	3	3	3	3	3	3
Large	12	17	19	19	10	15	17	12	17
Moderate	5	6	10	12	2	3	7	3	9
Total	20	26	32	34	15	21	27	18	29

- 13.10.42 All route options would have three potential impacts during construction of Very Large significance on the water quality attribute biodiversity. This is because all of the route options would involve in-channel construction works that would impact SWF 23 (River Nairn), SWF 24 (Tributary of the River Nairn) and SWF 26 (Auldearn Burn) and all have a very high sensitivity in relation to biodiversity. There is also a potential impact common to all route options on groundwater of Large significance.
- 13.10.43 Options 2C and 2D would have the greatest number of potential impacts during construction of Large significance, with Option 2D expected to have the greatest number of potential impacts which are Moderate or above significance. These potential impacts are mainly due to these route options involving in-channel works within the greatest number of SWFs.
- 13.10.44 Option 2E is expected to have the least number of potential impacts during construction of Large significance and the least number of impacts of Moderate or above significance. This is principally because this route option would require in-channel works within the lowest number of SWFs.
- 13.10.45 Potential impacts during construction would be short-term and, with appropriate mitigation in place, the magnitude of impact arising from the construction of the carriageway on water quality attributes is expected to be reduced to a residual magnitude of minor adverse (or less) for all route options. Impacts with minor adverse magnitude can vary in significance from neutral to large, depending upon the sensitivity of the SWF. However, as additional mitigation can be put in place where required, it is expected that residual adverse construction impacts of Moderate to Large significance could be avoided for all route options.
- 13.10.46 Table 13.43 provides a summary of the potential impacts of Moderate or above significance during operation.

Table 13.43: Summary of potential impacts on water quality during operation (Nairn Bypass)

Significance	Option								
	2A	2B	2C	2D	2E	2F	2G	2H	2I
Very Large	3	3	3	3	3	3	3	3	3
Large	10	13	13	13	10	13	13	10	13
Moderate	2	2	2	2	2	2	2	2	2
Total	15	18	18	18	15	18	18	15	18

- 13.10.47 All route options would have three potential impacts of Very Large significance during operation on the water quality attribute biodiversity. This is because all of the route options would involve operational discharges of routine runoff that would affect SWF 23 (River Nairn), SWF 24 (Tributary of the River Nairn) and SWF 26 (Auldearn Burn) and all have a very high sensitivity in relation to biodiversity.

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- 13.10.48 Options 2B, 2C, 2D, 2F, 2G and 2I would all share the greatest number of potential impacts of Large significance and the greatest number of potential impacts of Moderate or above significance. These potential impacts are mainly due to these route options involving operational discharges to the greatest number of SWFs.
- 13.10.49 Options 2A, 2E and 2H are expected to have the least number of potential impacts on water quality of Large significance, with the least number of potential impacts of Moderate or above significance. This is due to these route options involving operational discharges into the lowest number of SWFs.
- 13.10.50 With the adoption of appropriate treatment measures, the magnitude of impact arising during operation (from the discharge of routine road runoff into receiving SWFs) would be reduced from those presented above. The magnitude of these impacts will vary dependent on the impermeable area draining to the SWF, the dilution capacity of the receiving SWF and the sensitivity/importance of that SWF. However, as the drainage design will need to be appropriate to the particular characteristics of the area drained and the receiving SWF, it is expected that adverse residual impacts of Moderate to Large significance could be avoided for all route options.
- 13.10.51 In relation to compliance with planning policies, with appropriate mitigation as detailed in Section 13.9 (Potential Mitigation), it is expected that all of the route options would comply with SPP and Policy 28 (Sustainable Design), Policy 30 (Development Constraints), Policy 63 (Water Environment) and Policy 72 (Pollution) of the HwLDP.

13.11 Scope of DMRB Stage 3 Assessment

Hydrology and Flood Risk

- 13.11.1 The DMRB Stage 3 Assessment should consist of a full quantitative assessment of the preferred option in accordance with Methods E and F in section 5 of HD45/09.
- 13.11.2 This should include hydrological and hydraulic modelling which would require detailed topographic surveys of all watercourses crossed by the route, both upstream and downstream, including extension to any key features where flood impacts may propagate. In the case of SWF 23 (River Nairn) this may require consideration of tidal effects. Local flow gauging may be required to understand the characteristics of the smaller watercourses which are likely to be markedly different from the main River Nairn, which is gauged. Target areas for the provision of compensatory flood storage should be identified at an early stage for inclusion in the modelling.

Fluvial Geomorphology

- 13.11.3 As HD45/09 does not outline a specific methodology to enable the geomorphological impacts to be evaluated, and there are no Interim Advice Notes on the subject, the assessment should follow industry-accepted standards. The methodology adopted would be similar to that found within this DMRB Stage 2 Assessment, which was developed using the guidelines from Research and Development Programmes of the National Rivers Authority, Environment Agency and SNH (Environment Agency, 1998; and Sear and Newson, 2010)).
- 13.11.4 The DMRB Stage 3 Assessment should involve a further site visit to those watercourses that are expected to be impacted by the preferred option. Typically this would involve a site walkover 500m upstream and downstream of the proposed road crossing point. This would enable geomorphological sensitivities to be assigned with more certainty and will input to future CAR licence applications.
- 13.11.5 For sensitive watercourses, a more detailed geomorphological impact assessment may be required in order to satisfy the requirements of future CAR licence applications. For CAR licence applications, cross sectional and flow data would be required in order to calculate

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stream power. In addition, sediment samples may be required for sensitive watercourses to provide a more accurate indication of stream bed composition. In addition, sediment transport calculations may be required to help inform culvert design in order to dissipate energy and to retain a natural stream-bed composition within the culverted sections.

Water Quality

- 13.11.6 The water quality assessment of the preferred option should be conducted in line with the methodology outlined in section 5 of HD45/09. The assessment should consider pollution impacts from routine runoff to surface waters (and groundwater, if applicable) and spillage risk.
- 13.11.7 Methods A and B of the HAWRAT should be used to calculate whether the proposed option would 'pass' or 'fail' in terms of water quality in the receiving watercourses. The HAWRAT tool applies a number of factors to quantify the risk of pollution from either routine runoff or accidental spillage. The assessment should be based on information about the site, the scheme design and traffic flows. Method C should be used if any discharges to groundwater are proposed. Method D should be used to calculate spillage risk and the associated probability of a serious pollution incident.
- 13.11.8 The criteria outlined in Tables 13.1 and 13.2 (Section 13.2: Approach and Methods) should be employed in conducting the assessment of sensitivity and magnitude. The results of the HAWRAT and spillage risk calculations should be used to help determine the magnitude and significance of the impacts. The assessment should consider the types and extent of construction activities (e.g. crossing points, channel realignments, outfall construction); proximity to watercourses (and requirements for in-channel works); and the relative size of the watercourse in regards to its potential to dilute and disperse contaminants and spillages after mixing. The assessment of the magnitude of operational effects should be informed by the nature of the watercourses proposed to receive road drainage and the dilution or dispersal potential of the watercourse.

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14 Cultural Heritage

14.1 Introduction

- 14.1.1 This chapter presents the results of the cultural heritage assessment for the DMRB Stage 2 Assessment for the route options.
- 14.1.2 The assessment was undertaken based on the guidance provided in DMRB Volume 11, Section 3, Part 2 Cultural Heritage (HA208/07) (The Highways Agency et al., 2007) (hereafter referred to as HA208/07) and considers the impacts of the route options on cultural heritage under the three sub-topics of archaeological remains, historic buildings and the historic landscape. Simple Assessments (as defined in Chapter 5 of HA208/07) were undertaken for all three sub-topics.
- 14.1.3 The assessment is supported by the following appendices which are located within Part 6 (Appendices) of this report:
- Appendix A14.1: Desk-based Survey.
 - Appendix A14.2: Impact Assessment Tables.
- 14.1.4 As described in Part 1 (The Scheme), Chapter 3 (Description of Route Options) of this report, the proposed scheme is divided into two sections; Inverness to Gollanfield and the Nairn Bypass. The information presented in Section 14.2 (Approach and Methods), Section 14.3 (Policies and Plans) and Section 14.9 (Potential Mitigation) is appropriate to both sections. The information presented in Section 14.4 (Baseline Conditions), Sections 14.5 to 14.7 (Impact Assessment), Section 14.8 (Compliance with Policies and Plans) and Section 14.10 (Summary of Route Options) is reported for each section and where appropriate under the headings Inverness to Gollanfield and the Nairn Bypass.
- 14.1.5 Section 14.11 provides details on the proposed scope for the DMRB Stage 3 Assessment and Section 14.12 provides a full list of references that are noted within this chapter.

14.2 Approach and Methods

Scope and Guidance

- 14.2.1 This assessment was undertaken based on the guidance provided by HA208/07. In addition to DMRB guidance, other policy documents and published guidelines taken into account in the preparation of this chapter include:
- Scottish Planning Policy (Scottish Government, 2014) (hereafter referred to as SPP);
 - Planning Advice Note 2/2011: Planning and Archaeology (Scottish Government, 2011b) (hereafter referred to as PAN 2/2011);
 - Scottish Historic Environment Policy (SHEP) (Historic Scotland, 2011) (hereafter referred to as SHEP);
 - Managing Change in the Historic Environment: Setting (Historic Scotland, 2010); and
 - Standard and Guidance for historic environment desk-based assessment (Institute for Archaeologists, 2012).

Study Area

- 14.2.2 For the purposes of this assessment 200m study areas were defined from the outermost edge of each of the route options. These were then combined into the single study area shown on Figures 14.1 to 14.9.

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Baseline Data

- 14.2.3 To obtain information for the cultural heritage baseline the following sources of information were consulted:
- Historic Scotland for information on designated sites comprising World Heritage Sites, Scheduled Monuments, Listed Buildings, Conservation Areas, sites included on the Inventory of Gardens and Designed Landscapes in Scotland, and the Inventory of Historic Battlefields;
 - The Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS);
 - Historic Landscape Assessment undertaken by RCAHMS;
 - The Highland Council's Historic Environment Record (HER);
 - aerial photographs held in the National Collection of Aerial Photography (NCAP) maintained by RCAHMS;
 - published documentary and photographic sources held in the search room of the RCAHMS;
 - historic mapping held by the National Library of Scotland, available online at: <http://maps.nls.uk>;
 - published sources of The Society of Antiquaries of Scotland, available online at: <http://archaeologydataservice.ac.uk/archives/view/psas/index.cfm?CFID=2186613&CFTOKEN=62513300>;
 - documentary and cartographic sources held by the National Archives of Scotland; and
 - Discovery and Excavation in Scotland data available online through the archaeology data service at: <http://archaeologydataservice.ac.uk/archives/view/des/>
- 14.2.4 Further information on these sources can be found in Part 6 (Appendices), Appendix A14.1 (Desk-based Survey) of this report.
- 14.2.5 A site inspection of Auldearn Battlefield was undertaken by Jacobs' archaeologists in October 2013.
- 14.2.6 Consultation was undertaken with both Historic Scotland and The Highland Council, requesting comments on the potential impacts of the route options on cultural heritage assets and in particular the Auldearn Battlefield. Further information on the consultation process is provided in Chapter 7 (Overview of Environmental Assessment) of this report.

Impact Assessment

Sensitivity

- 14.2.7 Based on the guidance provided in HA208/07, cultural heritage was considered under the sub-topics of 'Archaeological Remains', 'Historic Buildings' and 'Historic Landscape'. For all three sub-topics, an assessment of the sensitivity (value) of each heritage asset was undertaken on a six-point scale of Very High, High, Medium, Low, Negligible and Unknown, based on professional judgement and guided by the criteria provided in HA208/07 as presented in Tables 14.1 to 14.3.

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Table 14.1: Criteria to assess the value of archaeological remains, historic buildings and historic landscape types

Value	Criteria
Archaeological Remains	
Very High	World Heritage Sites (including nominated sites). Assets of acknowledged international importance. Assets that can contribute significantly to acknowledged international research objectives.
High	Scheduled Monuments (including proposed sites). Undesignated assets of schedulable quality and importance. Assets that can contribute significantly to acknowledged national research objectives.
Medium	Designated or undesignated assets that contribute to regional research objectives.
Low	Designated and undesignated assets of local importance. Assets compromised by poor preservation and/or poor survival of contextual associations. Assets of limited value, but with potential to contribute to local research objectives.
Negligible	Assets with very little or no surviving archaeological interest.
Unknown	The sensitivity of the site has not been ascertained.
Historic Buildings	
Very High	Structures inscribed as of universal importance as World Heritage Sites. Other buildings of recognised international importance.
High	Scheduled Monuments with standing remains. Category A Listed Buildings. Other listed buildings that can be shown to have exceptional qualities in their fabric or historical associations not adequately reflected in the category. Conservation Areas containing very important buildings. Undesignated structures of clear national importance.
Medium	Category B Listed Buildings. Historic (unlisted) buildings that can be shown to have exceptional qualities in their fabric or historical associations. Conservation Areas containing buildings which contribute significantly to their historic character. Historic Townscape or built-up areas with important historic integrity in their buildings, or built settings (e.g. including street furniture and other structures).
Low	Category C Listed Buildings. Historic (unlisted) buildings of modest quality in their fabric or historical association. Historic Townscape or built-up areas of limited historic integrity in their buildings, or built settings (e.g. including street furniture and other structures).
Negligible	Buildings of no architectural or historical note; buildings of an intrusive character.
Unknown	Buildings with some hidden (i.e. inaccessible) potential for historic significance.
Historic Landscape Types	
Very High	World Heritage Sites inscribed for their historic landscape qualities. Historic landscapes of international value, whether designated or not. Extremely well preserved historic landscapes with exceptional coherence, time-depth, or other critical factors.
High	Designated historic landscapes of outstanding interest. Undesignated landscapes of outstanding interest. Undesignated landscapes of high quality and importance, and of demonstrable national value. Well preserved historic landscapes, exhibiting considerable coherence, time-depth or other critical factors.
Medium	Designated special historic landscapes. Undesignated historic landscapes that would justify special historic landscape designation, landscapes of regional value. Averagely well-preserved historic landscapes with reasonable coherence, time-depth or other critical factors.
Low	Robust undesignated historic landscapes. Historic landscapes with importance to local interest groups. Historic landscapes whose value is limited by poor preservation and/or poor survival of contextual associations.
Negligible	Landscape with little or no significant historical interest.

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- 14.2.8 Scheduled Monuments are by definition of national importance and are protected by law under the Ancient Monuments and Archaeological Areas Act 1979 (as amended by the Historic Environment (Amendment) (Scotland) Act 2011). It is a criminal offence to damage a Scheduled Monument, and Consent must be obtained from the Scottish Ministers before any works affecting a Scheduled Monument may take place.
- 14.2.9 Listed Buildings are protected under the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997 (as amended by the Historic Environment (Amendment) (Scotland) Act 2011), and are recognised to be of special architectural or historic interest. Under the Act, planning authorities are instructed to have special regard to the desirability of preserving a Listed Building, its setting, or any features of special architectural or historic interest which it possesses (Planning (Listed Buildings and Conservation Areas) Act 1997, Section 66(1)). Designation as a Listed Building confers additional controls over demolition and alteration through the requirement for Listed Building Consent to be gained before undertaking alteration or demolition.
- 14.2.10 The Historic Environment (Amendment) (Scotland) Act (2011) made it a statutory duty for Historic Scotland to compile and maintain an Inventory of Historic Battlefields on behalf of Scottish Ministers. While listing on the Inventory does not confer statutory designation on an Historic Battlefield, protection is provided under schedule 5 paragraph 5(5) of The Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013, whereby local authorities are required to consult Historic Scotland on development proposals (other than householder development) which may affect a historic battlefield.
- 14.2.11 In accordance with the guidance provided by Managing Change in the Historic Environment: Setting (Historic Scotland, 2010), a three stage process was undertaken to assess the impact of the route options on the setting of historic assets:
- Stage 1: identify the historic assets that might be affected by the route options.
 - Stage 2: define the setting of historic assets by establishing how the surroundings contribute to the ways in which the historic structure is understood, appreciated and experienced.
 - Stage 3: assess how the route options would affect upon that setting.

Magnitude of Impact

- 14.2.12 Magnitude of impact is the degree of change that would be experienced by an asset as a result of the route options, in comparison to the baseline. Magnitude of impact is assessed without reference to the value of the receptor, and may include physical impacts upon the asset, or impacts upon its setting or amenity value.
- 14.2.13 Assessment of magnitude without mitigation was based on professional judgement informed by the methodology and criteria provided by HA208/07 for archaeological remains, historic buildings and the historic landscape. This is set out in Table 14.2.

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Table 14.2: Magnitude of impact on cultural heritage assets

Magnitude	Criteria
Major	Change to most or all key archaeological materials, such that the resource is totally altered. Change to key historic building elements, such that the resource is totally altered. Change to most or all key historic landscape elements, parcels or components; extreme visual effects; gross change of noise or change to sound quality; fundamental changes to use or access; resulting in total change to historic landscape character unit. Comprehensive changes to setting.
Moderate	Changes to many key archaeological materials, such that the resource is clearly modified. Change to many key historic building elements, such that the resource is significantly modified. Changes to some key historic landscape elements, parcels or components, visual change to many key aspects of the historic landscape, noticeable differences in noise or sound quality, considerable changes to use or access; resulting in moderate changes to historic landscape character. Considerable changes to setting that affect the character of the asset.
Minor	Changes to key archaeological materials, such that the asset is slightly altered. Change to key historic building elements, such that the asset is slightly different. Changes to few key historic landscape elements, parcels or components, slight visual changes to few key aspects of historic landscape, limited changes to noise levels or sound quality; slight changes to use or access; resulting in limited changes to historic landscape character. Slight changes to setting.
Negligible	Very minor changes to archaeological materials or setting. Slight changes to historic buildings elements or setting that hardly affect it. Very minor changes to key historic landscape elements, parcels or components, virtually unchanged visual effects, very slight changes in noise levels or sound quality; very slight changes to use or access; resulting in a very small change to historic landscape character.
No Change	No change to elements, parcels or components; no visual or audible changes; no changes arising from amenity or community factors.

Significance of Impact

- 14.2.14 For all three sub-topics, in determining the significance of impact the value of the asset and the magnitude of impact were considered. This is achieved using professional judgment and informed by the matrix illustrated in Table 14.3. Five levels of significance of impact (Very Large, Large, Moderate, Slight or Neutral) are defined which apply equally to adverse and beneficial impacts.

Table 14.3: Matrix for determination of impact significance

Sensitivity \ Magnitude	Very High	High	Medium	Low	Negligible
Major	Very Large	Large/ Very Large	Moderate/ Large	Slight/ Moderate	Slight
Moderate	Large/ Very Large	Moderate/ Large	Moderate	Slight	Neutral/ Slight
Minor	Moderate/ Large	Moderate/ Slight	Slight	Neutral/ Slight	Neutral/ Slight
Negligible	Slight	Slight	Neutral/ Slight	Neutral/ Slight	Neutral
No Change	Neutral	Neutral	Neutral	Neutral	Neutral

Mitigation

- 14.2.15 Potential mitigation to reduce the impacts has been considered during this assessment and these are discussed in Section 14.9 (Potential Mitigation) and taken into account in Section 14.10 (Summary of Route Options) when discussing the potential residual impacts and whether proposed mitigation could result in a reduction in significance of impacts.

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Limitations to Assessment

- 14.2.16 This assessment is primarily desk-based using digital information available from Historic Scotland and the HER, maps, aerial photography and data gathered during a site visit to the Auldearn Battlefield.
- 14.2.17 Walkover surveys of the route options and non-intrusive or intrusive archaeological investigations have not been undertaken, apart from an initial site visit to the Auldearn Battlefield in October 2013. However, the information available from the desk-based assessment and the initial site visit to the Auldearn Battlefield is considered sufficient for the purposes of undertaking a DMRB Stage 2 Assessment.

14.3 Policies and Plans

- 14.3.1 The national, regional and local planning policies and guidance relevant to cultural heritage are identified below. An assessment of the compliance of the route options in relation to these policies is provided in Section 14.8 (Compliance with Policies and Plans).

National Planning Policy and Guidance

- 14.3.2 National planning policy on a variety of themes is contained within SPP (Scottish Government, 2014). In terms of the impact of proposals on cultural heritage, SPP is focussed on:
- promoting the care and protection of the designated and non-designated historic environment; and
 - enabling positive change in the historic environment which is informed by a clear understanding of the importance of the heritage assets affected and ensuring their future use.
- 14.3.3 Historic Scotland's, SHEP (Historic Scotland, 2011) and the Managing Change in the Historic Environment Guidance Note series (various publication dates), set out Scottish Ministers' policies for the historic environment and provide a framework that informs the work of a range of organisations that have a role and interest in managing the historic environment. A summary of these documents is provided in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.
- 14.3.4 Circulars and PANs published by the Scottish Government provide further guidance on specific topics. PAN 2/2011 (refer to Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report) is of relevance to cultural heritage assessments.

Regional and Local Planning Policy and Guidance

- 14.3.5 The Highland-wide Local Development Plan (HwLDP) (The Highland Council, 2012) (hereafter referred to as HwLDP) is the land-use Plan which will guide the development and investment in the region over the next 20 years. The relevant policies in relation to cultural heritage assets include:
- Policy 28: Sustainable Design; and
 - Policy 57: Natural, Built and Cultural Heritage.
- 14.3.6 The HwLDP has a number of supporting supplementary guidance notes, and those of relevance to cultural heritage assets include:
- Sustainable Design Guide: Supplementary Guidance (adopted January 2013) (The Highland Council, 2013c); and

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- Highland Historic Environment Strategy and Supplementary Guidance (adopted January 2013) (The Highland Council, 2013ab).

14.3.7 The details of these policies and guidance are summarised in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.

Review of Planning Policies

14.3.8 The key aspects of the relevant planning policies are discussed below in relation to their relevance to cultural heritage assets.

14.3.9 SPP highlights that the historic environment is a key cultural and economic asset and should be seen as integral to creating successful places. It also acknowledges that the historic environment can accommodate change which is informed by a clear understanding of the importance of the heritage assets affected. However, any change should be sensitively managed to avoid or minimise adverse impacts. SPP contains a number of policies relating to various aspects of the historic environment. Those relating to Listed buildings, Scheduled Monuments and undesignated assets include:

- Listed buildings: SPP requires planning authorities to have special regard to the desirability of preserving Listed Buildings and their setting, or any features of special architectural or historic interest which it possesses. Accordingly, there is a presumption against works that will adversely affect a Listed Building or its setting.
- Schedule Monuments: SPP states that development which will have adverse effects on a Scheduled Monument, or the integrity of its setting, would not be permitted unless there are exceptional circumstances.
- Undesignated assets: SPP seeks to protect and preserve as far as possible undesignated historic assets including historic landscapes, routes such as drove roads and battlefields which do not have statutory protection.

14.3.10 In relation to preserving the above cultural heritage assets, SPP states that these sites should be protected and preserved in-situ where feasible. Where it is not possible to preserve archaeological assets in-situ, appropriate excavation, recording, analysis, publication and archiving would be required to be undertaken before or during development.

14.3.11 The policies outlined in SPP are supported by a number of policies in the HwLDP. Policy 28 (Sustainable Design) of the HwLDP requires development to be designed with sustainability in mind. As such, developments will be assessed on a number of criteria including the extent to which they impact on designated areas of cultural heritage assets. Developments which are judged to be significantly detrimental in terms of these criteria will not accord with the HwLDP, except where no reasonable alternative exists, if there is demonstrable overriding strategic benefit or if satisfactory mitigation is incorporated. All development proposals must demonstrate compatibility with the Sustainable Design Guide: Supplementary Guidance (The Highland Council, 2013b), which requires developments to conserve and enhance the character of the Highland area and minimise the environmental impact of development.

14.3.12 Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP allows development that has the potential to impact on features of local/regional importance if it can be demonstrated that it will not have an unacceptable impact on the natural environment, amenity and heritage resource. In relation to cultural heritage assets, features of local/regional importance include the following designated assets; Category B and C Listed Buildings, Archaeological Heritage Areas, Conservation Areas and undesignated historic assets identified on the Sites and Monuments Record.

14.3.13 The Highland Historic Environment Strategy and Supplementary Guidance (The Highland Council, 2013ab) provides further information in regard to undesignated archaeological sites

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and states that where possible, archaeological sites and their settings should be understood and protected from harmful development. Where there is potential for an asset or its setting to be lost, the guidance states that consideration should be given to its significance and to the means available to preserve, record and interpret it in line with national policy (refer to paragraph 14.3.9 and 14.3.10).

- 14.3.14 Policy 57 (Natural, Built and Cultural Heritage) also outlines that for features of national importance, development will only be allowed if they can be shown not to compromise the natural environment, amenity and heritage resource. Where there will be significant adverse effects, these must be clearly outweighed by social or economic benefits of national importance. Features of national importance in relation to cultural heritage assets include Category A Listed Buildings, Scheduled Monuments, Inventoried Gardens and Designed Landscapes and Historic Battlefields.

14.4 Baseline Conditions

- 14.4.1 Detailed baseline information is provided in Part 6 (Appendices), Appendix A14.1 (Desk-based Survey) of this report. A summary of the assessed sensitivity of archaeological remains and historic buildings for both the Inverness to Gollanfield and the Nairn Bypass section is provided below. As it is similar for both sections, the historic landscape baseline is described collectively. The location of all cultural heritage assets is shown on Figures 14.1 to 14.9.

Inverness to Gollanfield

Archaeological Remains and Historic Buildings

- 14.4.2 A total of 135 archaeological remains and/or historic buildings have been identified within the study area for this section. Of these, 114 assets are undesignated. Table 14.4 provides a breakdown of the remaining 21 assets by their designation.

Table 14.4: Designated archaeological remains and historic buildings (Inverness to Gollanfield)

Designation	Asset No	Total
Scheduled Monument	43, 59, 67, 68, 74, 76, 85, 100,106, 136, 163, 242, 244, 250, 251, 255 and 264	17
Category B Listed Building	61 and 217	2
Category C Listed Building	138 and 139	2

- 14.4.3 Out of the 135 archaeological remains and/or historic buildings 22 have been assessed to be of high sensitivity. Of these, 17 are Scheduled Monuments. The remaining five assets are undesignated and are cropmark sites revealed by aerial photography, comprising of three unenclosed settlements (Assets 103, 109 and 239), a palisaded enclosure (Asset 69) and a timber hall (Asset 110). These assets have been assessed to be of high value due to their potential to contribute to our understanding of prehistoric settlement in the north of Scotland.
- 14.4.4 A total of 39 archaeological remains/historic buildings have been assessed to be of medium sensitivity. Of these, Allanfearn Farmhouse (Asset 61) and Seafeld of Raigmore (Asset 217) are Category B Listed Buildings. The remaining 37 assets are undesignated.
- 14.4.5 A total of 37 archaeological remains/historic buildings have been assessed to be of low sensitivity. Of these, Tornagrain Manse Farmstead and steading (Asset 138) and Tornagrain Old Manse (Asset 139) are Category C Listed Buildings. The remaining 34 assets are undesignated.
- 14.4.6 The remaining 37 assets are all undesignated and have been assessed to be of negligible sensitivity.

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14.4.7 Based on the concentration of known assets, a number of which date to the prehistoric period, the potential of the study area for unknown archaeological remains has been assessed to be high.

Nairn Bypass

Archaeological Remains and Historic Buildings

14.4.8 A total of 159 archaeological remains and/or historic buildings have been identified within the study area. Of these, 133 are undesignated. Table 14.5 provides a breakdown of the remaining 26 assets by their designation.

Table 14.5: Designated archaeological remains and historic buildings (Nairn Bypass)

Designation	Asset Number	Total
Scheduled Monument	177, 198, 314, 340 380 and 388	6
Category A Listed Building	328	1
Category B Listed Building	186, 187, 189, 277, 313, 329, 330, 331, 332, 333, 335, 337, 338, 341 and 376.	15
Category C Listed Building	296, 297, 349 and 357	4

14.4.9 A total of 15 archaeological remains and/or historic buildings have been assessed to be of high sensitivity. Of these, seven are designated assets and include six Scheduled Monuments, of which one, Auldearn Old Parish Church (Asset 340), is also designated as a Category B Listed Building, and one Category A Listed building the Boath House (Asset 328). The eight remaining assets of high sensitivity are undesignated and comprise of the following:

- one historic building Balblair House (Asset 421);
- three unenclosed settlements of which two are revealed by aerial photography (Assets 222 and 283) and one by archaeological evaluation (Asset 369);
- one mortuary enclosure (Asset 204);
- one possible henge (Asset 205);
- one possible fort (Asset 287); and
- the site of burials from the Battle of Auldearn (Asset 309).

14.4.10 These undesignated assets have been assessed to be of high value due to their potential to contribute to our understanding of prehistoric settlement (Assets 222, 283 and 369), prehistoric burial and ceremonial activity (Assets 204 and 205), prehistoric defensive structures (Asset 287) and historical associations (Assets 309 and 421).

14.4.11 A total of 43 archaeological remains and/or historic buildings have been assessed to be of medium sensitivity. Of these, 15 are Category B Listed Buildings with the remaining 28 assets undesignated.

14.4.12 A total of 46 archaeological remains and/or historic buildings have been assessed to be of low sensitivity. Of these four are Category C Listed Buildings; Grigorhill House (Asset 296), Grigorhill Farmstead (Asset 297), Innes Mount School (Asset 349) and Dalmore Former Free Church (Asset 357). The remaining 43 assets are undesignated.

14.4.13 The remaining 55 assets have been assessed to be of negligible sensitivity.

14.4.14 Based on the concentration of known assets, a number of which date to the prehistoric period, the potential of the study area for unknown archaeological remains has been assessed to be high.

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Historic Landscape Types

14.4.15 A total of 25 historic landscape types (HLT) have been identified within the study area. Table 14.6 provides a summary of these along with an assessment of their sensitivity. The locations of the HLTs are shown on Figures 14.1 to 14.9.

Table 14.6: Historic Landscape Types (HLT)

HLT No.	Historic Landscape Type	Sensitivity	Section
HLT 1	Natural Water Area	Negligible	Inverness to Gollanfield
HLT 2	17 th to 19 th Century Policies and Parkland	Medium	Inverness to Gollanfield/ Nairn Bypass
HLT 3	18 th to 19 th Century Rectilinear Fields	Negligible	Inverness to Gollanfield/ Nairn Bypass
HLT 4	18 th to 20 th Century Managed Woodland	Negligible	Inverness to Gollanfield/ Nairn Bypass
HLT 5	18 th to 20 th Century Planned Rectilinear Fields	Negligible	Inverness to Gollanfield/ Nairn Bypass
HLT 6	18 th to 20 th Century Smallholdings	Negligible	Nairn Bypass
HLT 7	19 th Century-Present Amalgamated Field	Negligible	Inverness to Gollanfield/ Nairn Bypass
HLT 8	19 th Century-Present Cultivated Former Parkland	Negligible	Nairn Bypass
HLT 9	19 th Century-Present Industrial and Commercial Area	Negligible	Inverness to Gollanfield/ Nairn Bypass
HLT 10	19 th Century-Present Quarry	Negligible	Inverness to Gollanfield
HLT 11	19 th Century-Present Recreation Area	Negligible	Nairn Bypass
HLT 12	19 th Century- Present Reservoir	Negligible	Nairn Bypass
HLT 13	19 th Century-Present Urban Area	Negligible	Inverness to Gollanfield/ Nairn Bypass
HLT 14	20 th Century Coniferous Plantation	Negligible	Inverness to Gollanfield/ Nairn Bypass
HLT 15	20 th Century-Present Airfield	Low	Inverness to Gollanfield
HLT 16	20 th Century Holdings	Negligible	Inverness to Gollanfield
HLT 17	Late 20 th Century-Present Industrial Scale Farming	Negligible	Inverness to Gollanfield
HLT 18	Late 20 th Century-Present New Field	Negligible	Inverness to Gollanfield/ Nairn Bypass
HLT 19	Late 20 th Century-Present Opencast	Negligible	Nairn Bypass
HLT 20	Late 20 th Century-Present Restored Agricultural Land	Negligible	Inverness to Gollanfield
HLT 21	Late 20 th Century-Present Road	Negligible	Inverness to Gollanfield
HLT 22	Late 20 th Century-Present Woodland Plantation	Negligible	Nairn Bypass
HLT 23	Prehistoric-Present Rough Grazing	Low	Inverness to Gollanfield/ Nairn Bypass
HLT 24	Medieval Urban Core	Medium	Nairn Bypass
HLT 25	Auldearn Battlefield	High	Nairn Bypass

14.4.16 Based on its designation as an Inventory Battlefield, its historical associations with the Earl of Montrose and its potential to contribute to our understanding of the civil war in Scotland through material remains, Auldearn Battlefield (HLT 25) has been assessed to be of high sensitivity. This is the only HLT with high sensitivity.

14.4.17 The Auldearn battlefield comprises of the following:

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- land to the west of the village of Auldearn around the farm of Kinnudie, representing the direction of advance of the Covenanter forces and where they formed up for battle;
- Auldearn village including the parkland of Boath House and Docket Hill, which was the position of the Royalist forces; and
- lands to the south and south-west of Auldearn village including Garlic Hill and Dead Wood, which was the likely direction of the defeated Covenanter's rout.

14.4.18 As described in Table 14.6 there are also two HLTs considered medium sensitivity (HLT 2 (17th to 19th Century Policies and Parkland) and HLT 24 (Medieval Urban Core)). The remaining 22 HLTs are mostly of negligible sensitivity with two being assigned low sensitivity.

14.5 Impact Assessment: Introduction

14.5.1 This section provides an introduction to the impact assessment of the route options within Section 14.6 (Impact Assessment: Inverness to Gollanfield) and Section 14.7 (Impact Assessment: Nairn Bypass).

14.5.2 The potential impacts detailed in Section 14.6 and 14.7 are reported in line with the following:

- Potential impacts represent those which could result from the construction or operation of the route options.
- Potential impacts are described without mitigation, and therefore represent a worst-case scenario. Mitigation to reduce these impacts will be developed for the preferred option during the DMRB Stage 3 Assessment.
- Due to the number of cultural heritage assets potentially impacted by each of the route options, only impacts of Moderate and above significance have been reported. This has been done to highlight the key impacts of route options. Full details of the impacts identified are presented in Part 6 (Appendices), Appendix A14.2 (Impact Assessment Tables) of this report.
- The assessment of impacts includes those that are common to all route options and those that vary between them. The potential impacts that are common to all have been based on the level of significance. This means that although there may be some differences in the activity that will lead to a particular impact, if that impact will be of the same significance regardless of which route option was selected, it is said to be common to all.

14.5.3 To provide context to the impact assessment, an overview of the potential impacts during the construction and operation of road schemes in relation to cultural heritage assets are discussed below.

14.5.4 Potential impacts on cultural heritage assets during construction could include direct physical impacts, whereby there is either partial or full removal of the cultural heritage asset. These could result from, but are not limited to, activities such as topsoil stripping, geotechnical investigations, compound construction and excavations for borrow pits. There are also potential impacts in relation to impacts on setting. These could result from, but are not limited to, activities such as site clearance involving the removal of trees and vegetation and an increase in noise and pollution as a result of traffic management operations.

14.5.5 Potential impacts on cultural heritage assets during operation include impacts on setting. This could include, but are not be limited to, new lighting, visual intrusion by traffic and an increase in noise and pollution.

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14.6 Impact Assessment: Inverness to Gollanfield

14.6.1 This section describes the impacts of Moderate and above significance that are specific to the Inverness to Gollanfield section. Impacts that are common to all route options are discussed, followed by those impacts which are additional to these for each route option.

Impacts Common to all Route Options

14.6.2 This section provides details on the potential impacts of Moderate and above significance which are common to all route options during construction and operation.

14.6.3 None of the route options have an impact of Moderate or above significance on HLTs.

14.6.4 During construction, all of the route options have the potential to have an impact of Large significance on Cairnlaw Possible Barrow (Asset 40) and Brackley Ring Ditch (Asset 164). The impacts on Asset 40 would result from the construction of the Smithton Junction and the impact on Asset 164 would result from the construction of the Brackley Junction and associated local roads. This would result in the complete removal of any archaeological remains associated with these assets.

14.6.5 During operation, all route options are predicted to have an impact of Moderate significance on Cairnlaw buildings (Asset 37).

14.6.6 A summary of the impact assessment is shown in Table 14.7.

Table 14.7: Construction and operation: Potential impacts on cultural heritage assets - common to all route options (Inverness to Gollanfield)

Asset No	Asset Name	Designation	Sensitivity	Magnitude	Significance
Undesignated Assets					
37	Cairnlaw buildings	None	Low	Major	Moderate
40	Cairnlaw Possible Barrow	None	Medium	Major	Large
164	Brackley Ring Ditch	None	Medium	Major	Large

Option 1A

14.6.7 This section presents the potential impacts of Moderate and above significance specific for Option 1A and which are additional to those which are reported as common to all route options (refer to paragraphs 14.6.2 to 14.6.6).

14.6.8 In addition to those impacts identified as common to all route options, six impacts are predicted to result from the construction of Option 1A. The impacts on Assets 70, 91, 104, 105, 107 and 113 would result from the removal, or partial removal of archaeological remains associated with these assets. Four impacts have been assessed to be of Large significance and two of Moderate significance.

14.6.9 The construction and operation of Newton Junction A would introduce a significant new visual element in views to the south and south-west of Newton of Petty Ring Cairn (Asset 106), which is a Scheduled Monument. The significance of this impact has been assessed to be Moderate significance.

14.6.10 A summary of the impact assessment is shown in Table 14.8.

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Table 14.8: Construction and operation: Potential impacts on cultural heritage assets - additional for Option 1A

Asset No	Asset Name	Designation	Sensitivity	Magnitude	Significance
Designated Assets					
106	Newton of Petty Ring Cairn	Scheduled Monument	High	Moderate	Moderate
Undesignated Assets					
70	Balloch, Allanfearn Enclosure	None	Medium	Major	Large
105	Upper Cullernie Possible Ring Ditch	None	Medium	Major	Large
107	Newton Cropmark	None	Medium	Major	Large
113	Newton Possible Enclosure	None	Medium	Major	Large
91	Lower Cullernie Possible Enclosure	None	Medium	Moderate	Moderate
104	Upper Cullernie Enclosure	None	Medium	Moderate	Moderate

Option 1A (MV)

- 14.6.11 This section presents the potential impacts of Moderate and above significance specific for Option 1A (MV) and which are additional to those which are reported as common to all route options (refer to paragraphs 14.6.2 to 14.6.6).
- 14.6.12 In addition to those impacts identified as common to all route options, four impacts are predicted to result from the construction of Option 1A (MV). The impacts on Assets 70, 91, 113 and 115 would result from the removal, or partial removal of archaeological remains associated with these assets. Three impacts have been assessed to be of Large significance and one of Moderate significance. A summary of the impact assessment is shown in Table 14.9

Table 14.9: Construction: Potential impacts on cultural heritage assets - additional for Option 1A (MV)

Asset No	Asset Name	Designation	Sensitivity	Magnitude	Significance
Undesignated Assets					
70	Balloch Allanfearn Enclosure	None	Medium	Major	Large
113	Newton Possible Enclosure	None	Medium	Major	Large
115	Newton Enclosure	None	Medium	Major	Large
91	Lower Cullernie Possible Enclosure	None	Medium	Moderate	Moderate

- 14.6.13 No operational impacts of Moderate significance or above have been identified.

Option 1B

- 14.6.14 This section presents the potential impacts of Moderate and above significance specific for Option 1B and which are additional to those which are reported as common to all route options (refer to paragraphs 14.6.2 to 14.6.6).
- 14.6.15 In addition to those impacts identified as common to all route options, six impacts are predicted to result from the construction of Option 1B. The impacts on Assets 70, 91, 104, 105, 107 and 113 would result from the removal, or partial removal of archaeological remains associated with these assets. Four impacts have been assessed to be of Large significance and two of Moderate significance.

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14.6.16 The construction and operation of Newton Junction A would introduce a significant new visual element in views to the south and south-west of Newton of Petty Ring Cairn (Asset 106), which is a Scheduled Monument. The significance of this impact has been assessed to be Moderate significance.

14.6.17 A summary of the impact assessment is shown in Table 14.10.

Table 14.10: Construction and operation: Potential impacts on cultural heritage assets - additional for Option 1B

Asset No	Asset Name	Designation	Sensitivity	Magnitude	Significance
Designated Assets					
106	Newton of Petty Ring Cairn	Scheduled Monument	High	Moderate	Moderate
Undesignated Assets					
70	Balloch, Allanfearn Enclosure	None	Medium	Major	Large
105	Upper Cullernie Possible Ring Ditch	None	Medium	Major	Large
107	Newton Cropmark	None	Medium	Major	Large
113	Newton Possible Enclosure	None	Medium	Major	Large
91	Lower Cullernie Possible Enclosure	None	Medium	Moderate	Moderate
104	Upper Cullernie Enclosure	None	Medium	Moderate	Moderate

Option 1B (MV)

14.6.18 This section presents the potential impacts of Moderate and above significance specific for Option 1B (MV) and which are additional to those which are reported as common to all route options (refer to paragraphs 14.6.2 to 14.6.6).

14.6.19 In addition to those impacts identified as common to all route options, four impacts are predicted to result from the construction of Option 1B (MV). The impacts on Assets 70, 91, 113 and 115 would result from the removal, or partial removal of archaeological remains associated with these assets. Three impacts have been assessed to be of Large significance and one of Moderate significance.

14.6.20 The construction and operation of a new local road and the route option alignment on embankment would introduce a significant new visual element in views to the north and west of Morayhill Farmstead (Asset 135). The significance of this impact has been assessed to be Moderate significance.

14.6.21 A summary of the impact assessment is shown in Table 14.11.

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Table 14.11: Construction and operation: Potential impacts on cultural heritage assets - additional for Option 1B (MV)

Asset No	Asset Name	Designation	Sensitivity	Magnitude	Significance
Undesignated Assets					
70	Balloch, Allanfearn Enclosure	None	Medium	Major	Large
113	Newton Possible Enclosure	None	Medium	Major	Large
115	Newton Enclosure	None	Medium	Major	Large
91	Lower Cullernie Possible Enclosure	None	Medium	Moderate	Moderate
135	Morayhill Farmstead	None	Low	Major	Moderate

Option 1C

14.6.22 This section presents the potential impacts of Moderate and above significance specific for Option 1C and which are additional to those which are reported as common to all route options (refer to paragraphs 14.6.2 to 14.6.6).

14.6.23 In addition to those impacts identified as common to all route options, twelve impacts are predicted to result from the construction of Option 1C. The impacts on Assets 75, 96, 97, 98, 99, 100, 101, 103, 104, 105, 108 and 109 would result from the removal, or partial removal of archaeological remains associated with these assets. Nine impacts have been assessed to be of Large significance and three of Moderate significance. Of the Large impacts one is predicted on Lower Cullernie Ring Ditch (Asset 100) designated as a Scheduled Monument. This would be partially removed as a result of construction works associated with the Newton Junction B.

14.6.24 A summary of the impact assessment is shown in Table 14.12.

Table 14.12: Construction: Potential impacts on cultural heritage assets - additional for Option 1C

Asset No	Asset Name	Designation	Sensitivity	Magnitude	Significance
Designated Assets					
100	Lower Cullernie Ring Ditch	Scheduled Monument	High	Major	Large
Undesignated Assets					
96	Upper Cullernie Enclosure	None	Medium	Major	Large
97	Upper Cullernie Ring Ditch	None	Medium	Major	Large
98	Upper Cullernie Ring Ditch	None	Medium	Major	Large
99	Newton Barrow	None	Medium	Major	Large
101	Upper Cullernie Possible Ring Ditches	None	Medium	Major	Large
103	Upper Cullernie Ring Ditches	None	High	Major	Large
104	Upper Cullernie Enclosure	None	Medium	Major	Large
105	Upper Cullernie Possible Ring Ditch	None	Medium	Major	Large
75	Balloch Rig and Furrow, Find Spot	None	Medium	Moderate	Moderate
108	Newton Cropmarks	None	Medium	Moderate	Moderate
109	Newton Unenclosed Settlement	None	High	Moderate	Moderate

14.6.25 No operational impacts of Moderate significance or above have been identified.

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Option 1C (MV)

- 14.6.26 This section presents the potential impacts of Moderate and above significance specific for Option 1C (MV) and which are additional to those which are reported as common to all route options (refer to paragraphs 14.6.2 to 14.6.6).
- 14.6.27 Option 1C (MV) is expected to have the same potential additional impacts as Option 1C (refer to paragraphs 14.6.22 to 14.6.25), with the addition of an impact on Asset 115 (Newton Enclosure). The potential impact on Asset 115 would result from the removal, or partial removal of archaeological remains associated with this asset. This potential impact is assessed to be of Large significance.

Option 1D

- 14.6.28 This section presents the potential impacts of Moderate and above significance specific for Option 1D and which are additional to those which are reported as common to all route options (refer to paragraphs 14.6.2 to 14.6.6).
- 14.6.29 In addition to those impacts identified as common to all route options, twelve impacts are predicted to result from the construction of Option 1D. The impacts on Assets 75, 96, 97, 98, 99, 100, 101, 103, 104, 105, 108 and 109 would result from the removal, or partial removal of archaeological remains associated with these assets. Nine impacts have been assessed to be of Large significance and three of Moderate significance. Of the Large impacts one is predicted on Lower Cullernie Ring Ditch (Asset 100) designated as a Scheduled Monument. This asset would be partially removed as a result of construction works associated with the Newton Junction B.
- 14.6.30 A summary of the impact assessment is shown in Table 14.13.

Table 14.13: Construction: Potential impacts on cultural heritage assets - additional for Option 1D

Asset No	Asset Name	Designation	Sensitivity	Magnitude	Significance
Designated Assets					
100	Lower Cullernie Ring Ditch	Scheduled Monument	High	Major	Large
Undesignated Assets					
96	Upper Cullernie Enclosure	None	Medium	Major	Large
97	Upper Cullernie Ring Ditch	None	Medium	Major	Large
98	Upper Cullernie Ring Ditch	None	Medium	Major	Large
99	Newton Barrow	None	Medium	Major	Large
101	Upper Cullernie Possible Ring Ditches	None	Medium	Major	Large
103	Upper Cullernie Ring Ditches	None	High	Major	Large
104	Upper Cullernie Enclosure	None	Medium	Major	Large
105	Upper Cullernie Possible Ring Ditch	None	Medium	Major	Large
75	Balloch Rig and Furrow, Find Spot	None	Medium	Moderate	Moderate
108	Newton Cropmarks	None	Medium	Moderate	Moderate
109	Newton Unenclosed Settlement	None	High	Moderate	Moderate

- 14.6.31 No operational impacts of Moderate significance or above have been identified.

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Option 1D (MV)

- 14.6.32 This section presents the potential impacts of Moderate and above significance specific for Option 1D (MV) and which are additional to those which are reported as common to all route options (refer to paragraphs 14.6.2 to 14.6.6).
- 14.6.33 Option 1D (MV) is expected to have the same potential additional impacts as Option 1D (refer to paragraphs 14.6.28 to 14.6.31), with the addition of impacts on Asset 115 (Newton Enclosure) and Asset 135 (Morayhill Farmstead). The potential impact on Asset 115 would result from the removal, or partial removal of archaeological remains associated with this asset. This potential impact is assessed to be of Large significance. The construction and operation of a new local road and the route option alignment on embankment would introduce a significant new visual element in views to the north and west of Morayhill Farmstead (Asset 135). The significance of this potential impact has been assessed to be Moderate significance.

14.7 Impact Assessment: Nairn Bypass

- 14.7.1 This section describes the potential impacts of Moderate and above significance that are specific to the Nairn Bypass section. There are no potential impacts which are common to all options during construction and operation. As such all potential impacts are reported against each route option.
- 14.7.2 It should be noted that based on the assessment of desk-based sources, no impact is predicted from the route options on the setting of Boath House (Asset 325), a Category A Listed building. This would be further assessed during the DMRB Stage 3 Assessment when a site visit would be proposed to confirm this level of impact.

Option 2A

- 14.7.3 Three potential impacts are predicted to result from the construction and operation of Option 2A. The potential impact on Auldearn Battlefield (HLT 25), listed on the Inventory of Historic Battlefields, would result from the reinforcement of the existing separation of Boath House from other elements of Auldearn Battlefield such as Dooket Hill, and the land to the west of the village that was the route of the advance of the Covenanter army. The significance of this impact has been assessed to be of Moderate significance.
- 14.7.4 The construction and operation of Nairn East Junction A and associated local roads would introduce a significant new visual element into mainly rural views to the west of Castle of Auldearn (Motte) (Asset 314) which is a Scheduled Monument and Boath Dovecot (Asset 313) which is a Category B Listed Building. The significance of these potential impacts has been assessed to be of Moderate significance.
- 14.7.5 A summary of the impact assessment is shown in Table 14.14.

Table 14.14: Construction and operation: Potential impacts on cultural heritage assets for Option 2A

Asset No	Asset Name	Designation	Sensitivity	Magnitude	Significance
Designated Assets					
313	Boath Dovecot	Category B Listed	Medium	Moderate	Moderate
314	Castle of Auldearn (Motte)	Scheduled Monument	High	Moderate	Moderate
HLT 25	Auldearn Battlefield	Historic Battlefield	High	Moderate	Moderate

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Option 2B

- 14.7.6 Five potential impacts are predicted to result from the construction and operation of Option 2B. The potential impact on Auldearn Battlefield (HLT 25), listed on the Inventory of Historic Battlefields, would result from the reinforcement of the existing separation of Boath House from other elements of Auldearn Battlefield such as Dooket Hill, and the land to the west of the village that was the route of the advance of the Covenanter army. The significance of this potential impact has been assessed to be of Moderate significance.
- 14.7.7 The construction of the route option alignment to the east of Auldearn would result in the partial removal of the Little Penick Enclosure (Asset 380) which is a Scheduled Monument, and the complete removal of Courage Cottage Ring Ditch (Asset 401). These potential impacts are assessed to be of Large significance.
- 14.7.8 The construction and operation of Nairn East Junction A and associated local roads would introduce a significant new visual element into mainly rural views to the west of Castle of Auldearn (Motte) (Asset 314) which is a Scheduled Monument and Boath Dovecot (Asset 313) which is a Category B Listed Building. The significance of these potential impacts has been assessed to be of Moderate significance.
- 14.7.9 A summary of the impact assessment is shown in Table 14.15.

Table 14.15: Construction and operation: Potential impacts on cultural heritage assets for Option 2B

Asset No	Asset Name	Designation	Sensitivity	Magnitude	Significance
Designated Assets					
380	Little Penick Enclosure	Scheduled Monument	High	Major	Large
313	Boath Dovecot	Category B Listed	Medium	Moderate	Moderate
314	Castle of Auldearn (Motte)	Scheduled Monument	High	Moderate	Moderate
HLT 25	Auldearn Battlefield	Historic Battlefield	High	Moderate	Moderate
Undesignated Assets					
401	Courage Cottage Ring Ditch	None	Medium	Major	Large

Option 2C

- 14.7.10 Four potential impacts are predicted to result from the construction of Option 2C. The potential impacts on Assets 345, 380, 401 and 402 would result from the removal, or partial removal of archaeological remains associated with these assets. Two potential impacts have been assessed to be of Large significance and two of Moderate significance. Of the Large impacts one is predicted on Little Penick Enclosure (Asset 380) which is designated as a Scheduled Monument. This would be partially removed through the construction of Nairn East Junction D.
- 14.7.11 A summary of the impact assessment is shown in Table 14.16.

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Table 14.16: Construction: Potential impacts on cultural heritage assets for Option 2C

Asset No	Asset Name	Designation	Sensitivity	Magnitude	Significance
Designated Assets					
380	Little Penick Enclosure	Scheduled Monument	High	Major	Large
Undesignated Assets					
401	Courage Cottage Ring Ditch	None	Medium	Major	Large
345	Newmill Enclosure	None	Medium	Moderate	Moderate
402	Courage Cottage Possible Ring Ditch	None	Medium	Moderate	Moderate

14.7.12 No operational impacts of Moderate significance or above have been identified.

Option 2D

14.7.13 Four potential impacts are predicted to result from the construction of Option 2D. The potential impacts on Assets 288, 380, 401 and 402 would result from the removal, or partial removal of archaeological remains associated with these assets. Three potential impacts have been assessed to be of Large significance and one of Moderate significance. Of the Large impacts, one is predicted on Little Penick Enclosure (Asset 380) which is designated as a Scheduled Monument. This would be partially removed through the construction of Nairn East Junction D.

14.7.14 A summary of the impact assessment is shown in Table 14.17.

Table 14.17: Construction: Potential impacts on cultural heritage assets for Option 2D

Asset No	Asset Name	Designation	Sensitivity	Magnitude	Significance
Designated Assets					
380	Little Penick Enclosure	Scheduled Monument	High	Major	Large
Undesignated Assets					
288	Foynesfield Enclosure	None	Medium	Major	Large
401	Courage Cottage Ring Ditch	None	Medium	Major	Large
402	Courage Cottage Possible Ring Ditch	None	Medium	Moderate	Moderate

14.7.15 No operational impacts of Moderate significance or above have been identified.

Option 2E

14.7.16 Three potential impacts are predicted to result from the construction and operation of Option 2E. The potential impact on Auldearn Battlefield (HLT 25), listed on the Inventory of Historic Battlefields, would result from the reinforcement of the existing separation of Boath House from other elements of Auldearn Battlefield such as Dooket Hill, and the land to the west of the village that was the route of the advance of the Covenanter army. The significance of this potential impact has been assessed to be of Moderate significance.

14.7.17 The construction and operation of Nairn East Junction A and associated local roads would introduce a significant new visual element into mainly rural views to the west of Castle of Auldearn (Motte) (Asset 314) which is a Scheduled Monument and Boath Dovecot (Asset 313) which is a Category B Listed Building. The significance of these potential impacts has been assessed to be of Moderate significance.

14.7.18 A summary of the impact assessment is shown in Table 14.18.

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Table 14.18: Construction and operation: Potential impacts on cultural heritage assets for Option 2E

Asset No	Asset Name	Designation	Sensitivity	Magnitude	Significance
Designated Assets					
313	Boath Dovecot	Category B Listed	Medium	Moderate	Moderate
314	Castle of Auldearn (Motte)	Scheduled Monument	High	Moderate	Moderate
HLT 25	Auldearn Battlefield	Historic Battlefield	High	Moderate	Moderate

Option 2F

- 14.7.19 Five potential impacts are predicted to result from the construction and operation of Option 2F. The potential impact on the Auldearn Battlefield (HLT 25), listed on the Inventory of Historic Battlefields, would result from the reinforcement of the existing separation of Boath House from other elements of Auldearn Battlefield such as Dooket Hill and the land to the west of the village that was the route of the advance of the Covenanter army. The significance of this potential impact has been assessed to be of Moderate significance.
- 14.7.20 The construction of the main route option alignment to the east of Auldearn would result in the partial removal of the Little Penick Enclosure (Asset 380) which is a Scheduled Monument, and the complete removal of Courage Cottage Ring Ditch (Asset 401). These potential impacts are assessed to be of Large significance.
- 14.7.21 The construction and operation of Nairn East Junction B and associated local roads would introduce a significant new visual element into mainly rural views to the west of Castle of Auldearn (Motte) (Asset 314) which is a Scheduled Monument and Boath Dovecot (Asset 313) which is a Category B Listed Building. The significance of these potential impacts has been assessed to be Moderate significance.
- 14.7.22 A summary of the impact assessment is shown in Table 14.19.

Table 14.19: Construction and operation: Potential impacts on cultural heritage assets for Option 2F

Asset No	Asset Name	Designation	Sensitivity	Magnitude	Significance
Designated Assets					
380	Little Penick Enclosure	Scheduled Monument	High	Major	Large
313	Boath Dovecot	Category B Listed	Medium	Moderate	Moderate
314	Castle of Auldearn (Motte)	Scheduled Monument	High	Moderate	Moderate
HLT 25	Auldearn Battlefield	Historic Battlefield	High	Moderate	Moderate
Undesignated Assets					
401	Courage Cottage Ring Ditch	None	Medium	Major	Large

Option 2G

- 14.7.23 Four potential impacts are predicted to result from the construction of Option 2G. The potential impacts on Assets 345, 380, 401 and 402 would result from the removal, or partial removal of archaeological remains associated with these assets. Two potential impacts have been assessed to be of Large significance and two of Moderate significance. Of the Large impacts one is predicted on Little Penick Enclosure (Asset 380) designated as a Scheduled Monument. This asset would be partially removed through the construction of Nairn East Junction D.
- 14.7.24 A summary of the impact assessment is shown in Table 14.20.

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Table 14.20: Construction: Potential impacts on cultural heritage assets for Option 2G

Asset No	Asset Name	Designation	Sensitivity	Magnitude	Significance
Designated Assets					
380	Little Penick Enclosure	Scheduled Monument	High	Major	Large
Undesignated Assets					
401	Courage Cottage Ring Ditch	None	Medium	Major	Large
345	Newmill Enclosure	None	Medium	Moderate	Moderate
402	Courage Cottage Possible Ring Ditch	None	Medium	Moderate	Moderate

14.7.25 No operational impacts of Moderate significance or above have been identified.

Option 2H

14.7.26 Four potential impacts are predicted to result from the construction and operation of Option 2H. The potential impact on the Auldearn Battlefield (HLT 25), listed on the Inventory of Historic Battlefields, would result from the reinforcement of the existing separation of Boath House from other elements of Auldearn Battlefield such as Dooket Hill, and the land to the west of the village that was the route of the advance of the Covenanter army. The significance of this potential impact has been assessed to be Moderate significance.

14.7.27 The potential impact on Kinnudie Possible Enclosure Asset 211 would result from the partial removal of archaeological remains associated with this asset.

14.7.28 The construction and operation of Nairn East Junction C and associated local roads would introduce a significant new visual element into mainly rural views to the west of Castle of Auldearn (Motte) (Asset 314) which is a Scheduled Monument and Boath Dovecot (Asset 313) which is a Category B Listed Building. The significance of these potential impacts has been assessed to be Moderate significance.

14.7.29 A summary of the impact assessment is shown in Table 14.21.

Table 14.21: Construction and operation: Potential impacts on cultural heritage assets for Option 2H

Asset No	Asset Name	Designation	Sensitivity	Magnitude	Significance
Designated Assets					
313	Boath Dovecot	Category B Listed	Medium	Moderate	Moderate
314	Castle of Auldearn (Motte)	Scheduled Monument	High	Moderate	Moderate
HLT 25	Auldearn Battlefield	Historic Battlefield	High	Moderate	Moderate
Undesignated Assets					
211	Kinnudie Possible Enclosure	None	Medium	Moderate	Moderate

Option 2I

14.7.30 Four potential impacts are predicted to result from the construction of Option 2I. The potential impacts on Assets 288, 380, 401 and 402 would result from the removal, or partial removal of archaeological remains associated with these assets. Three potential impacts have been assessed to be of Large significance and one of Moderate significance. Of the Large impacts, one is predicted on Little Penick Enclosure (Asset 380) which is designated as a Scheduled Monument. This would be partially removed through the construction of Nairn-East Junction D.

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14.7.31 A summary of the impact assessment is shown in Table 14.22.

Table 14.22: Construction: Potential impacts on cultural heritage assets for Option 2I

Asset No	Asset Name	Designation	Sensitivity	Magnitude	Significance
Designated Assets					
380	Little Penick Enclosure	Scheduled Monument	High	Major	Large
Undesignated Assets					
288	Foynesfield Enclosure	None	Medium	Major	Large
401	Courage Cottage Ring Ditch	None	Medium	Major	Large
402	Courage Cottage Possible Ring Ditch	None	Medium	Moderate	Moderate

14.7.32 No operational impacts of Moderate significance or above have been identified.

14.8 Compliance with Policies and Plans

14.8.1 An assessment of the compliance of the route options in relation to the policies and plans mentioned in Section 14.3 (Policies and Plans) is presented taking into account potential impacts on Scheduled Monument, Listed Buildings, Historic Battlefields and undesignated assets. The assessment is presented for each section; Inverness to Gollanfield and the Nairn Bypass.

Inverness to Gollanfield

Scheduled Monuments

14.8.2 Options 1A, 1B, 1C, 1C (MV), 1D and 1D (MV) have the potential to conflict with SPP and Policy 28 (Sustainable Design) and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP in relation to their impacts on Scheduled Monuments.

14.8.3 SPP considers that development which will have adverse effects on a Scheduled Monument, or the integrity of its setting, should not be permitted unless there are exceptional circumstances. Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP further supports this and states for features of national importance, which include Scheduled Monuments, that where there will be significant adverse effects, these must be clearly outweighed by social or economic benefits of national importance. Policy 28 (Sustainable Design) of the HwLDP also states that developments which are judged to be significantly detrimental in terms of designated areas of cultural heritage will not accord with the HwLDP, except where no reasonable alternative exists, if there is demonstrable overriding strategic benefit or if satisfactory mitigation is incorporated.

14.8.4 In relation to its national importance and strategic benefits, the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme is included in the Strategic Transport Projects Review (STPR) (Transport Scotland, 2008) which identifies a programme of strategic transport interventions necessary to support the future effective operation of Scotland's transport network. The Infrastructure Investment Plan (Scottish Government, 2011a) also identifies investment in Scotland's transport as a key enabler for enhancing productivity and delivering sustainable growth, and has made a commitment to dual the A96 between Inverness and Aberdeen by 2030. The strategic benefits are also reflected in the HwLDP which states that key transport improvements must be delivered in order to support the development of the A96 corridor.

14.8.5 In line with this, there is scope to consider that as the route options are likely to deliver strategic and social and economic benefits of national importance that the route options would comply with these policies. However, further assessment on the full extent of the

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impacts would be required to conclude whether or not the benefits of strategic and national importance outweigh these adverse impacts.

Undesignated Assets

- 14.8.6 All route options have the potential to conflict with SPP and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP, in relation to their impacts on undesignated assets.
- 14.8.7 SPP seeks to protect and preserve as far as possible undesignated historic assets and should it not be possible to preserve archaeological assets present on site in-situ, appropriate excavation, recording, analysis, publication and archiving will be required before or during development.
- 14.8.8 SPP is supported by Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP and its supplementary guidance which states that archaeological sites and their settings should be understood and protected from harmful development. However, where there is potential for an asset or its setting to be lost, consideration should be given to its significance and to the means available to preserve, record and interpret it in line with national policy (refer to paragraph 14.8.7).
- 14.8.9 In line with this, there is scope to consider that through appropriate mitigation that the route options could comply with SPP and Policy 57 (Natural, Built and Cultural Heritage).

Nairn Bypass

Scheduled Monuments

- 14.8.10 All route options have the potential to conflict with SPP and Policy 28 (Sustainable Design) and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP in relation to their impacts on Scheduled Monuments.
- 14.8.11 The compliance with these policies is the same as for reported for Inverness to Gollanfield (refer to paragraphs 14.8.3 to 14.8.5).

Historic Battlefields

- 14.8.12 Options 2A, 2B, 2E, 2F and 2H have the potential to conflict with SPP and Policy 28 (Sustainable Design) and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP in relation to their Moderate impacts on the Auldearn Battlefield (HLT 25).

Listed Buildings

- 14.8.13 Options 2A, 2B, 2E, 2F and 2H have the potential to conflict with SPP and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP in relation to their potential impact on the setting of Boath Dovecot (Asset 313), a Category B Listed Building.
- 14.8.14 Within both policies there is a presumption against works that will adversely affect a Listed Building or its setting and development would only be allowed if it can be satisfactorily demonstrated that it will not have an unacceptable impact on the Listed Building.

Undesignated Assets

- 14.8.15 The compliance with policies and plans for impacts to undesignated cultural heritage assets is the same as for Inverness to Gollanfield section (refer to paragraphs 14.8.6 to 14.8.9).

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14.9 Potential Mitigation

14.9.1 For a DMRB Stage 2 Assessment the design has not been sufficiently developed to allow mitigation measures to be defined in detail at this stage. The objective of this section is to identify potential mitigation taking into account best practice, legislation and guidance, which would be developed and refined during the DMRB Stage 3 Assessment. As part of DMRB Stage 3, the design of the preferred option would be reviewed and where possible, the preferred option would be further developed (pre-DMRB Stage 3 Assessment mitigation) to minimise impacts on cultural heritage assets.

Construction

14.9.2 The preferred mitigation for cultural heritage assets is to preserve them in-situ. Where this is not possible, the alternative is preservation by record. Preservation by record comprises recording works in advance of or during construction, for example archaeological excavation, watching brief, historic building recording, and the dissemination of the results of these works to provide a permanent record of the impacted cultural heritage asset. This reduces the amount of information that would otherwise be lost.

Operation

14.9.3 During the operational phase, mitigation for the route options could potentially include landscaping to reduce impacts on the setting of cultural heritage assets.

14.10 Summary of Route Options

14.10.1 This section provides a summary of the impact assessment for each section; Inverness to Gollanfield and the Nairn Bypass. As noted above, due to the number of cultural heritage assets potentially impacted, only impacts of Moderate and above significance have been summarised. The summary includes those impacts which are common to all and those that vary between the route options.

14.10.2 A discussion of the potential residual impacts is then presented taking into account the possible mitigation measures outlined in Section 14.9 (Potential Mitigation).

Inverness to Gollanfield

14.10.3 Table 14.23 provides a summary of the potential impacts on cultural heritage assets for the route options within the Inverness to Gollanfield section.

Table 14.23: Summary of potential impacts on cultural heritage assets during construction and operation (Inverness to Gollanfield)

Significance	Asset Designation	Option							
		1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Large	Designated	-	-	-	-	1	1	1	1
	Undesignated	6	5	6	5	10	11	10	11
Moderate	Designated	1	-	1	-	-	-	-	-
	Undesignated	3	2	3	3	4	4	4	5
Total	Designated	1	-	1	-	1	1	1	1
	Undesignated	9	7	9	8	14	15	14	16
Overall Total		10	7	10	8	15	16	15	17

14.10.4 All of the route options are expected to have a potential physical impact of Large significance on the Cairnlaw Possible Barrow (Asset 40) and the Brackley Ring Ditch (Asset 164). These

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potential impacts are due to the construction of the Smithton Junction and the Brackley Junction, respectively and would result in the complete removal of any archaeological remains associated with these assets. All of the route options are expected to have a potential impact of Moderate significance on the setting of Cairnlaw buildings (Asset 37). The Smithton Junction would completely enclose all views from this asset. These are all undesignated assets.

- 14.10.5 In relation to potential impacts on designated assets, Options 1C, 1C (MV), 1D, and 1D (MV) are predicted to have a potential physical impact of Large significance on the Lower Cullernie Ring Ditch Scheduled Monument (Asset 100). This would be partially removed as a result of construction works associated with Newton Junction B. Options 1A and 1B are expected to have a potential impact of Moderate significance on the setting of Newton of Petty Ring Cairn Scheduled Monument (Asset 106) as a result of the construction of Newton Junction A, which would introduce significant visual elements in views to the south and south-west of the asset.
- 14.10.6 It is likely that the identified physical impacts on archaeological remains can be reduced through preservation by record. However based on current information and in the absence of ground truthing through intrusive or non-intrusive investigations, it is unlikely that these potential impacts can be wholly mitigated and as such those routes options with the largest number of unmitigated significant impacts are also likely to have the largest number of significant residual effects. Potential impacts on the setting of cultural heritage assets could be reduced by the use of appropriate landscaping such as grading out of embankments and planting to reduce adverse impacts and to improve integration of the new road and its surroundings.
- 14.10.7 Taking mitigation into account, Options 1C (MV) and 1D (MV) have the largest number of potential impacts of Moderate or above significance and would require Scheduled Monument Consent to enable mitigation of the impact on the Lower Cullernie Ring Ditch Scheduled Monument (Asset 100). Options 1A (MV) and 1B (MV) have the least number of potential impacts of Moderate or above significance and are not expected to have any potential impacts on designated assets.
- 14.10.8 In relation to compliance with planning policies, all route options have the potential to conflict with SPP and Policy 28 (Sustainable Design) and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP in relation to potential impacts on Scheduled Monuments. However, there is scope to consider that as the route options are likely to deliver strategic and social and economic benefits of national importance that there is potential for the route options to comply with these policies. However, further assessment on the full extent of the impacts would be required to conclude whether or not the benefits of national importance outweighed the adverse impacts.
- 14.10.9 All route options also have the potential to conflict with SPP and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP in relation to potential impacts on undesignated assets. However, with appropriate mitigation, such as preservation in-situ or appropriate excavation, recording, analysis, publication and archiving, it is expected that all route options could comply with these policies.

Nairn Bypass

- 14.10.10 Table 14.24 provides a summary of the potential impacts on cultural heritage assets for the route options within the Nairn Bypass.

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Table 14.24: Summary of potential impacts on cultural heritage assets during construction and operation (Nairn Bypass)

Significance	Asset Designation	Option								
		2A	2B	2C	2D	2E	2F	2G	2H	2I
Large	Designated	-	1	1	1	-	1	1	-	1
	Undesignated	-	1	1	2	-	1	1	-	2
Moderate	Designated	3	3	-	-	3	3	-	3	-
	Undesignated	-	-	2	1	-	-	2	1	1
Total	Designated	3	4	1	1	3	4	1	3	1
	Undesignated	-	1	3	3	-	1	3	1	3
Overall Total		3	5	4	4	3	5	4	4	4

- 14.10.11 There are no potential impacts that are common to all of the route options.
- 14.10.12 In relation to potential impacts on designated assets, Options 2B, 2C, 2D, 2F, 2G and 2I are expected to have a direct physical impact of Large significance on the Little Penick Enclosure (Asset 380), a Scheduled Monument. This relates to the partial removal of the Scheduled Monument through either the construction of Nairn East Junction D (Options 2C, 2D, 2G and 2I) or the route option alignment to the east of Auldearn (Options 2B and 2F). Options 2A, 2B, 2E, 2F and 2H are also expected to have a potential impact on setting of Moderate significance on the Castle of Auldearn (Motte) Scheduled Monument (Asset 314) and Boath Dovecot, a Category B Listed Building (Asset 313). This relates to the construction and operation of Nairn East Junctions A, B and C and associated local roads that would introduce significant new visual elements into mainly rural views to the west of these assets. These route options would also reinforce the existing separation of Boath House from other elements of the Auldearn Battlefield such as Dooket Hill and the land to the west of the village, which was the route of the advance of the Covenanter army.
- 14.10.13 In relation to potential impacts on undesignated assets, Options 2B, 2C, 2D, 2F, 2G and 2I would have Large direct physical impacts. For Options 2D and 2I this relates to the construction of Nairn East Junction D and A939 Junction B which would result in the complete removal of any archaeological remains associated with Courage Cottage Ring Ditch (Asset 401) and Foynesfield Enclosure (Asset 288), respectively. For Options 2B, 2C, 2F and 2G the potential impacts relate to the complete removal of any archaeological remains associated with Courage Cottage Ring Ditch (Asset 401), as a result of either the construction of Nairn East Junction D or the route option alignment to the east of Auldearn.
- 14.10.14 As noted above, it is likely that the identified physical impacts on archaeological remains or the physical remains associated with the battlefield could be reduced through preservation by record. However, based on current information and in the absence of ground truthing through intrusive or non-intrusive investigations, it is unlikely that these potential impacts could be wholly mitigated and as such those routes with the largest number of unmitigated significant impacts are also likely to have the largest number of significant residual impacts. Potential impacts on the setting of cultural heritage assets could be reduced by the use of appropriate landscaping such as grading out of embankments and planting to reduce adverse impacts and to improve integration of the new road and its surroundings.
- 14.10.15 Overall, all the route options are similar with regards to the number of potential impacts of Moderate or above significance. Taking into account potential mitigation, Options 2B, 2C, 2D, 2F, 2G and 2I would require Scheduled Monument Consent to enable mitigation of the direct impact on the Little Penick Enclosure Scheduled Monument (Asset 380). Options 2A, 2B, 2E, 2F and 2H would reinforce the existing severance of Boath House from other elements of the Auldearn Battlefield and it is expected that this potential impact would not be reduced through mitigation. Therefore, Options 2B and 2F are expected to have the greatest

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impact due to their potential impacts on the Little Penick Enclosure Scheduled Monument and the Auldearn Battlefield.

14.10.16 In relation to compliance with planning policies, the route options have the potential to conflict with SPP and Policy 28 (Sustainable Design) and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP in relation to potential impacts on Scheduled Monuments (all route options) and the Auldearn Battlefield (Options 2A, 2B, 2E, 2F and 2H). However, there is scope to consider that as the route options are likely to deliver strategic and social and economic benefits of national importance that the route options could comply with these policies. However, further assessment on the full extent of the impacts would be required to conclude whether or not the benefits of national importance outweighed the adverse impacts.

14.10.17 All route options also have the potential to conflict with SPP and Policy 57 (Natural, Built and Cultural Heritage) of the HwLDP in relation to potential impacts on undesignated assets. However, with appropriate mitigation, such as preservation in-situ or appropriate excavation, recording, analysis, publication and archiving, it is expected that all route options could comply with these policies.

14.11 Scope of DMRB Stage 3 Assessment

14.11.1 The DMRB Stage 3 Assessment should be based on HD208/07 and should include a detailed assessment for all three sub-topics. Information for the assessment should be gathered by:

- revisiting sources consulted for the DMRB Stage 2 Assessment and consulting any identified additional sources;
- revisit original sources on the Battle of Auldearn;
- rectification of aerial photographs; and
- walkover survey.

14.11.2 Further consultation should be undertaken with Historic Scotland to confirm the nature and timing of archaeological surveys. Given the potential for unknown archaeological remains and the impacts on known archaeological remains this may include a geophysical survey, followed by targeted trial trenching of the preferred option to include the Auldearn Battlefield. Also, building on the work undertaken by Historic Scotland to inform the Inventory, further documentary research and fieldwork, possibly including field walking and a metal detecting survey may be required to inform an assessment of impact on Auldearn Battlefield.

14.12 References

Ancient Monuments and Archaeological Areas Act 1979

Historic Environment (Amendment) Scotland Act (2011)

Historic Scotland (2010) Managing Change in the Historic Environment: Setting

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The Highways Agency, Transport Scotland, Welsh Assembly Government and The Department for Regional Development Northern Ireland (2007). Design Manual for Roads and Bridges, Volume 11, Section 3, Part 2, HA208/07, Cultural Heritage. August 2007.

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15 Effects on All Travellers

15.1 Introduction

- 15.1.1 This chapter presents the DMRB Stage 2 Assessment of potential impacts on the journeys made by pedestrians, cyclists, equestrians and vehicular travellers. For ease of reference the term Non-Motorised Users (NMUs) is used to describe pedestrians, cyclists and equestrians.
- 15.1.2 The assessment includes the following:
- baseline conditions within the study area relating to the path network, outdoor access and public transport;
 - potential impacts of each of the route options with regard to the identified baseline conditions; and
 - anticipated mitigation measures that might be developed during the development of the preferred option.
- 15.1.3 In line with DMRB Interim Advice Note 125/09 Supplementary Guidance for users of DMRB Volume 11, Environmental Assessment (The Highways Agency, 2009) (hereafter referred to as IAN125/09) this chapter combines DMRB Volume 11, Section 3, Part 8 Pedestrians, Cyclists, Equestrians and Community Effects and Part 9 Vehicle Travellers (The Highways Agency et al., 1993ab) (hereafter referred to as 'DMRB Pedestrians, Cyclists, Equestrians and Community Effects' and 'DMRB Vehicle Travellers'). Please note that in line with this advice note, the community effects element of DMRB Pedestrians, Cyclists, Equestrians and Community Effects is included in Chapter 16 (Community and Private Assets) of this report.
- 15.1.4 This chapter is supported by the following appendices which are located within Part 6 (Appendices) of this report:
- Appendix A15.1: Path Network.
 - Appendix A15.2: Impact Assessment Tables.
- 15.1.5 As described in Part 1 (The Scheme), Chapter 3 (Description of Route Options) of this report, the proposed scheme is divided into two sections; Inverness to Gollanfield and the Nairn Bypass. The information presented in Section 15.2 (Approach and Methods), Section 15.3 (Policies and Plans) and Section 15.9 (Potential Mitigation) is appropriate to both sections. The information presented in Section 15.4 (Baseline Conditions), Sections 15.5 to 15.7 (Impact Assessment), Section 15.8 (Compliance with Policies and Plans) and Section 15.10 (Summary of Route Options) is reported for each section and where appropriate under the headings Inverness to Gollanfield and the Nairn Bypass.
- 15.1.6 Section 15.11 provides details on the proposed scope for the DMRB Stage 3 Assessment and Section 15.12 provides a full list of references that are noted within this chapter.

15.2 Approach and Methods

Scope and Guidance

- 15.2.1 This assessment was undertaken with reference to the guidance within DMRB Pedestrians, Cyclists, Equestrians and Community Effects, DMRB Vehicle Travellers, IAN125/09 and Appendix 5 of Scottish Natural Heritage (SNH)'s Handbook on Environmental Impact Assessment (SNH, 2013) (hereafter referred to as Appendix 5 (SNH)).
- 15.2.2 DMRB Pedestrians, Cyclists, Equestrians and Community Effects states that the objective of the DMRB Stage 2 Assessment is to undertake sufficient assessment to identify the routes

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used by NMUs and identify the impacts of the route options on these routes. It should be noted that potential impacts on public transport have been scoped out of this assessment as following consultation with Stagecoach no significant potential impacts on NMUs using the public transport network are expected (refer to paragraph 15.2.11). This will be considered further for the preferred option during the DMRB Stage 3 Assessment.

15.2.3 DMRB Vehicle Travellers states that the objective of the DMRB Stage 2 Assessment is to undertake sufficient assessment to identify factors and effects concerning vehicle travellers in relation to views from the road and driver stress. It should be noted that both driver stress and views from the road have been scoped out of this assessment as they are not considered to be key differentiators between the route options at this stage. This is for the following reasons:

- Views from the road will generally be of similar nature to that of the existing A96 Aberdeen – Inverness Trunk Road (hereafter referred to as existing A96), as they all travel through the same local landscape context. The theoretical nature of comparing views from route options is also limited at this stage as a result of limited mitigation detail.
- A preliminary assessment was carried out for driver stress using traffic flow data for each of the route options. This confirmed that there were no significant differences between any of the route options in relation to driver stress.

15.2.4 Both views from the road and driver stress will be considered further for the preferred option during the DMRB Stage 3 Assessment.

15.2.5 Table 1 of Appendix 5 (SNH) provides a list of area based facilities (National Parks, Regional Parks and Local Nature Reserves) and linear access facilities (core paths, National Cycle Network and public rights of way).

15.2.6 In accordance with SNH guidance, this assessment has taken consideration of NMUs ability to access the outdoors. The assessment of linear access facilities is included within the assessment of the 'Path Network' and the assessment of access to area based facilities is included under a separate heading 'Access to Outdoor Areas'.

Study Area

15.2.7 The study area for the assessment has been defined to be 500m from the outermost edge of all of the route options as shown on Figures 15.1 to 15.9. However, the assessment of impacts will, in some instances, extend beyond this to allow for consideration of the potential impacts on paths that would be used to access outdoor areas that are located outside of the 500m study area.

Baseline Data

15.2.8 A desk-based study including a review of Ordnance Survey (OS) maps, The Highland Council Core Path Network Plan (The Highland Council, 2011), and an online resources search was undertaken to identify existing and proposed paths including core paths, public rights of way and local paths and outdoor access areas.

15.2.9 In accordance with guidance provided in paragraph 9.7 of DMRB Pedestrians, Cyclists, Equestrians and Community Effects, no origin/destination surveys have been undertaken. The type of user, and where possible the usage levels, have been determined from information provided through the consultation process (refer to paragraph 15.2.10).

15.2.10 Consultation to inform the baseline conditions was undertaken with ScotWays, The British Horse Society, Sustrans and The Highland Council Outdoor Access Officer. Consultation consisted of an information request for the location and use of core paths, public rights of way and cycle routes within the study area. Further information on the consultation process is provided in Chapter 7 (Overview of Environmental Assessment) of this report.

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- 15.2.11 A consultation meeting also took place in February 2014 with representatives from Stagecoach, who are the major bus operator in the area. The purpose of the meeting was to establish which bus routes they anticipated to be affected by the route options. The meeting concluded that no significant impacts were expected on public transport as a result of the route options.

Impact Assessment

- 15.2.12 In accordance with DMRB Pedestrians, Cyclists, Equestrians and Community Effects, the assessment of impacts on NMUs focuses on three main aspects:

- changes in journey lengths and times;
- changes in the amenity value of journeys; and
- changes in links to access outdoors areas.

- 15.2.13 DMRB Pedestrians, Cyclists, Equestrians and Community Effects does not provide detailed guidance on whether a specific sensitivity and magnitude criteria is required in relation to impacts at DMRB Stage 2 Assessment. Details on how sensitivity, magnitude and significance of impact are considered in this assessment are provided below.

Sensitivity

- 15.2.14 Under the Land Reform (Scotland) Act 2003, Chapter 5, Section 13, paragraph 1, states that: *“it is the duty of the local authority to assert, protect and keep open and free from obstruction or encroachment any route, waterway or other means by which access rights may reasonably be exercise”*.

- 15.2.15 In line with the above, this assessment considers all paths as being of equal importance, regardless of user type or levels of usage and that all paths should be maintained and/or improved where practical. As such, no sensitivity criteria have been applied to the different types of paths.

Magnitude of Impact

- 15.2.16 For the purposes of this assessment, the magnitude of impact is considered to be a function of a change in journey length, amenity value or access to outdoor areas. These aspects are discussed in further detail below.

Journey Length

- 15.2.17 A change in journey length is determined to have occurred where there is severance of a path or where there is an impact on the ability of NMUs to use the path in its current form, through for example where a path provides access to a crossing point of the existing A96, or where access from the existing A96 is required to use the path. In all cases NMUs are expected to have a change in their journey length to continue to use the path network.

- 15.2.18 The number and type of paths to be impacted by each route option is reported, with any changes to journeys described qualitatively, i.e. where there will be an increase in journey length this will be described as either ‘Yes’ or ‘No’. Further detail on the degree of changes would be considered for the preferred option during the DMRB Stage 3 Assessment.

Amenity Value

- 15.2.19 Amenity value is defined in paragraph 4.1 of DMRB Pedestrians, Cyclists, Equestrians and Community Effects as the *“relative pleasantness of a journey”* and includes consideration of any change in the safety of paths and/or exposure to noise, dirt and air pollution as well as the visual impact associated with the route options. All assessments of change to amenity

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are based on professional judgement taking into account safety, noise, air and visual impacts anticipated. For specific noise, air and visual impacts reference should be made to Chapter 8 (Air Quality), Chapter 9 (Noise and Vibration) and Chapter 10 (Landscape and Visual) of this report.

15.2.20 For the purposes of this assessment, a change in amenity is considered where there is a change in the location of the existing A96 in relation to the location of the path. For example, adverse impacts on amenity are expected to occur where the route option is within closer proximity to the path than the existing A96.

15.2.21 The number and type of paths to be impacted by each route option is reported, with any changes to amenity value described qualitatively i.e. where there will be an increase, decrease, or no change in amenity value. Where a decrease is reported this is considered as an adverse impact on the amenity of the path. Further detail on the degree of these changes in relation to the preferred option would be considered within the DMRB Stage 3 Assessment.

Access to Outdoor Areas

15.2.22 As the assessment of journey length and amenity value considers the impacts on linear access facilities (i.e. the path network), the assessment of changes in access to outdoor areas focuses on any changes in access to area based facilities as listed in Table 1 of Appendix 5 (SNH). This includes National Parks, Regional Parks, Country Parks as well as local open space and green space.

15.2.23 The number and type of paths to be impacted by each route option is reported, with any changes to access to outdoor areas described qualitatively based on changes in journey length and amenity value. The assessment focuses on those paths which are located within the study area and provide access to outdoor areas. Further detail on the degree of these changes in relation to the preferred option would be considered within the DMRB Stage 3 Assessment.

Significance of Impact

15.2.24 Potential impacts are considered to be either significant or not significant and may be beneficial or adverse in nature. A potential impact will be based on professional judgement and is considered to be significant where a route option will result in a change to either journey length, amenity value or access to outdoor areas.

Mitigation

15.2.25 At this stage, the route options have no specific provisions for NMUs embedded within the designs. As such all potential impacts have been assessed assuming no embedded mitigation and therefore represent the worst case scenario.

15.2.26 Potential mitigation measures which are likely to be developed during the design of the preferred option at DMRB Stage 3 have been considered within this assessment and are detailed in Section 15.9 (Potential Mitigation).

Limitations to Assessment

15.2.27 This assessment was completed using a desk-based approach and informed by consultation with relevant statutory and non-statutory consultees. No site visit has been undertaken to confirm the baseline data used in the assessment. A site visit would be undertaken during the DMRB Stage 3 Assessment for the preferred option.

15.2.28 The assessment does not apply a significance scale to impacts on paths, rather impacts are simply recorded as either being significant or not significant based on professional

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judgement, taking into account potential change to journey length, amenity value and access to outdoor areas. Although, this assessment method does not involve detailed calculation of journey length changes, it does allow differentiation between the route options. Application of a significance scale would be considered for the preferred option during the DMRB Stage 3 Assessment.

15.3 Policies and Plans

15.3.1 The national, regional and local planning policies and guidance relevant to all travellers are identified below. An assessment of the compliance of the route options in relation to these policies is provided in Section 15.8 (Compliance with Policies and Plans).

National Planning Policy and Guidance

15.3.2 National planning policy on a variety of themes is contained within Scottish Planning Policy (SPP) (Scottish Government, 2014) (hereafter referred to as SPP). In terms of the impact of proposals on all travellers and the path network SPP is focused on:

- promoting sustainable development;
- promoting opportunities for personal travel by mode in the following order – walking, cycling, public transport, car and other motorised vehicles;
- providing safe and convenient opportunities for walking and cycling for both active travel and recreation;
- enabling the integration of transport modes;
- improving the natural environment and the sustainable use and enjoyment of it; and
- facilitating positive change whilst maintaining and enhancing the distinctive character of the landscape in both the countryside and urban areas.

15.3.3 Circulars and Planning Advice Notes (PANs) published by the Scottish Government provide further guidance on specific topics. Documents of relevance to all travellers are summarised in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report and include PAN 75: Planning For Transport (Scottish Executive, 2005) and PAN 78: Inclusive Design (Scottish Executive, 2006).

Regional and Local Planning Policy and Guidance

15.3.4 The Highland-wide Local Development Plan (HwLDP) (The Highland Council, 2012) (hereafter referred to as the HwLDP), is the land-use Plan which will guide the development and investment in the region over the next 20 years. The relevant policies in relation to all travellers and the path network include:

- Policy 30: Physical Constraints;
- Policy 56: Travel;
- Policy 77: Public Access; and
- Policy 78: Long Distance Networks.

15.3.5 The HwLDP has a number of supporting supplementary guidance notes, and those of relevance include the Physical Constraints Supplementary Guidance, which were adopted in March 2013 (The Highland Council, 2013).

15.3.6 Further details on these policies and guidance are provided in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.

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Review of Planning Policies

- 15.3.7 The key aspects of the relevant planning policies are discussed below in relation to their relevance for all travellers and the path network. Please note that as impacts on public transport are scoped out of this assessment (refer to paragraph 15.2.2) no details on policies related to public transport are provided. This will be considered further during the DMRB Stage 3 Assessment of the preferred option.
- 15.3.8 As highlighted in SPP, the planning system seeks to maintain, enhance and promote access to open space and recreation, and new developments should provide safe and convenient opportunities for walking and cycling. This is reflected in Policy 56 (Travel) of the HwLDP which advises that development should ensure that opportunities for encouraging walking and cycling are maximised, be designed for the safety and convenience of all potential users and incorporate appropriate mitigation (on-site and/or off-site) which might include improvements and enhancements to the walking/cycling network.
- 15.3.9 SPP directs planning authorities to protect access rights as well as core and other important routes. Paths included in the core paths plan (The Highland Council, 2011) are protected by Policy 30 (Physical Constraints) and Policy 77 (Public Access) of the HwLDP. Policy 77 (Public Access) requires proposals that affect a core path to either:
- retain the existing path while maintaining or enhancing its amenity value; or
 - ensure alternative access provision that is no less attractive, is safe and convenient for public use, and does not damage or disturb species or habitats.
- 15.3.10 Long distance routes, including National Cycle Routes, are protected by Policy 78 (Long Distance Routes) of the HwLDP which seeks to safeguard and enhance such routes as well as their settings.

15.4 Baseline Conditions

- 15.4.1 The baseline conditions for the study area are described below with further detail on the path network provided in Part 6 (Appendices), Appendix A15.1 (Path Network) of this report. The path network has been described separately for those that are located or operational between Inverness and Gollanfield and in the vicinity of the Nairn Bypass.
- 15.4.2 Paths used by NMUs are important because they can provide:
- access to local countryside and more remote areas on foot, bike or horse;
 - opportunities for long-distance travelling;
 - safe, non-motorised access to community facilities such as shops, places of business and schools; and
 - opportunities to integrate access and land management.
- 15.4.3 The use of paths can help to improve health, reduce social exclusion, and unlike other modes of transport generally has few associated costs (e.g. fuel, travel tickets etc). A good path network can also inspire visitors to enjoy the outdoors and to visit places of landscape, historical and wildlife interest, therefore encouraging financial expenditure and supporting the local rural economy. Well planned paths can potentially assist landowners and farmers to successfully integrate recreational use with land management operations.
- 15.4.4 The key baseline features in the study area and their interaction with the route options are shown on Figure 15.1 to 15.9.

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Core Paths

- 15.4.5 Local authorities have a duty to make a plan regarding core paths publicly available for inspection under the Land Reform (Scotland) Act 2003. The local authority responsible for access within the study area is The Highland Council. The Highland Council Core Paths Network Plan (The Highland Council, 2011) was adopted on 21 September 2011 and aims to satisfy the basic needs of local people and visitors for general access and recreation, and provide links to the wider path network throughout.
- 15.4.6 Core paths may include the following; public rights of way, footpaths, tracks, cycle tracks, paths which are, or may be, covered by path agreements or path orders under the Land Reform (Scotland) Act 2003 (Sections 20 and 21), waterways, or other means by which persons may cross land. In establishing a core path plan consideration of likely usage, desirability of paths is balanced with landowner interests.
- 15.4.7 The core paths within The Highland Council Core Path Network Plan (The Highland Council, 2011) comprise a mixture of existing paths and proposed new paths. The majority of the core paths are close to residential areas and can range from tracks worn into natural ground to those which are surfaced. The core path network is meant to cater for all types of users including walkers, cyclists, horse riders, canoeists and people with disabilities, and are a key part of outdoor access provision.

Inverness to Gollanfield

- 15.4.8 In the Inverness to Gollanfield section of the study area there are eight core paths of which five provide direct links to the existing A96: IN08.10, IN08.30, IN08.05, IN08.21 and IN08.32.
- 15.4.9 There are three core paths that provide direct access to outdoor areas. IN08.23 and IN08.30 provide access to the beach to the north of the existing A96. IN08.32 provides access to Cullernie Wood and High Wood.

Nairn Bypass

- 15.4.10 In the Nairn Bypass section of the study are there are 13 core paths of which three provide direct links to the existing A96: NA04.13, NA04.11 and NA04.07.
- 15.4.11 There are 10 core paths that provide direct access to outdoor areas; NA04.15 provides access to Delnies Community Wood, NA04.13 and NA04.11 provide access to Delnies Wood, NA04.16, NA04.17, NA04.02, NA04.03 and NA04.04 provide access to the River Nairn, NA04.07 provides access to Dunbar Recreation Ground and NA01.01 provides access to Lethan Road Wood.

Public Rights of Way

- 15.4.12 A public right of way is a defined route which has been used by the general public for at least 20 years and which links two public places (usually public roads). Public rights of way vary from long hill routes (often historical drove or kirk roads) to local routes used for dog walking or as short cuts to shops, schools and other local amenities.
- 15.4.13 ScotWays maintains the National Catalogue of Rights of Way (CROW), in partnership with SNH. In addition, many local authorities also have their own records. Access along public rights of way is protected by the Countryside (Scotland) Act 1967, Section 46, requiring the local authority to “*assert, protect and keep open and free from obstruction or encroachment any public rights of way*”. Diversions can be considered if the proposed diversion is deemed suitable by the planning authority.

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Inverness to Gollanfield

- 15.4.14 There are no public rights of way within this section of the study area.

Nairn Bypass

- 15.4.15 There is one public right of way (HN1) in the Nairn Bypass section of the study area. This runs directly through farmland via specially sign posted dirt track and provides access to, from and across the existing A96 leading to the centre of Auldearn. This path does not provide direct access to any outdoor areas as defined in paragraph 15.2.22.

Aspirational Core Paths

- 15.4.16 Unlike core paths and public rights of way, aspirational core paths hold no statutory designation. However, they are recognised by The Highland Council as paths that the public want to see made part of the overall network of core paths. In some cases, the paths do not physically exist on the ground, but are considered important for the development of the wider path network in the future. It should be noted that this assessment only considers those aspirational core paths that currently physically exist and not paths that are yet to be created. This allows assessment of paths in the area that are currently in use by NMUs.

Inverness to Gollanfield

- 15.4.17 In the Inverness to Gollanfield study area there are seven aspirational core paths of which four provide links to the existing A96; ACP04, ACP05, ACP06 and ACP07.
- 15.4.18 There are two aspirational core paths that provide direct access to outdoor areas; ACP05 provides a direct access to the beach to the north of the existing A96 and ACP08 provides access to Loch Flemington.

Nairn Bypass

- 15.4.19 In the Nairn Bypass study area there are two aspirational core paths, of which ACP09 provides a direct link to the existing A96 and ACP10 provides direct access to the River Nairn riverside path.

Local Paths

- 15.4.20 Unlike core paths and public rights of way, local paths hold no statutory designation. However, they are considered important by The Highland Council in providing important links for NMUs. Local paths can either be links on roads or wider network paths.

Inverness to Gollanfield

- 15.4.21 In the Inverness to Gollanfield study area there are 16 local paths of which 11 provide links to the A96; LP01, LP02, LP04, LP05, LP06, LP07, LP08, LP09, LP10, LP11 and LP12.
- 15.4.22 There are 11 local paths that provide direct access to outdoor areas; LP04 and LP05 provide direct access to the beach to the north of the existing A96 and LP06, LP07, LP08, LP09, LP10, LP11, LP13, LP14 and LP15 provide direct access to and/or within either High Wood, Kerrowaird Wood, Tornagrain Wood or Woodend Plantation.

Nairn Bypass

- 15.4.23 In the Nairn Bypass study area there are five local paths, of which three provide a link to the existing A96; LP17, LP18 and LP21.

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- 15.4.24 There are four local paths that provide direct access to outdoor areas; LP18 provides direct access to Delnies Wood, LP19 provides direct access to woodland near Kinsteary House, LP20 provides direct access to the Crook Plantation and LP21 provides direct access to Gallows Hill.

National Cycle Routes

- 15.4.25 The National Cycle Network is a UK network of cycle routes and was created by Sustrans. The routes are a combination of pedestrian routes, disused railways, minor roads, canal towpaths and traffic calmed routes. National Cycle Routes can also be designated as core paths or public rights of way.

- 15.4.26 National Cycle Route 1 Dover to Shetland (NCR1) is a key strategic cycle path that links Dover to the Shetland Isles mainly via the east coast. The route runs through Nairn town centre when arriving from the east and heads southwards before looping back up in a north-westerly direction towards Inverness.

Inverness to Gollanfield

- 15.4.27 NCR1 intersects the Inverness to Gollanfield section of the study area briefly in the village of Balloch.

Nairn Bypass

- 15.4.28 NCR1 approaches Nairn from the east, passing through the town centre and then southwards through rural areas to the south of Nairn. The route is very scenic, passing near to the River Nairn and the Crook Plantation.

Access to Outdoor Areas

- 15.4.29 As noted in paragraph 15.2.22, outdoor areas include National Parks, Regional Parks, Country Parks as well as local open space and green space.

- 15.4.30 There are no National Parks, Regional Parks or Country Parks within the study area for the Inverness to Gollanfield or the Nairn Bypass sections. The baseline for outdoor areas is therefore made up of local open space and green space. It should be noted that due to the rural nature of the study area, a number of paths pass through open agricultural land. However, these are not included in the assessment of access to outdoor areas due to the informal nature of the outdoor access that these paths provide. The key outdoor access areas considered within this assessment are listed below.

Inverness to Gollanfield

- 15.4.31 The main outdoor access areas include:

- the beach north of the existing A96;
- Loch Flemington;
- Culloden Playing Field; and
- woodlands such as Culloden Wood, Cullernie Wood, High Wood, Kerrowaird Wood, Tornagrain Wood and Woodend Plantation.

Nairn Bypass

- 15.4.32 The main outdoor access areas include:

- the River Nairn;

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- Tradespark Playing Field;
- Dunbar Recreation Ground; and
- woodlands including Delnies Community Wood, Delnies Wood, Crook Plantation, Bognafuaran Wood, Russell's Wood, Craig's Wood, Lethan Road Wood, woodlands near Kinsteary House, Gallows Hill, Wester Hardmuir and Hardmuir Wood.

15.5 Impact Assessment: Introduction

- 15.5.1 This section provides an introduction to the impact assessment of the route options within Section 15.6 (Impact Assessment: Inverness to Gollanfield) and Section 15.7 (Impact Assessment: Nairn Bypass).
- 15.5.2 The impact assessments in Section 15.6 and 15.7 have been undertaken with reference to the following:
- Potential impacts of the route options on NMUs are described in the absence of mitigation and hence represents the worst-case scenario. Mitigation to reduce these impacts will be developed for the preferred option during DMRB Stage 3.
 - Potential impacts on public transport and vehicle travellers have been scoped out of the DMRB Stage 2 Assessment, and as such are not discussed (refer to paragraphs 15.2.2 and 15.2.3 for further details).
 - At this stage in the design, the likely nature and location of the construction activities (e.g. location of construction compounds) is not available. As such, it is not possible to undertake an appropriate assessment of the impacts as a result of construction, and therefore the assessment of impacts focuses on the operational impacts only. This is considered appropriate for a DMRB Stage 2 Assessment as it allows for the differentiation between the route options.
- 15.5.3 To provide context to the impact assessment, an overview of the potential impacts during the construction and operation of road schemes in relation to NMUs are discussed below.
- 15.5.4 During the construction period, NMUs have the potential to be disrupted by:
- temporary diversions of paths, cycleways and local roads which may increase journey times;
 - temporary severance where construction works disrupt or deter NMUs from using paths;
 - temporary severance of existing at-grade access across roads;
 - construction traffic on local roads, which may create busier crossing points;
 - location of site compounds on recreation areas, which would reduce accessibility; and
 - impacts on the amenity value of the path and cycleway network due to noise, dust, and visual intrusion of the works.
- 15.5.5 Without mitigation, the operational phase could disrupt NMUs through the following:
- permanent severance of existing paths or routes;
 - permanent diversions resulting in journey length increases; and
 - permanent amenity impacts from increased noise, poor air quality, disrupted views or safety issues.
- 15.5.6 NMUs may also experience beneficial impacts as a result of the new road alignment being moved further away, providing benefits for the amenity of the path network.

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15.6 Impact Assessment: Inverness to Gollanfield

15.6.1 This section describes the impacts for the path network that are specific to the Inverness to Gollanfield section. Impacts that are common to all route options are discussed, followed by those impacts which are additional to these, for each route option. Further information on the impacts for each route option is provided in Part 6 (Appendices), Appendix A15.2 (Impact Assessment Tables) of this report.

Impacts Common to all the Route Options

15.6.2 All of the route options would have a potential significant impact on 13 paths within the study area. Of these, 12 paths provide access to outdoor areas. These potential impacts are all adverse and a summary of the impact assessment is shown in Table 15.1.

Table 15.1: Potential impacts on NMUs using the path network - common to all route options (Inverness to Gollanfield)

Path Name	Path Type	Change in Journey Length	Change in Amenity Value	Access to Outdoor Areas
Adverse Impacts				
IN08.30	Core path	Yes	No	Beach north of A96
IN08.10	Core path	Yes	No	
IN08.05	Core path	Yes	Decrease	Beach north of the A96 and Culloden Playing Fields.
ACP04	Aspirational core path	Yes	Decrease	Beach north of the A96.
ACP06	Aspirational core path	Yes	Decrease	
LP01	Local path	Yes	Decrease	
LP02	Local path	Yes	Decrease	
LP03	Local path	Yes	Decrease	-
LP06	Local path	Yes	Decrease	High Wood
LP07	Local path	Yes	Decrease	Kerrowaird Wood, the curling pond and Tornagrain Wood
LP08	Local path	Yes	Decrease	
LP11	Local path	Yes	Decrease	
LP12	Local path	Yes	Decrease	

15.6.3 The potential adverse impacts on these paths are all as a result of severance, and in most of these cases access to and from the existing A96 to the path is expected to be stopped-up. Only two of the paths are considered not to be impacted by a decrease in amenity (IN08.30 and IN08.10) and this is due to the online widening of the existing A96 in this location and the current close proximity of these paths to the existing A96.

15.6.4 All potential impacts in relation to access to outdoors areas are adverse, impacting on access to the beach north of the A96 (IN08.30, IN08.10, IN08.05, ACP04, ACP06, LP01 and LP02), Culloden Playing Fields (IN08.05), High Wood (LP06) and Kerrowaird Wood, the curling pond and Tornagrain Wood (LP07, LP08, LP11 and LP12).

Option 1A

15.6.5 The impacts described in this section represent the potential impacts, which are additional to those reported as common to all (refer to paragraphs 15.6.2 to 15.6.4) and are specific for Option 1A.

15.6.6 Option 1A would have potential impacts on an additional six paths within the study area in relation to journey length and amenity value. All of these paths provide access to outdoor

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areas. The potential impacts on these paths are either adverse or beneficial and a summary of the impact assessment is shown in Table 15.2.

Table 15.2: Potential impacts on NMUs using the path network - additional for Option 1A

Path Name	Path Type	Change in Journey Length	Change in Amenity Value	Access to Outdoor Areas
Adverse Impacts				
IN08.21	Core path	Yes	No	Beach north of the A96
IN08.32	Core path	No	Decrease	Cullernie Wood and High Wood
ACP07	Aspirational core path	No	Decrease	Cullernie Wood and High Wood
LP05	Local path	Yes	No	Beach north of the A96
Beneficial Impacts				
LP09	Local path	No	Increase	Tornagrain Wood
LP10	Local path	No	Increase	Tornagrain Wood

15.6.7 The potential adverse impacts on these paths are as a result of the amenity impacts of Newton Junction A (IN08.32 and ACP07), severance of IN08.21 as it joins and crosses the existing A96 and access restrictions for LP05 as the route option alignment is expected to remove access to this path from the existing A96. Beneficial impacts are expected in relation to LP09 and LP10 as the route option alignment is moved further away from NMUs using these paths, than the existing A96.

15.6.8 In relation to access to outdoor areas, NMUs using IN08.21 and LP05 and IN08.32 and ACP07 to access the beach north of the A96 and Cullernie and High Wood, respectively are expected to be adversely impacted. NMUs using LP09 and LP10 to access to Tornagrain Wood are expected to have beneficial impacts.

Option 1A (MV)

15.6.9 The additional potential impacts (to those reported as common to all, refer to paragraphs 15.6.2 to 15.6.4), which are specific for Option 1A (MV) are considered to be the same as for Option 1A for the following paths; IN08.21, LP05, LP09 and LP10. Please refer to paragraphs 15.6.6 to 15.6.8 for a description of the potential impacts for these paths.

Option 1B

15.6.10 The impacts described in this section represent the potential impacts, which are additional to those reported as common to all (refer to paragraphs 15.6.2 to 15.6.4) and are specific for Option 1B.

15.6.11 Option 1B would have potential impacts on an additional six paths within the study area. All of these paths provide access to outdoor areas. The potential impacts on these paths are all adverse and a summary of the impact assessment is shown in Table 15.3.

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Table 15.3: Potential impacts on NMUs using the path network – additional for Option 1B

Path Name	Path Type	Change in Journey Length	Change in Amenity Value	Access to Outdoor Areas
Adverse Impacts				
IN08.21	Core path	Yes	No	Beach north of the A96.
IN08.32	Core path	No	Decrease	Cullernie Wood and High Wood.
ACP07	Aspirational core path	No	Decrease	Cullernie Wood and High Wood.
LP05	Local path	Yes	No	Beach north of the A96.
LP09	Local path	Yes	Decrease	Tornagrain Wood
LP10	Local path	Yes	Decrease	Tornagrain Wood

15.6.12 The potential adverse impacts on these paths are as a result of the amenity impacts of Newton Junction A (IN08.32 and ACP07), severance of IN08.21 as it joins and crosses the existing A96, access restrictions for LP05 as the route option alignment is expected to remove access to this path from the existing A96, and severance and amenity impacts on LP09 and LP10 as a result of the route option alignment and local road associated with Mid Coul Junction B.

15.6.13 All potential impacts in relation to access to the outdoors are adverse for NMUs using IN08.21 and LP05 to access the beach north of the A96, IN08.32 and ACP07 to access Cullernie Wood and High Wood and LP09 and LP10 to access Tornagrain Wood.

Option 1B (MV)

15.6.14 The additional potential impacts (to those reported as common to all, refer to paragraphs 15.6.2 to 15.6.4), which are specific for Option 1B (MV) are considered to be the same as for Option 1B for the following paths; IN08.21, LP05, LP09 and LP10. Please refer to paragraphs 15.6.11 to 15.6.13 for a description of the potential impacts on these paths.

Option 1C

15.6.15 The impacts described in this section represent the potential impacts, which are additional to those reported as common to all (refer to paragraphs 15.6.2 to 15.6.4) and specific for Option 1C.

15.6.16 Option 1C would have potential impacts on an additional eight paths within the study area. Of these, five paths are potentially impacted that provide access to outdoor areas. These potential impacts are either adverse or beneficial and a summary of the impact assessment is shown in Table 15.4.

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Table 15.4: Potential impacts on NMUs using the path network - additional for Option 1C

Path Name	Path Type	Change in Journey Length	Change in Amenity Value	Access to Outdoor Areas
Adverse Impacts				
IN08.15	Core path	Yes	Decrease	-
IN08.16	Core path	Yes	Decrease	-
IN08.21	Core path	No	Decrease	-
IN08.32	Core path	Yes	Decrease	Cullernie Wood and High Wood
ACP07	Aspirational core path	Yes	Decrease	Cullernie Wood and High Wood
Beneficial Impacts				
LP05	Local path	No	Increase	Beach north of the A96
LP09	Local path	No	Increase	Tornagrain Wood
LP10	Local path	No	Increase	Tornagrain Wood

15.6.17 The potential adverse impacts on these paths are as a result of amenity impacts of the route option alignment being in closer proximity to NMUs using IN08.21, amenity and severance impacts of Newton Junction B (ACP07 and IN08.32) and the route option alignment near Allanfearn (IN08.15 and IN08.16). Beneficial impacts are expected in relation to LP05, LP09 and LP10 as the route option alignment is moved further away from NMUs using these paths, than the existing A96.

15.6.18 In relation to access to outdoor areas, NMUs using IN08.32 and ACP07 to access Cullernie and High Wood are expected to be adversely impacted. NMUs using LP05 to access the beach north of the A96 and LP09 and LP10 to access Tornagrain Wood are expected to have beneficial impacts.

Option 1C (MV)

15.6.19 The additional potential impacts (to those reported as common to all, refer to paragraphs 15.6.2 to 15.6.4), which are specific for Option 1C (MV) are considered to be the same as for Option 1C. Please refer to paragraphs 15.6.16 to 15.6.18 for a description of the potential impacts.

Option 1D

15.6.20 The impacts described in this section represent the potential impacts, which are additional to those reported as common to all (refer paragraphs 15.6.2 to 15.6.4) and specific for Option 1D.

15.6.21 Option 1D would have potential impacts on an additional eight paths within the study area. Of these, five paths provide access to outdoor areas. The potential impacts on these paths are either adverse or beneficial and a summary of the impact assessment is shown in Table 15.5.

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Table 15.5: Potential impacts on NMUs using the path network - additional for Option 1D

Path Name	Path Type	Change in Journey Length	Change in Amenity Value	Access to Outdoor Areas
Adverse Impacts				
IN08.15	Core path	Yes	Decrease	-
IN08.16	Core path	Yes	Decrease	-
IN08.21	Core path	No	Decrease	-
IN08.32	Core path	Yes	Decrease	Cullernie Wood and High Wood
ACP07	Aspirational core path	Yes	Decrease	Cullernie Wood and High Wood
LP09	Local path	Yes	Decrease	Tornagrain Wood
LP10	Local path	Yes	Decrease	Tornagrain Wood
Beneficial Impacts				
LP05	Local path	No	Increase	Beach north of A96

15.6.22 The potential adverse impacts on these paths are as a result of amenity impacts of the route option alignment being in closer proximity to NMUs using IN08.21 and amenity and severance impacts of Newton Junction B (ACP07 and IN08.32), the route option alignment and local roads associated with Mid Coul Junction B (LP09 and LP10) and the route option alignment near Allanfearn (IN08.15 and IN08.16). Beneficial impacts are expected in relation to LP05 as the route option alignment is moved further away from NMUs using this path, than the existing A96.

15.6.23 In relation to access to outdoor areas, NMUs using IN08.32 and ACP07 to access Cullernie and High Wood, and LP09 and LP10 to access Tornagrain Wood are expected to be adversely impacted. NMUs using LP05 to access the beach north of the A96 are expected to have beneficial impacts.

Option 1D (MV)

15.6.24 The potential additional impacts (to those reported as common to all, refer to paragraphs 15.6.2 to 15.6.4), which are specific for Option 1D (MV) are considered to be the same as for Option 1D. Please refer to paragraphs 15.6.21 to 15.6.23 for a description of the potential impacts.

15.7 Impact Assessment: Nairn Bypass

15.7.1 This section describes the potential impacts for the path network that are specific to the Nairn Bypass section. It includes those potential impacts which are common to all and those that vary between the route options. Further information on the impacts for each route option is provided in Part 6 (Appendices), Appendix A15.2 (Impact Assessment Tables) of this report.

Impacts Common to all Route Options

15.7.2 All of the route options would have potential impacts on four paths within the study area. All of these paths provide access to outdoor areas. All these potential impacts are adverse and a summary of the impact assessment is shown in Table 15.6.

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Table 15.6: Potential impacts on NMUs using the path network - common to all route options (Nairn Bypass)

Path Name	Path Type	Change in Journey Length	Change in Amenity Value	Access to Outdoor Areas
Adverse Impacts				
NA04.03	Core path	Yes	Decrease	River Nairn riverside path
NCR1	National Cycle Route	Yes	Decrease	Crook Plantation
ACP10	Aspirational core path	Yes	Decrease	River Nairn riverside path
LP21	Local Path	No	Decrease	Gallows Hill

15.7.3 These potential adverse impacts are as a result of severance of NA04.03 and ACP10 at the point where the route options cross the River Nairn and NCR1 near the Crook Plantation. The amenity value of these paths is also expected to decrease as a result of the closer proximity of the route option alignment to the NMUs using the path. There is also expected to be a decrease in amenity for LP21 either as a result of the route option alignment to the north of the path, the route option alignment to the south of the existing A96 or Nairn East Junction D.

15.7.4 All potential impacts on access to outdoor areas are expected to be adverse for NMUs using NA04.03 and ACP10 to access the River Nairn riverside path, NCR1 to access the Crook Plantation and LP21 to access Gallows Hill.

Option 2A

15.7.5 The impacts described in this section represent the potential impacts, which are additional to those reported as common to all (refer to paragraphs 15.7.2 to 15.7.4) and specific for Option 2A.

15.7.6 Option 2A would have potential impacts on an additional seven paths within the study area. Of these, three paths provide access to outdoor areas. The potential impacts on these paths are either adverse or beneficial and a summary of the impact assessment is shown in Table 15.7.

Table 15.7: Potential impacts on NMUs using the path network - additional for Option 2A

Path Name	Path Type	Change in Journey Length	Change in Amenity Value	Access to Outdoor Areas
Adverse Impacts				
HN1	Public right of way	Yes	Decrease	-
NA04.13	Core path	Yes	Decrease	Delnies Wood
NA04.07	Core path	Yes	Decrease	Dunbar Recreation Ground
LP17	Local path	Yes	No	-
LP18	Local path	Yes	Decrease	Delnies Wood
Beneficial Impacts				
NA01.02	Core path	No	Increase	-
ACP09	Aspirational core path	No	Increase	-

15.7.7 The potential adverse impacts on these paths are as a result of severance and amenity impacts by Nairn West and Nairn East Junction A (NA04.13, HN1 and NA04.07), the route option alignment through Delnies Wood (LP18) and impacts on access for LP17 which is currently accessed from the existing A96. There are two beneficial impacts and these are as a result of the route option alignment being further away from these paths than the existing A96.

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15.7.8 All potential impacts in relation to access to outdoor areas are adverse for NMUs using NA04.13 and LP18 to access Delnies Wood and NA04.07 to access the Dunbar Recreation Ground.

Option 2B

15.7.9 The impacts described in this section represent the potential impacts, which are additional to those reported as common to all (refer to paragraphs 15.7.2 to 15.7.4) and specific for Option 2B.

15.7.10 Option 2B would have potential impacts on an additional seven paths within the study area. Of these, three paths provide access to outdoor areas. The potential impacts on these paths are all adverse and a summary of the impact assessment is shown in Table 15.8.

Table 15.8: Potential impacts on NMUs using the path network - additional for Option 2B

Path Name	Path Type	Change in Journey Length	Change in Amenity Value	Access to Outdoor Areas
Adverse Impacts				
HN1	Public right of way	Yes	Decrease	-
NA04.13	Core path	Yes	Decrease	Delnies Wood
NA04.07	Core path	Yes	Decrease	Dunbar Recreation Ground
NA01.02	Core path	Yes	Decrease	-
ACP09	Aspirational core path	Yes	Decrease	-
LP17	Local path	Yes	No	-
LP18	Local path	Yes	Decrease	Delnies Wood

15.7.11 The potential adverse impacts on these paths are as a result of severance and amenity impacts of Nairn West Junction A (NA04.13), Nairn East Junction B (NA04.07), the route option alignment through Delnies Wood (LP18) and the online section of the route option alignment and associated local roads north and north-west of Auldearn (HN1, ACP09 and NA01.02). Impacts are also expected in relation to access to LP17, as this path is currently accessed from the existing A96.

15.7.12 All potential impacts in relation to access to outdoor areas are adverse for NMUs using NA04.13 and LP18 to access Delnies Wood and NA04.07 to access the Dunbar Recreation Ground.

Option 2C

15.7.13 The impacts described in this section represent the potential impacts, which are additional to those reported as common to all (refer to paragraphs 15.7.2 to 15.7.4) and specific for Option 2C.

15.7.14 Option 2C would have potential impacts on an additional nine paths within the study area. Of these, five paths provide access to outdoor areas. The potential impacts on these paths are either adverse or beneficial and a summary of the impact assessment is shown in Table 15.9.

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Table 15.9: Potential impacts on NMUs using the path network - additional for Option 2C

Path Name	Path Type	Change in Journey Length	Change in Amenity Value	Access to Outdoor Areas
Adverse Impacts				
NA04.13	Core path	Yes	Decrease	Delnies Wood
NA01.01	Core path	Yes	Decrease	Lethan Road Wood
LP17	Local path	Yes	No	-
LP18	Local path	Yes	Decrease	Delnies Wood
LP19	Local path	Yes	Decrease	Woodlands near to Kinstearly House
Beneficial Impacts				
HN1	Public right of way	No	Increase	-
NA04.07	Core path	No	Increase	Dunbar Recreation Ground
NA01.02	Core path	No	Increase	-
ACP09	Aspirational core path	No	Increase	-

15.7.15 The potential adverse impacts on these paths are as a result of severance and amenity impacts of Nairn West Junction A (NA04.13) and the route option alignment through Delnies Wood (LP18), the woodlands near Kinstearly House (LP19) and Lethan Road Wood (NA1.01). Impacts are also expected in relation to access to LP17, as this path is currently accessed from the existing A96. There are also a number of beneficial impacts and these are as a result of the route option alignment being further away from the paths than the existing A96.

15.7.16 The majority of potential impacts relating to access to outdoor areas are expected to be adverse for NMUs using NA04.13 and LP18 to access Delnies Wood, NA1.01 to access the woodlands on Lethan Road and LP19 to access the woodlands near Kinstearly House. One beneficial impact is expected for NMUs using NA04.07 to access Dunbar Recreation Ground.

Option 2D

15.7.17 The impacts described in this section represent the potential impacts, which are additional to those reported as common to all (refer to paragraphs 15.7.2 to 15.7.4) and specific for Option 2D.

15.7.18 Option 2D would have potential impacts on an additional ten paths within the study area. Of these, six provide access to outdoor areas. The potential impacts on these paths are either adverse or beneficial and a summary of the impact assessment is shown in Table 15.10.

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Table 15.10: Potential impacts on NMUs using the path network - additional for Option 2D

Path Name	Path Type	Change in Journey Length	Change in Amenity Value	Access to Outdoor Areas
Adverse Impacts				
NA04.13	Core path	Yes	Decrease	Delnies Wood
NA01.01	Core path	Yes	Decrease	Lethan Road Wood
LP17	Local path	Yes	No	-
LP18	Local path	Yes	Decrease	Delnies Wood
LP19	Local path	Yes	Decrease	Woodlands near Kinstearly House
LP20	Local path	No	Decrease	Crook Plantation
Beneficial Impacts				
HN1	Public right of way	No	Increase	-
NA04.07	Core path	No	Increase	Dunbar Ground Recreation
NA01.02	Core path	No	Increase	-
ACP09	Aspirational core path	No	Increase	-

15.7.19 The potential adverse impacts on these paths are as a result of severance and amenity impacts of Nairn West Junction A (NA04.13) and the route option alignment through Delnies Wood (LP18), the woodlands near Kinstearly House (LP19) and Lethan Road Wood (NA1.01). Impacts are also expected in relation to access to LP17, as this path is currently accessed from the existing A96, and in relation to amenity impacts on LP20 due to the proximity of the route option alignment to this path. There are also a number of beneficial impacts and these are as a result of the route option alignment being further away from the paths than the existing A96.

15.7.20 The majority of the potential impacts relating to access to outdoor areas are expected to be adverse for NMUs using paths to access Delnies Wood (NA04.13 and LP18), the woodlands on Lethan Road (NA01.01), the woodlands near Kinstearly House (LP19) and the Crook Plantation (LP20). One beneficial impact is expected for NMUs using NA04.07 to access Dunbar Recreation Ground.

Option 2E

15.7.21 The impacts described in this section represent the potential impacts, which are additional to those reported as common to all (refer to paragraphs 15.7.2 to 15.7.4) and specific for Option 2E.

15.7.22 Option 2E would have potential impacts on an additional eight paths within the study area. Of these, four paths provide access to outdoor areas. The potential impacts on these paths are either adverse or beneficial and a summary of the impact assessment is shown in Table 15.11.

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Table 15.11: Potential impacts on NMUs using the path network - additional for Option 2E

Path Name	Path Type	Change in Journey Length	Change in Amenity Value	Access to Outdoor Areas
Adverse Impacts				
HN1	Public right of way	Yes	Decrease	-
NA04.07	Core path	Yes	Decrease	Dunbar Recreation Ground
Beneficial Impacts				
NA04.11	Core path	No	Increase	Delnies Wood
NA04.13	Core path	No	Increase	Delnies Wood
NA01.02	Core path	No	Increase	-
LP17	Local path	No	Increase	-
LP18	Local path	No	Increase	Delnies Wood
ACP09	Aspirational core path	No	Increase	-

15.7.23 The potential adverse impacts on these paths are as a result of severance and amenity impacts of Nairn East Junction A (NA04.07) and the route option alignment north-west of Auldearn (HN1). There are also a number of beneficial impacts and these are as a result of the route option alignment being further away from these paths than the existing A96.

15.7.24 With the exception of NMUs using NA04.07 to access Dunbar Recreation Ground, NMUs are expected to benefit in using NA04.11, NA04.13 and LP18 to access Delnies Wood.

Option 2F

15.7.25 The impacts described in this section represent the potential impacts, which are additional to those reported as common to all (refer to paragraphs 15.7.2 to 15.7.4) and specific for Option 2F.

15.7.26 Option 2F would have potential impacts on an additional eight paths within the study area. Of these four paths provide access to outdoor areas. The potential impacts on these paths are either adverse or beneficial and a summary of the impact assessment is shown in Table 15.12.

Table 15.12: Potential impacts during operation on the path network - additional for Option 2F

Path Name	Path Type	Change in Journey Length	Change in Amenity Value	Access to Outdoor Areas
Adverse Impacts				
HN1	Public right of way	Yes	Decrease	-
NA04.07	Core path	Yes	Decrease	Dunbar Recreation Ground
NA01.02	Core path	Yes	Decrease	-
ACP09	Aspirational core path	Yes	Decrease	-
Beneficial Impacts				
NA04.11	Core path	No	Increase	Delnies Wood
NA04.13	Core path	No	Increase	Delnies Wood
LP17	Local path	No	Increase	-
LP18	Local path	No	Increase	Delnies Wood

15.7.27 The potential adverse impacts on these paths are as a result of severance and amenity impacts of Nairn East Junction A (NA04.07) and the online section of the route option

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alignment and associated local roads to the north and north-west of Auldearn (HN1, ACP09 and NA1.02). There are also a number of beneficial impacts and these are as a result of the route option alignment being further away from these paths than the existing A96.

- 15.7.28 In relation to access to outdoor areas, NMUs are expected to be adversely impacted in using NA04.07 to access Dunbar Recreation Ground. NMUs are expected to benefit in using NA04.11, NA04.13 and LP18 to access Delnies Wood.

Option 2G

- 15.7.29 The impacts described in this section represent the potential impacts, which are additional, to those reported as common to all (refer to paragraphs 15.7.2 to 15.7.4) and specific for Option 2G.
- 15.7.30 Option 2G would have potential impacts on an additional ten paths within the study area. Of these, six paths provide access to outdoor areas. The potential impacts on these paths are either adverse or beneficial and a summary of the impact assessment is shown in Table 15.13.

Table 15.13: Potential impacts on NMUs using the path network - additional for Option 2G

Path Name	Path Type	Change in Journey Length	Change in Amenity Value	Access to Outdoor Areas
Adverse Impacts				
NA01.01	Core path	Yes	Decrease	Lethan Road Wood
LP19	Local path	Yes	Decrease	Woodlands near to Kinsteary House
Beneficial Impacts				
HN1	Public right of way	No	Increase	-
NA04.07	Core path	No	Increase	Dunbar recreation ground
NA04.11	Core path	No	Increase	Delnies Wood
NA04.13	Core path	No	Increase	Delnies Wood
NA01.02	Core path	No	Increase	-
ACP09	Aspirational core path	No	Increase	-
LP17	Local path	No	Increase	-
LP18	Local path	No	Increase	Delnies Wood

- 15.7.31 The potential adverse impacts on these paths are as a result of severance and amenity impacts of the route option alignment through Lethan Road Wood (NA1.01) and the woodlands near Kinsteary House (LP19). There are also a number of beneficial impacts and these are as a result of the route option alignment being further away from these paths than the existing A96.
- 15.7.32 In relation to potential impacts on access to outdoor areas, NMUs are expected to be adversely impacted in using NA1.01 and LP19 for accessing Lethan Road Wood and the woodlands near Kinsteary House, respectively. There are expected to be beneficial impacts for NMUs using NA04.11, NA04.13 and LP18 to access Delnies Wood and NA04.07 to access Dunbar Recreation Ground.

Option 2H

- 15.7.33 The impacts described in this section represent the potential impacts, which are additional to those reported as common to all (refer to paragraphs 15.7.2 to 15.7.4) and specific for Option 2H.

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- 15.7.34 Option 2H would have additional potential impacts on nine paths within the study area. Of these, five paths provide access to outdoor areas. The potential impacts on these paths are either adverse or beneficial and a summary of the impact assessment is shown in Table 15.14.

Table 15.14: Potential impacts on NMUs using the path network - additional for Option 2H

Path Name	Path Type	Change in Journey Length	Change in Amenity Value	Access to Outdoor Areas
Adverse Impacts				
HN1	Public right of way	Yes	Decrease	-
NA04.07	Core path	Yes	Decrease	Dunbar Recreation Ground
LP20	Local path	Yes	Decrease	Crook Plantation
Beneficial Impacts				
NA04.11	Core path	No	Increase	Delnies Wood
NA04.13	Core path	No	Increase	Delnies Wood
NA01.02	Core path	No	Increase	-
LP17	Local path	No	Increase	-
LP18	Local path	No	Increase	Delnies Wood
ACP09	Aspirational core path	No	Increase	-

- 15.7.35 The potential adverse impacts on these paths are as a result of severance and amenity impacts of Nairn East Junction C (NA04.07), the route option alignment north-west of Auldearn (HN1) and the route option alignment near Foynesfield (LP20). There are a number of beneficial impacts and these are as a result of the route option alignment being further away from these paths than the existing A96.
- 15.7.36 In relation to access to outdoor areas, NMUs are expected to be adversely impacted in using NA04.07 to access Dunbar Recreation Ground and LP20 to access the Crook Plantation. NMUs are expected to benefit in using NA04.11, NA04.13 and LP18 to access Delnies Wood.

Option 2I

- 15.7.37 The impacts described in this section represent the potential impacts, which are additional, to those reported as common to all (refer to paragraphs 15.7.2 to 15.7.4) and specific for Option 2I.
- 15.7.38 Option 2I would have potential impacts on an additional 11 paths within the study area. Of these, seven paths provide access to outdoor areas. The potential impacts on these paths are either adverse or beneficial and a summary of the impact assessment is shown in Table 15.15.

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Table 15.15: Potential impacts on NMUs using the path network - additional for Option 2I

Path Name	Path Type	Change in Journey Length	Change in Amenity Value	Access to Outdoor Areas
Adverse Impacts				
NA01.01	Core path	Yes	Decrease	Lethan Road Wood
LP19	Local path	Yes	Decrease	Woodlands near to Kinsteary House
LP20	Local path	No	Decrease	Crook Plantation
Beneficial Impacts				
HN1	Public right of way	No	Increase	-
NA04.07	Core path	No	Increase	Dunbar Recreation Ground
NA04.11	Core path	No	Increase	Delnies Wood
NA04.13	Core path	No	Increase	Delnies Wood
NA01.02	Core path	No	Increase	-
ACP09	Aspirational core path	No	Increase	-
LP17	Local path	No	Increase	-
LP18	Local path	No	Increase	Delnies Wood

15.7.39 The potential adverse impacts on these paths are as a result of severance and amenity impacts of the route option alignment through Lethan Road Wood (NA1.01), the woodlands near Kinsteary House (LP19) and the Crook Plantation (LP20). There are also a number of beneficial impacts and these are as a result of the route option alignment being further away from these paths than the existing A96.

15.7.40 In relation to potential impacts on access to outdoor areas, NMUs are expected to be adversely impacted in using NA1.01, LP19 and LP20 for accessing Lethan Road Wood, woodlands near Kinsteary House and, the Crook Plantation, respectively. There are beneficial impacts for NMUs using NA04.11, NA04.13 and LP18 to access Delnies Wood and NA04.07 to access Dunbar Recreation Ground.

15.8 Compliance with Policies and Plans

15.8.1 An assessment of the compliance of the route options in relation to the policies and plans mentioned in Section 15.3 (Policies and Plans) is presented in this section.

Inverness to Gollanfield

15.8.2 There are a number of beneficial impacts expected on paths as a result of the route options being further away from these paths than the existing A96. However, all the route options are expected to have adverse impacts on the path network and therefore have the potential to conflict with SPP, and Policy 30 (Physical Constraints), Policy 56 (Travel) and Policy 77 (Public Access) of the HwLDP.

15.8.3 All the route options would sever and/or impact on the amenity of a number of paths. In order to comply with SPP and Policy 56 (Travel) of the HwLDP all route options should ensure that opportunities for encouraging walking and cycling are maximised and, where adverse impacts to access to public open space and recreation are expected, appropriate mitigation such as improvements and enhancements to the local walking/cycling network should be considered.

15.8.4 Policy 30 (Physical Constraints) and Policy 77 (Public Access) of the HwLDP specifically relate to impacts to core paths and in line with these policies, should it not be possible to retain the existing core paths while maintaining or enhancing their environmental amenity,

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alternative access provision will be required that is no less attractive, is safe and convenient for public use, and does not damage or disturb species or habitats. If this is not possible, then there will be conflict with these policies.

Nairn Bypass

- 15.8.5 There are a number of beneficial impacts expected on paths as a result of the route options being further away from these paths than the existing A96. However, all the route options are expected to have adverse impacts on the path network and therefore have the potential to conflict with SPP, and Policy 30 (Physical Constraints), Policy 56 (Travel) and Policy 77 (Public Access) of the HwLDP (refer to paragraphs 15.8.3 to 15.8.4). Furthermore, all of the Nairn Bypass route options have the potential to conflict with Policy 78 (Long Distance Routes) through their potential impact on NCR1. This policy seeks to safeguard long distance routes and their amenity.

15.9 Potential Mitigation

- 15.9.1 For a DMRB Stage 2 Assessment the design has not been sufficiently developed to allow mitigation measures to be defined in detail at this stage. The objective of this section is to identify potential mitigation taking into account best practice, legislation and guidance, which would be developed and refined during the DMRB Stage 3 Assessment. As part of DMRB Stage 3, the design of the preferred option would be reviewed and, where possible, the preferred option would be further developed (pre-DMRB Stage 3 Assessment mitigation) to minimise impacts all travellers. The potential mitigation measures to be developed as part of the DMRB Stage 3 Assessment for both the construction and operational phases are described in this section.

Construction

- 15.9.2 Detailed mitigation would be developed as part of the DMRB Stage 3 Assessment when additional construction information is known and can be assessed in further detail. However, typical mitigation measures are anticipated to include:
- Programming the construction works in such a manner to reduce the length of closures or restrictions of access as far as practicable. Any diversion routes must be safe for NMUs and all inclusive in accordance with the Roads for All: Good Practice Guide for Roads (Transport Scotland, 2013).
 - Fencing of the construction site and restriction of access by non-authorised personnel.
 - Temporary diversion routes should be provided to maintain access for NMUs throughout the works, and any closure or re-routing of routes used by NMUs should be agreed in advance with the local authorities.
 - Where necessary, bus stops should be relocated safely with a safe access route provided for NMUs.
 - Best practicable means should be employed to avoid the creation of a statutory nuisance associated with noise, dust and air pollution. Further information on mitigation in relation to air and noise is available in Chapter 8 (Air Quality) and Chapter 9 (Noise and Vibration) of this report.
 - Reasonable precautions should be taken to reduce the visual impact of the construction works where practicable. Further information on mitigation in relation to this is provided in Chapter 10 (Landscape and Visual) of this report.

Operation

- 15.9.3 Mitigation would be developed as part of the DMRB Stage 3 Assessment when the preferred option is known and the design has been developed further. Mitigation should take into

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account the need to maintain access for NMUs along and across roads and paths directly impacted by the preferred option. Typical mitigation measures are anticipated to include:

- Diversion or re-routing of existing paths to provide relief from severance.
- Creation of new paths/cycleways.
- Take due regard of The Equality Act (2010) and follow guidelines of Road for All: The Good Practice Guide for Roads (Transport Scotland, 2013).
- Surfacing of any new paths including those alongside roads should be considered with regard to the type of user.
- Safety can be improved by segregating paths/cycleways from traffic.
- Cycling provision can be improved by including designated cycle lanes and clear signing.
- New cycleways/footpaths should be constructed using non-frost susceptible materials to reduce risk of degradation.

15.9.4 The amenity value of paths can also be improved as a result of the mitigation measures employed to reduce potential visual and air and noise impacts. These are discussed in more detail in Chapter 8 (Air Quality), Chapter 9 (Noise and Vibration) and Chapter 10 (Landscape and Visual) of this report.

15.9.5 Mitigation to reduce and or remove severance of paths may include provision of access across the point of severance using structures such as overbridges and underpasses. The route options currently have potential for this type of mitigation at the following locations:

- Smithton Junction;
- Newton Junction A, B and C;
- Mid Coul Junction A and B;
- Brackley Junction;
- Nairn West Junction A and B;
- A939 Junction A and B;
- Nairn East Junction A, B, C and D;
- River Nairn Bridge; and
- various local roads with some providing underbridges or overbridges to maintain access across the main A96 carriageway.

15.9.6 The potential for the route options to utilise these structures to mitigate severance of the path network is not considered within this comparative assessment of the route options. This is because although these structures may provide relief from severance, it is likely that there would continue to be impacts on amenity for NMUs using the paths, as well as the potential for impacts on journey length. This would continue to result in a significant impact (as defined in paragraph 15.2.24). The inclusion of structures to provide relief from severance and mitigation of amenity impacts would be considered within the DMRB Stage 3 Assessment of the preferred option.

15.10 Summary of Route Options

15.10.1 This section provides a summary of the impact assessment for each section including those potential impacts which are common to all and those that vary between the route options. The summary below relates to operational impacts. Impacts due to construction have not been considered at this stage as the likely nature and location of the construction activities is not available.

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- 15.10.2 A discussion of the potential mitigation for the route options is also presented taking into account the likely mitigation measures outlined in Section 15.9 (Potential Mitigation).

Inverness to Gollanfield

Path Network and Access to Outdoor Areas

- 15.10.3 Table 15.16 provides a summary of all the route options with the number of paths with significant adverse or beneficial potential impacts for NMUs in the Inverness to Gollanfield section. A significant impact is deemed to have occurred where there is an increase in journey length, either through severance or changes in access, or a change in the amenity value of the path. It should be noted that when considering the overall impacts reported in Table 15.16 that beneficial impacts are not considered to directly outweigh the adverse impacts.

Table 15.16: Number of paths with potential significant adverse or beneficial impacts (Inverness to Gollanfield)

Potential Impact	Option							
	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Path Network								
Adverse Impacts	17	15	19	17	18	18	20	20
Beneficial Impacts	2	2	-	-	3	3	1	1
Access to Outdoor Areas								
Adverse Impacts	16	14	18	16	14	14	16	16
Beneficial Impacts	2	2	-	-	3	3	1	1

- 15.10.4 All route options are expected to have a significant adverse impact on NMUs using the path network and in access to outdoor areas, either as a result of an increase in journey length or a decrease in amenity.
- 15.10.5 Options 1D and 1D (MV) are expected to have the greatest number of potential adverse impacts on NMUs using the path network, whereas Option 1A (MV) is expected to have the least number of potential adverse impacts. For Option 1D and 1D (MV) the greater impacts are mainly due to a combination of the route option alignment south of Allanfean Farm, Newton Junction B and the route option alignment and local roads associated with Mid Coul Junction B.
- 15.10.6 All route options, with the exception of Options 1B and 1B (MV), are expected to have some beneficial impacts on NMUs using the path network. Beneficial impacts arise as a result of an increase in amenity due to the route option alignment being further away from the paths than the existing A96. Options 1C and 1C (MV) are expected to have the greatest number of potential beneficial impacts, whereas Options 1B and 1B (MV) are expected to no beneficial impacts. Options 1B and 1B (MV) are mainly online and as such in a number of locations do not move the route option alignment further away from the path network, than the existing A96.
- 15.10.7 All route options are expected to have a significant potential adverse impact on NMUs using paths to access outdoor areas. Option 1B is expected to have the greatest number of potential adverse impacts, closely followed by Options 1A, 1B (MV), 1D and 1D (MV). This is mainly as a result of either Newton Junction A (Option 1A, 1B) and/or the route option alignment and local roads associated with Mid Coul Junction B (Options 1B, 1B (MV), 1D and 1D (MV)) in relation to their impact on paths that provide outdoor access to Cullernie Wood, High Wood and Tornagrain Wood. Options 1A (MV), 1C and 1C (MV) are expected to have the least number of potential adverse impacts.

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- 15.10.8 In relation to beneficial impacts on access to outdoor areas, the impacts are the same as reported for the path network. Please refer to paragraph 15.10.6 for summary of potential impacts.
- 15.10.9 Overall, taking into account adverse and beneficial impacts on the path network and access to outdoor areas, Options 1B, 1B (MV), 1D and 1D (MV) are expected to have the greatest adverse impact on NMUs. This is mainly due to these options being the most online, particularly at their eastern end, and therefore impacting a greater number of paths which are currently accessed from the existing A96, and as a result of the impacts of the route option alignment and local roads associated with Mid Coul Junction B on the paths around Tornagrain Wood. Option 1A (MV) is expected to have the least impact on NMUs. This is mainly due to this option avoiding the potential impacts on the path network near Allanfearn, surrounding Newton Junction A and B and the additional impacts associated with Mid Coul Junction B within Tornagrain Wood.

Mitigation

- 15.10.10 The mitigation measures outlined in Section 15.9 (Potential Mitigation) are expected to reduce the impacts on NMUs for all the route options from the potential impacts reported above. However, at this stage it is not possible to determine by how much these mitigation measures would reduce the impacts and as such this is not currently taken into account in the assessment of the route options.
- 15.10.11 There is potential within the route options for mitigation of severance using existing structures. However, it is likely that there would continue to be amenity impacts for these paths, especially where paths are currently located away from the existing A96, and also potential impacts on journey length. The inclusion of structures to provide relief from severance and mitigation of amenity impacts will be considered further during the DMRB Stage 3 Assessment of the preferred option.

Policies and Plans

- 15.10.12 In relation to compliance with planning policies, without mitigation, all of the route options have the potential to conflict with SPP, and Policy 30 (Physical Constraints), Policy 56 (Travel) and Policy 77 (Public Access) of the HwLDP. With appropriate mitigation as detailed in Section 15.9 (Potential Mitigation), it is expected that all the route options could comply with these policies. However, should it not be possible to provide alternative access provision for a core path that is no less attractive, is safe and convenient for public use, and does not damage or disturb protected species, a conflict with Policy 30 (Physical Constraints), Policy 56 (Travel) and Policy 77 (Public Access) of the HwLDP is expected.

Nairn Bypass

Path Network and Access to Outdoor Areas

- 15.10.13 Table 15.17 provides a summary of the number of paths with significant potential adverse and beneficial impacts for NMUs in the Nairn Bypass section. A significant impact is deemed to have occurred where there is an increase in journey length, either through severance or changes in access, or a change in the amenity value of the path. It should be noted that when considering the overall impacts reported in Table 15.17 that beneficial impacts are not considered to directly outweigh the adverse impacts.

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Table 15.17: Number of paths with potential significant adverse or beneficial impacts (Nairn Bypass)

Potential Impact on Path Network	Option								
	2A	2B	2C	2D	2E	2F	2G	2H	2I
Path Network									
Adverse Impacts	9	11	9	10	6	8	6	7	7
Beneficial Impacts	2	-	4	4	6	4	8	6	8
Access to Outdoor Areas									
Adverse Impacts	7	7	8	9	5	5	6	6	7
Beneficial Impacts	-	-	1	1	3	3	4	3	4

- 15.10.14 All route options are expected to have a significant potential adverse impact on NMUs using the path network and in access to outdoor areas, either as a result of an increase in journey length and/or a decrease in amenity value. All route options are expected to potentially impact on NCR1 near the Crook Plantation.
- 15.10.15 Generally, those route options which go through Delnies Wood (Options 2A, 2B, 2C and 2D) are expected to have the greatest number of adverse impacts on NMUs using the path network, with Options 2B and 2D expected to have the greatest number of potential adverse impacts overall. This is mainly due to the additional impacts that these route options have in relation to the paths close to the online section north of Auldearn (Option 2B) and the route option alignment by the Crook Plantation (Option 2D). Options 2E and 2G are expected to have the least number of potential adverse impacts on NMUs using the path network, closely followed by Options 2H and 2I. This is mainly due to these route options avoiding the paths both within Delnies Wood and close to the online section north of Auldearn.
- 15.10.16 All route options, with the exception of Option 2B, are expected to have some beneficial impacts on NMUs using the path network. Beneficial impacts arise as a result of an increase in amenity due to the route option alignment being further away from the paths than the existing A96. The beneficial impacts mainly occur for paths within Delnies Wood and those close to the existing A96 north of Auldearn. As Option 2B is the most online of the options in these locations, it is not expected to have any beneficial impacts on NMUs using the path network. Options 2G and 2I are expected to have the greatest number of potential beneficial impacts and this is mainly due to the route option alignment being further away, than the existing A96, from the paths within both Delnies Wood and those close to the existing A96 north of Auldearn.
- 15.10.17 All route options are expected to have significant potential adverse impacts on NMUs in relation to access to outdoor areas, with Option 2C and 2D expected to have the greatest number of potential adverse impacts. This is mainly due to these options impacting on NMUs using the path network within Delnies Wood (as Options 2A and 2B), but also having additional impacts on paths which provide access to outdoor areas to the south of the existing A96 (e.g. those paths within Lethan Road Wood and the woodlands around Kinsteary House). Options 2E and 2F are expected to have the least number of potential adverse impacts as they avoid the paths both within Delnies Wood and those to the south of the existing A96 around Lethan Road Wood and Kinsteary House. Option 2H also avoids the paths within both these outdoor areas, but this route option is expected to have additional impacts in relation to access to the Crook Plantation.
- 15.10.18 In relation to potential beneficial impacts and access to outdoor areas, those options that avoid Delnies Wood are expected to have a greater number of beneficial impacts (Options 2E, 2F, 2G, 2H and 2I). Although, Options 2C and 2D go through Delnies Wood they are expected to have one beneficial impact on access to the Dunbar Recreation Ground as these route options, along with Options 2G and 2I, move the route option alignment further away from this area than the existing A96.

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15.10.19 Overall, taking into account adverse and beneficial impacts on the path network and access to outdoor areas, Option 2B is expected to have the greatest potential adverse impact on NMUs, followed by Option 2D. This is mainly due to Options 2B and 2D going through Delnies Wood and having additional impacts to Option 2A and 2C in relation to impacts on the path network online to the north of the A96 near Auldearn (Option 2B) and near the Crook Plantation (Option 2D). Option 2E is expected to have the least potential adverse impact on NMUs, followed by Option 2G. This is mainly due to these route options avoiding Delnies Wood and the online section of the existing A96 to the north of Auldearn. Options 2H and 2I also avoid these areas, but these options, as with Option 2D, have additional impacts in relation to the paths near the Crook Plantation.

Mitigation

15.10.20 The summary of mitigation for the Nairn Bypass section is the same as for Inverness to Gollanfield. Please refer to paragraphs 15.10.10 and 15.10.11.

Policies and Plans

15.10.21 The summary of compliance with policy and plans for the Nairn Bypass section is the same for SPP, and Policy 30 (Physical Constraints), Policy 56 (Travel) and Policy 77 (Public Access) of the HwLDP as for Inverness to Gollanfield (refer to paragraph 15.10.12). In addition, all of the Nairn Bypass route options have the potential to impact on NCR1, and should it not be possible to safeguard NCR1 along with its settings, a conflict with Policy 78 (Long Distance Routes) of the HwLDP is also expected.

15.11 Scope of DMRB Stage 3 Assessment

15.11.1 In line with IAN125/09 the assessment of Effects on All Travellers at DMRB Stage 3 should combine DMRB Pedestrians, Cyclists, Equestrians and Community Effects and DMRB Vehicle Travellers. The DMRB Stage 3 Assessment should:

- confirm the information gathered from relevant statutory bodies and local councils including types of users through desk-based assessment and site visits;
- undertake additional consultation with relevant organisations such as SNH, local councils, ScotWays, Sustrans, British Horse Society and local outdoor access groups;
- refine the DMRB Stage 2 Assessment of the amenity value of paths using traffic flow data and information available from the relevant assessments (e.g. air quality, noise and vibration and landscape and visual) from the DMRB Stage 3 Assessment;
- update and define the level of impact significance for changes in journey length and amenity, taking into account embedded mitigation;
- propose appropriate mitigation measures based on refined assessments;
- assess the impacts on driver stress, using updated traffic data based on the preferred option;
- review the DMRB Stage 3 Assessment for landscape and visual to inform the view from the road, taking account of landscaping and mitigation during the winter year of opening and summer 15 years after opening; and
- identify any further mitigation, including input, where appropriate, into aspects such as signage and lighting.

15.12 References

Countryside (Scotland) Act 1967.

Disability Discrimination Act 1995.

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Equality Act 2010.

Land Reform (Scotland) Act 2003.

Scottish Executive (2005), Planning Advice Note 75: Planning for Transport.

Scottish Executive (2006). Planning Advice Note 78: Inclusive Design.

Scottish Government (2014). Scottish Planning Policy. June 2014.

Scottish Natural Heritage (2013). A Handbook on Environmental Impact Assessment. Guidance for Competent Authorities, Consultees, and others involved in the Environmental Impact Assessment Process in Scotland.

The Highland Council (2011). Core Path Network Plan. September 2011.

The Highland Council (2012), Highland-wide Local Development Plan. April 2012.

The Highland Council (2013), Physical Constraints Supplementary Guidance. March 2013.

The Highways Agency, Scottish Executive Development Department, The National Assembly for Wales and The Department of Regional Development Northern Ireland, (1993a). Design Manual for Roads and Bridges Volume 11, Section 3, Part 8, Pedestrians, Cyclists, Equestrians and Community Effects. June 1993.

The Highways Agency, Scottish Executive Development Department, The National Assembly for Wales and The Department of Regional Development Northern Ireland, (1993b). DMRB Volume 11 Section 3, Part 9, Vehicle Travellers. June 1993.

The Highways Agency (2009) Interim Advice Note 125/09. Supplementary Guidance for users of DMRB Volume 11 'Environmental Assessment'. October 2009.

Transport Scotland (2013). Roads for All: Good Practice Guide for Roads.

16 Community and Private Assets

16.1 Introduction

16.1.1 This chapter presents the DMRB Stage 2 Assessment of the potential impacts of each of the route options on community and private assets. For the purposes of this assessment community and private assets include:

- residential, commercial and industrial property;
- community facilities;
- community land;
- development land;
- agriculture and forestry land; and
- waterway restoration projects.

16.1.2 The assessment includes a discussion of the potential impacts of the route options on the land-take (e.g. demolition of a building, land-take of associated land and/or severance of land), access arrangements, amenity (e.g. air, noise and visual impacts) and community severance.

16.1.3 This assessment is supported by the following appendices in Part 6 (Appendices) of this report:

- Appendix A16.1: Development Land.
- Appendix A16.2: Development Land - Impact Assessment Tables.
- Appendix A16.3: Agricultural Land Classification.
- Appendix A16.4: Agriculture and Forestry - Impact Assessment Tables.

16.1.4 As described in Part 1 (The Scheme), Chapter 3 (Description of Route Options) of this report, the proposed scheme is divided into two sections; Inverness to Gollanfield and the Nairn Bypass. The information presented in Section 16.2 (Approach and Methods), Section 16.3 (Policies and Plans) and Section 16.9 (Potential Mitigation) is appropriate to both sections. The information presented in Section 16.4 (Baseline Conditions), Sections 16.5 to 16.7 (Impact Assessment), Section 16.8 (Compliance with Policies and Plans) and Section 16.10 (Summary of Route Options) is reported for each section and where appropriate under the headings Inverness to Gollanfield and the Nairn Bypass

16.1.5 Section 16.11 provides details on the proposed scope for the DMRB Stage 3 Assessment and Section 16.12 provides a full list of references that are noted within this chapter.

16.2 Approach and Methods

Scope and Guidance

16.2.1 The assessment has been undertaken with reference to DMRB Interim Advice Note 125/09 Supplementary Guidance for users of DMRB Volume 1 Environment Assessment (The Highways Agency, 2009) (hereafter referenced as IAN125/09). This states that the guidance in DMRB Volume 11, Section 3, Part 6, Land Use (The Highways Agency et al., 2001) should be followed, incorporating the 'community effects' element of DMRB Volume 11, Section 3, Part 8, Pedestrians, Equestrians, Cyclists and Community Effects (The Highways Agency et al., 1993) (hereafter referred to as 'DMRB Land Use' and 'DMRB Pedestrians, Cyclists, Equestrians and Community Effects').

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- 16.2.2 The 'community effects' element of the guidance includes an assessment of the degree of potential severance experienced by local communities i.e. the degree to which communities are separated from facilities and services they use within their community.
- 16.2.3 A review of the Waterway Restoration Priorities by the Inland Waterways Amenity Advisory Council (IWAAC) (IWAAC, 1998) and the subsequent report (IWAAC, 2006) revealed that no relevant waterway restoration projects were located within the study area, and therefore, this aspect is not considered any further in this assessment.
- 16.2.4 The impact of the route options on sporting interests, within the context of agricultural and forestry land interests has been scoped out at this stage. This is because land use in the study area is mainly focused on agricultural and forestry operations, with sporting interests being a smaller element of land use. The assessment of land-take and disruption to agricultural and forestry operations through severance of fields and access is considered to provide sufficient differentiation between the route options for the purposes of the DMRB Stage 2 Assessment. Sporting interests would be considered further during the DMRB Stage 3 Assessment.

Study Area

- 16.2.5 The study area for the assessment has been defined as 500m from the outermost edge of all of route options. However, the assessment of community severance, in some instances, may extend beyond this to allow for consideration of the potential impacts of severance on communities which extend beyond the study area. The study area is shown on Figures 16.1 to 16.27.

Baseline Data

- 16.2.6 Baseline receptors considered within this assessment include:
- local communities;
 - residential, commercial and industrial property;
 - community facilities which include commercial or public authority managed facilities for use by the whole community e.g. doctors surgeries, schools, hospitals, post offices and churches;
 - community land which includes any land laid out as public parks or used for the purpose of public recreation, such as playing fields and woodlands which permit public access;
 - agricultural and forestry land interests, whereby agriculture is considered to be the practice of cultivating land or rearing stock to produce food products and forestry is defined as the growing of trees to produce wood and wood products for commercial purposes; and
 - land allocated for development through the local development plan and/or planning applications.
- 16.2.7 It should be noted that community and private assets can fall into one or more of the baseline categories listed above. For the purposes of this assessment, community and private assets have been allocated to one category and this has been based on their primary or future land use. For example, where forestry land permits access to the public (e.g. community land), this land is considered within the agriculture and forestry category as forestry is considered to be the primary land use.
- 16.2.8 In relation to development land, where land is allocated within the local development plan or where land has an extant planning application, this land has been allocated to the development land baseline category. This ensures that potential impacts are not double counted between current and future land use and allows for an assessment of the potential impacts of the route options on development land. For example, where agricultural land is

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allocated within the local development plan for future development, this is assessed under the development land category and is excluded from the agricultural and forestry assessment.

- 16.2.9 Baseline conditions for the above receptors were identified through a review of the following:
- aerial photographs;
 - Ordnance Survey (OS) maps;
 - Scottish Index of Multiple Deprivation (SIMD) Interactive Mapping website (<http://scotland.gov.uk/Topics/Statistics/SIMD/SIMDinteractive>);
 - The Highland-wide Local Development Plan (HwLDP), adopted April 2012 (The Highland Council, 2012) (hereafter referred to as HwLDP);
 - Inner Moray Firth Proposed Local Development Plan (IMFPLDP), currently under formal examination by the Scottish Ministers (The Highland Council, 2013a) (hereafter referred to as IMFPLDP);
 - Inverness Local Plan, as continued in force, April 2012 (The Highland Council, 2006)
 - Nairnshire Local Plan, as continued in force, April 2012 (The Highland Council, 2000);
 - Highland Greenspace Audit (The Highland Council, 2010);
 - Macaulay Land Use Research Institute (MLURI), now the James Hutton Institute (JHI), Land Capability for Agriculture (LCA) data (JHI, 2013);
 - information provided by Brodies LLP in October 2013 in relation to land ownership;
 - information provided by the District Valuer in February 2014 in relation to land-take and potential impacts on community and private assets; and
 - online based search for commercial and industrial property and community facilities.
- 16.2.10 An initial site visit was undertaken by SAC Consulting in March 2014 to verify the agriculture and forestry land use and land management practices that were determined from desk-based studies.
- 16.2.11 Available LCA data (JHI, 2013) were used to indicate the land capability class within the study area. This classification system gives an indication of the capability of land to grow certain types of crops and grass. Land is classified into seven main classes, some of which have subdivisions, with Class 1 being the best quality land and Class 7 the poorest. Classes 1, 2 and 3.1 are known as prime quality land and Classes 3.2 to 7 are known as non-prime land.
- 16.2.12 Consultation with The Highland Council was undertaken to identify consented planning applications submitted from 21 February 2009 to 21 February 2014. Section 58 of the Town and Country Planning (Scotland) Act 1997 was amended on 03 August 2009 to reduce the standard duration of planning permission from five to three years. Generally, consents pre-dating this change would still have five years within which the permission could be implemented. Accordingly, applications consented prior to 21 February 2009 have been discounted since they would have either been implemented or planning permission would have lapsed. Applications consented up to and including 02 August 2009 would be considered in the assessment and applications consented on or after the 03 August 2009 have been reviewed to identify whether the permission is still valid (i.e. within a three year implementation timeframe).
- 16.2.13 Planning applications excluded the following:
- householder applications for improvements/extensions;
 - local commercial and business applications for minor improvement works and alterations;

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- change of use;
- applications for advertisement consent; and
- enforcement actions.

16.2.14 Planning applications that have been withdrawn or refused were generally excluded from the baseline, except where they related to planning applications associated with the development land allocations.

16.2.15 Public Exhibitions were held in November 2013. Where appropriate, feedback received following the exhibitions has been taken into account in this DMRB Stage 2 Assessment.

Impact Assessment

Community Severance

16.2.16 The assessment of community severance does not use the standard significance criteria (e.g. Moderate significance) and instead qualitatively considers how the route options impact on the connectivity of communities, both within and between local communities, in relation to how residents gain access to local facilities and services. This includes an assessment of whether the route options may cause severance or provide relief from existing severance.

Residential, Commercial and Industrial Property

16.2.17 The assessment of residential, commercial and industrial property does not assign standard significance terms (e.g. Moderate significance), and is instead based on a qualitative assessment of the direct adverse impacts caused by changes in access or land-take as a consequence of the route options.

16.2.18 The estimated land-take is based on the footprint of the route options including a 5m buffer to take account of any land required for maintenance. It does not include land required for construction of the route options (e.g. for construction compounds) or additional land-take required for aspects such as landscape planting or other essential mitigation, which cannot be accurately quantified in the DMRB Stage 2 Assessment.

16.2.19 The assessment of potential impacts on access considers there to be an adverse impact where access to an existing residential, commercial and industrial property is expected to be stopped-up as part of the design of the route options, and where no alternative access is provided. The potential impacts associated with increased journey length and amenity impacts brought about by the construction and operation of these alternative access routes would be further assessed during the DMRB Stage 3 Assessment.

16.2.20 The approach set out in paragraph 16.2.17 is followed because all receptors are considered to be of high sensitivity and for commercial/industrial properties it is difficult to confirm impact significance without incorporating a detailed assessment of the impacts of the route options on future business viability. A detailed assessment of business viability is not considered to be appropriate at this stage and this would be considered in the DMRB Stage 3 Assessment once detailed site visits and consultation with affected landowners is undertaken. For the purposes of this assessment, any potential impacts on business viability have been assessed based on impacts of the route options in relation to access and land-take only.

16.2.21 For residential, commercial and industrial property, potential changes in air quality, traffic noise and visual amenity are considered in Chapter 8 (Air Quality), Chapter 9 (Noise and Vibration) and Chapter 10 (Landscape and Visual) of this report.

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Community Facilities

16.2.22 The assessment of community facilities follows the same approach as detailed for the assessment of residential, commercial and industrial property (refer to paragraphs 16.2.17 to 16.2.21).

Community Land

16.2.23 The assessment of impacts on community land follows the same approach as detailed for residential, commercial and industrial property (refer to paragraphs 16.2.17 to 16.2.21).

Agricultural and Forestry Land

16.2.24 In respect of agriculture and forestry land, the four main areas covered in the assessment are specified as:

- land-take in relation to the quantity and quality of agricultural and forestry land;
- type of land use affected (arable, grassland, woodland);
- severance, including the number of fields affected; and
- the need for major accommodation works beyond that which are embedded in the route option designs and which would be developed during the DMRB Stage 3 Assessment.

16.2.25 The area is mapped by the JHI for LCA. 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 to 7 are known as non-prime land.

16.2.26 The estimated land-take is based on the footprint of the route options including a 5m buffer to take account of any land required for maintenance. It does not include land required for construction of the route options (e.g. for construction compounds) or additional land-take required for aspects such as landscape planting or other essential mitigation, which cannot be accurately quantified in the DMRB Stage 2 Assessment.

16.2.27 At this stage the details of how farmers take access to their fields and farm buildings are not fully known and therefore it is difficult to assess how access would be impacted by each of the route options. Therefore, the number of fields where land-take occurs is used as a measure of likely severance and is considered for the purposes of this assessment to represent potential impacts on access. A detailed assessment of the impacts on access would be undertaken in the DMRB Stage 3 Assessment.

16.2.28 At this stage in the assessment the significance of impact cannot be assessed as detailed site visits and consultation with landowners have not yet taken place to allow the determination of the sensitivity of the agricultural and forestry land. However, to inform the assessment, it is possible to give an indication of the magnitude of the impact of the route options on land use, considering the combination of factors outlined in paragraphs 16.2.24 and 16.2.27. Magnitude of impact can be low, medium or high and is defined for the purposes of this assessment in Table 16.1.

16.2.29 The magnitude criteria in Table 16.1 have been set on the understanding that the average size of a commercial farm in the area is around 200ha and as such a low magnitude of impact in relation to land-take would represent up to 2.5% of the holding and a high magnitude of impact would represent more than 7.5% of the holding (interpreted from information contained within Economic Report on Scottish Agriculture (Scottish Government, 2013)).

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Table 16.1: Land use magnitude of impact

Impact (Adverse)	Criteria
Low	Land interests that would experience only low levels of disruption to access, and/or small permanent decreases in land area (less than or equal to 2.5% (5ha)) and/or business operational impacts to current agricultural and forestry systems and practices.
Medium	Land interests that would experience medium levels of disruption to access, and/or moderate permanent decreases in land area (greater than 2.5% (5ha) but less than 7.5% (15ha)) and/or business operational impacts to current agricultural and forestry systems and practices.
Major	Land interests that would experience high levels of disruption to access, and/or major permanent decreases in land area (greater than 7.5% (15ha)) and/or major business operational impacts to current agricultural and forestry systems and practices.

Development Land

- 16.2.30 The assessment of development land does not use standard significance criteria (e.g. Moderate significance) and instead qualitatively considers where the route options conflict with a development land allocation or an extant planning consent. This can be directly through land-take or indirectly as a result of potential changes in amenity. These impacts have the potential to result in either the partial or total loss of the development capability in relation to the preferred use of the site. This approach is followed as it is difficult to determine the magnitude or sensitivity of impacts due to the uncertainties concerning the nature of future development (e.g. whether consented planning applications or development land allocations will be implemented, and if they are the layout of these sites).
- 16.2.31 The IMFPLDP will be used alongside the HwLDP and will replace the land allocations identified in the Inverness Local Plan and Nairnshire Local Plan on its adoption. It also provides more detail on individual projects relating to the spatial strategies outlined in the HwLDP. For this reason, where allocations from different plans relate to the same development site, potential impacts are assessed in relation to the IMFPLDP allocation.
- 16.2.32 Some of the development land allocations have extant planning applications. Where this is the case the potential impacts have been assessed as part of the development land allocation. This approach ensures that potential impacts are only assessed once, as either an impact on a development land allocation or as an impact on an extant planning application.

Mitigation

- 16.2.33 Potential mitigation measures to reduce the impacts have been considered as part of this assessment and are discussed in Section 16.9 (Potential Mitigation).

Limitations to Assessment

- 16.2.34 Baseline information has been determined on data available at the time of the assessment and mainly through a desk-based assessment. Following the selection of a preferred option, detailed site visits and further consultation with landowners along the line of the preferred option would be undertaken to confirm the baseline to inform the DMRB Stage 3 Assessment.
- 16.2.35 Land-take calculations are approximate and are based on the footprint of the route options including a 5m buffer to take account of any land required for maintenance. It does not include land required for construction of the route options (e.g. for construction compounds), or any additional land-take required for aspects such as landscape planting or other essential mitigation. These would be identified during the DMRB Stage 3 Assessment.
- 16.2.36 It should be noted that the land-take calculations presented in this chapter may vary from those reported in Chapter 11 (Habitats and Biodiversity) of this report as in this assessment

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some of the agriculture and forestry land may form part of a development land allocation and as such will be assessed as a potential impact (e.g. land-take) under development land.

- 16.2.37 The assessment of potential impacts on access considers there to be an adverse impact where access is expected to be stopped-up as part of the design of the route options and where no alternative access is provided. The potential impacts associated with increased journey length and amenity brought about by the construction and operation of these alternative access routes would be further assessed for the DMRB Stage 3 Assessment.
- 16.2.38 Community Land is defined in paragraph 16.2.6. However, as noted in Chapter 15 (Effects on All Travellers) of this report, the Land Reform (Scotland) Act 2003 establishes statutory rights of responsible access on and over most land. It is therefore acknowledged that additional areas of privately owned land may be used informally by the community. These would be identified through further consultation during the DMRB Stage 3 Assessment and assessed with proposed mitigation as necessary.
- 16.2.39 The potential impacts on future business viability have been determined through the assessment of land-take, potential impacts in relation to access and where information is available, initial consultation with affected landowners. Detailed site visits and further consultation with affected landowners would be required for the DMRB Stage 3 Assessment to fully assess the impacts of the preferred option on future business viability.
- 16.2.40 The information gathered from the desk-based assessment and the initial site visit for the agricultural and forestry assessment is limited in relation to confirming the extent of each land interest holding and the full nature of its agricultural and forestry operations. During the initial site visit in March 2014 no contact was made with land interests as it was deemed premature given the stage of development of the route options. As such, it is not possible to confirm the sensitivity of the land interest or the significance of impact. The assessment of potential impacts has therefore been based on the magnitude of impact only.
- 16.2.41 At this stage the details of how farmers take access to their fields and farm buildings are not fully known and therefore it is difficult to assess how access would be impacted by each of the route options. Therefore, the number of fields where land-take occurs is used as a measure of likely severance and is considered for the purposes of this assessment to represent potential impacts on access. A detailed assessment of the impacts on access would be further assessed for the DMRB Stage 3 Assessment.
- 16.2.42 The assessment of potential impacts on development land was completed using a desk-based approach in consultation with The Highland Council. No site visit has been undertaken to confirm the status of planning applications or development land allocations on the ground and it is therefore possible that some consented development may have been completed.
- 16.2.43 The above limitations are typical of a DMRB Stage 2 Assessment, and the assessment reported in this chapter is considered robust and of an appropriate level to provide a comparative assessment of the route options. As noted above, further detailed work would be undertaken for the DMRB Stage 3 Assessment to inform the DMRB Stage 3 design and assessment of the preferred option.

16.3 Policies and Plans

- 16.3.1 The national, regional and local planning policies and guidance relevant to community and private assets are identified below. An assessment of the compliance of the route options in relation to these policies is provided in Section 16.8 (Compliance with Policies and Plans).

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National Planning Policy and Guidance

- 16.3.2 National planning policy on a variety of themes is contained within Scottish Planning Policy (SPP) (Scottish Government, 2014) (hereafter referred to as SPP). In terms of the impact of route options on community and private assets, SPP is focussed on:
- supporting sustainable economic growth and regeneration;
 - making efficient use of existing capabilities of land, buildings and infrastructure;
 - supporting delivery of accessible housing, business, retailing and leisure development;
 - supporting delivery of infrastructure including better transport connectivity;
 - improving health and well-being by offering opportunities for social interactions;
 - having regard for the principles of sustainable land use; and
 - avoiding over development.
- 16.3.3 SPP indicates that the fundamental principle of sustainable development is that it integrates economic, social and environmental objectives. The aim is to achieve the right development in the right place. SPP provides that the planning system should promote development that supports the move towards a more economically, socially and environmentally sustainable society.
- 16.3.4 Circulars and Planning Advice Notes (PANs) published by the Scottish Government provide further guidance on specific topics. PAN 65: Planning and Open Space (Scottish Government, 2008) and Circular 18/1987 (as amended by 29/1988 and 25/1994): 'Development involving agricultural land' (Scottish Executive, 1987) are of relevance to community and private assets and are summarised in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.

Regional and Local Planning Policy and Guidance

- 16.3.5 The key development plan policies that are of relevance to community and private assets are listed below and summarised in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report. In addition, a number of policies relating to specific land allocations are identified in Part 6 (Appendices), Appendix A16.1 (Development Land) of this report.

Highland-wide Local Development Plan (HwLDP)

- 16.3.6 The HwLDP is the land-use Plan which will guide the development and investment in the region over the next 20 years. The relevant policies in relation to community and private assets include:
- Policy 28: Sustainable Design;
 - Policy 52: Principle of Development in Woodland;
 - Policy 75: Open Space; and
 - Policy 76: Playing Fields and Sports Pitches.
- 16.3.7 The HwLDP has a number of supporting supplementary guidance notes, and those of relevance to community and private assets include:
- Sustainable Design Guide Supplementary Guidance (adopted January 2013) (The Highland Council, 2013b); and
 - Trees, Woodlands and Development Supplementary Guidance (adopted January 2013) (The Highland Council, 2013c).

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Inverness and Nairnshire Local Plans

16.3.8 The Inverness and Nairnshire Local Plans include a number of general settlement policies which safeguard, maintain or promote existing uses within settlements. These include:

Inverness Local Plan

- General Policy A: Amenity
- General Policy B: Business
- General Policy H: Housing
- General Policy I: Industry
- General Policy S: Special Uses

Nairnshire Local Plan

- General Policy S2: Housing
- General Policy S3: Business
- General Policy S4: Industry
- General Policy S5: Special Uses

Review of Planning Policies

16.3.9 The key aspects of the relevant planning policies are discussed below in relation to their relevance for community and private assets.

Community and Private Assets (excl. agricultural and forestry and development land)

16.3.10 Policy 28 (Sustainable Design) of the HwLDP requires development to be designed with sustainability in mind and encourages development that will promote and enhance the social and environmental wellbeing of Highland. As such, developments will be assessed on a number of criteria including the extent to which they:

- impact on individual and community residential amenity and promote well used environments which will enhance community safety and security;
- contribute to the economic and social development of the community; and
- are compatible with public service provision (water and sewerage, drainage, roads, schools, electricity).

16.3.11 Policy 28 (Sustainable Design) of the HwLDP also advises that all development proposals must demonstrate compatibility with the Sustainable Design Guide (The Highland Council, 2013b) which requires that all developments should minimise the environmental impact of development and enhance the viability of Highland communities.

16.3.12 Developments which are judged to be significantly detrimental in terms of these criteria will not accord with the HwLDP and will only be supported if no reasonable alternative exists, if there is demonstrable overriding strategic benefit or if satisfactory overall mitigation measures are incorporated.

16.3.13 In relation to community land as defined in paragraph 16.2.6, SPP advises that Planning Authorities should support, protect and enhance public open space (as identified in the open space audit and strategy) and opportunities for sport and recreation.

16.3.14 Policy 75 (Open Space) of the HwLDP supports SPP and safeguards existing areas of high quality, accessible and fit for purpose open space from inappropriate development. Sites

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identified in the Highland Council's Audit of Greenspace (The Highland Council, 2010) will be safeguarded unless it can be demonstrated that the open space is not fit for purpose, substitute provision can be made or development of the open space would significantly contribute to the spatial strategy for the area.

- 16.3.15 SPP and Policy 76 (Playing Fields and Sports Pitches) of the HwLDP state that playing fields and sports pitches should not be redeveloped. However exceptions to this may include where the development involves a minor part of the field which would not affect its use, where a replacement playing field of comparable or greater benefit is provided, or if a playing field strategy and consultation with SportScotland has demonstrated that there is a clear excess of sport pitches to meet current and anticipated future demand.
- 16.3.16 The general settlement policies within the Inverness Local Plan and Nairnshire Local Plan look to safeguard, maintain or promote existing uses within settlements. For example General Policy A: Amenity of the Inverness Local Plan seeks to safeguard areas within settlements from development not associated with their purpose and function.

Agriculture and Forestry Land

- 16.3.17 As prime quality agricultural land is a finite national resource, SPP emphasises that development on it would not be permitted unless it is an essential component of the settlement strategy or it is necessary to meet an essential need (e.g. essential infrastructure) where no other suitable site is available. In support of this, Policy 28 (Sustainable Design) of the HwLDP states that developments will be assessed on a number of criteria including the extent to which they impact on prime quality agricultural land. Developments which are judged to be significantly detrimental in terms of these criteria will not accord with the HwLDP, and will only be supported if no reasonable alternative exists, if there is demonstrable overriding strategic benefit or if satisfactory overall mitigation measures are incorporated.
- 16.3.18 SPP recommends that planning authorities should consider preparing woodland strategies to inform future development of woodland (including forestry) in their area. In response to this, The Highland Council has prepared supplementary guidance (The Highland Council, 2013c) which provides further information in support of Policy 52 (Principle of Development in Woodland) of the HwLDP. This policy reflects the Council's strong presumption in favour of protecting woodlands, and developments resulting in its loss will not be supported unless they offer clear and significant public benefit and provide compensatory planting. In relation to forestry, The Highland Council will consider major development proposals against their socio-economic impact on the local forestry industry, the economic maturity of the woodland, and the opportunity for the proposals to co-exist with forestry operations.

Development Land

- 16.3.19 As highlighted in SPP, the planning system is plan-led and therefore requires succinct development plans setting out long-term visions for an area. Development plans guide the future use of land and decisions on proposed developments should be taken against a framework of up to date development plans. Any development that would conflict with a proposed land allocation in the HwLDP, the Inverness and Nairnshire Local Plans and the IMFPLDP, would not accord with the associated development plan.

16.4 Baseline Conditions

- 16.4.1 The baseline conditions for each section of the study area are described below in relation to local communities; residential, commercial and industrial property; community facilities; community land; agricultural and forestry land and development land.

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Inverness to Gollanfield

Local Communities

- 16.4.2 The main communities within close proximity to the study area include Smithton, Culloden and Balloch, which are all located to the south of the existing A96 Aberdeen – Inverness Trunk Road (hereafter referred to as the existing A96). Other smaller settlements include, but are not limited to, Milton of Culloden, Tornagrain, Mid Coul, Milton of Gollanfield, Gollanfield and Lochside. The location of these communities in relation to the route options are shown on Figures 16.1 to 16.4.

Residential, Commercial and Industrial Property

- 16.4.3 Most residential properties are located within the communities listed in paragraph 16.4.2, with the remainder of residential properties made up of a number of scattered rural dwellings, including a number of farmhouses and their associated cottages.
- 16.4.4 The SIMD identifies areas of multiple deprivation across Scotland. None of the areas identified in paragraph 16.4.2 are listed in the top 20% of multiple deprivation (Scottish Government, 2012).
- 16.4.5 Commercial and industrial property is located along the length of the route options, with the main concentration at the eastern end of the study area. These include, but are not limited to StoneyField Business Centre, Inverness Business and Retail Park, Allanfean Sewage Treatment Works, Allanfean Gas Distribution Centre, the Norbord Factory, Morayston House B&B, Highland Campervans, Hillhead Quarry, Inverness Airport, Polfalden Boarding Kennels and Cattery and the Taste of Moray Restaurant.
- 16.4.6 The location of the main residential areas (i.e. local communities) and commercial and industrial properties in relation to the route options are shown on Figures 16.1 to 16.4

Community Facilities

- 16.4.7 The majority of community facilities are located outside of the study area in the communities of Smithton, Culloden and Balloch. However, the following community facilities are located within the study area; Balloch Primary School, Balloch Village Hall, Curling Pond at Kerrowaird Wood, Petty Parish Church of Scotland, War Memorial near Tornagrain and the Breachlich Cemetery. The location of these community facilities in relation to the route options are shown on Figures 16.1 to 16.4.

Community Land

- 16.4.8 The Highland Council's Audit of Greenspace (The Highland Council, 2010) for Inverness shows that there are a number of areas where land is identified as open space, mainly as natural/semi-natural or amenity greenspaces. A review of this document identifies that these areas are mainly included in land which due to its primary land use would be considered for the purposes of this assessment within either the commercial/industrial or agricultural and forestry assessment (refer to paragraph 16.2.7).
- 16.4.9 Community land within the study area, not referenced within the Highland Council's Audit of Greenspace (The Highland Council, 2010), consists of Loch Flemington, where a scenic walk is located, and Kerrowaird and Tornagrain woodlands. The location of these in relation to the route options is shown on Figures 16.1 to 16.4. For the purposes of this assessment Kerrowaird Wood has been categorised within the baseline by its primary land use which is forestry (refer to paragraph 16.2.7) and as such this is included in the agriculture and forestry assessment. Tornagrain Wood has a development land allocation (refer to LA15 in Table 16.3) and as such this is included in the development land assessment (refer to paragraph 16.2.8).

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- 16.4.10 There are a number of footpaths (e.g. core paths) within the study area which provide access for the public which may be used by the local community for recreational purposes. The potential impact of the route options on these paths is considered within Chapter 15 (Effects on All Travellers) of this report.

Agriculture and Forestry Land

- 16.4.11 The predominant land use in the study area is agriculture with parcels of forestry and woodland. The land mainly supports intensive arable based agricultural systems with livestock (cattle and sheep) as secondary enterprises.
- 16.4.12 Figures 16.10 to 16.13 show the distribution of LCA classes in this section of the study area. The land, particularly at the southern end, is some of the more productive land in Scotland. Consequently, the area is important in supporting Scotland's combinable crop (wheat, barley and oilseed rape), as well as the potato and vegetable sectors.
- 16.4.13 The predominant land class in the study area is Class 3.2 (land capable of average production but high yields of cereals and grass are often obtained). There are also significant areas of prime agricultural land, including both LCA Class 2 and 3.1 land. These bands of prime land are mainly found to the south and west of the study area, with some located to the east of Tornagrain. Class 2 land is very flexible and a wide range of crops can be grown, whilst Class 3.1 land is capable of producing high yields of a narrow range of crops and/or moderate yields.
- 16.4.14 Within the study area, twenty land interests have been identified that are affected by one or more of the route options. For the purposes of this DMRB Stage 2 Assessment the land use for each land interest has been characterised as arable, grassland or woodland. A summary of the affected land interests is provided in Table 16.2, with their location in relation to the route options shown on Figures 16.10 to 16.13. The land interest reference relates to information as provided by Brodies LLP in October 2013.

Table 16.2: Agricultural and forestry land Interests affected by the route options (Inverness to Gollanfield)

Land Interest Reference	Type of Land Use within Study Area
60	Woodland
239	Arable and grassland
258	Arable
268	Woodland
269A*, 269X*, 269E*, 269B*	Arable, grassland and woodland
290	Woodland
312	Grassland
313	Arable and grassland
315	Arable
316	Arable
317	Arable
321	Arable and grassland
331	Grassland
337	Arable and grassland
338	Woodland
339	Arable and grassland
340	Arable and grassland

* Land Interest Reference 269 is owned by the Moray Estate and covers a large area of the total land determined to be used for agriculture/forestry. There are a number of tenant farmers who farm the land and for the purposes of this assessment these tenanted areas are considered separately with the potential impacts reported against each of the tenant farmers. These are referenced as land interest reference 269A, 269B, 269E and 269X.

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Development Land

- 16.4.15 The HwLDP sets out the overarching vision, spatial strategy and general planning policies for the whole of the Highland Council area. It was adopted in April 2012 and supersedes the General Policies and other related material of the Inverness Local Plan and the Nairnshire Local Plan. However, a number of land allocations from these Local Plans continue in force until the IMFPLDP is formally adopted. The IMFPLDP sets out the Highland Council's site allocations to guide development in the Inner Moray Firth area over the next 20 years. This was published for consultation between 01 November and 13 December 2013 and is currently under formal examination by the Scottish Ministers. Although not yet adopted in its final form, it can currently be used as a material consideration in the determination of planning applications.
- 16.4.16 There are 16 development land allocations and 11 extant planning applications (i.e. those consented within the last five years) located within the study area. The majority of the area allocated for development is allocated for mixed use development and include the following larger development sites; Stratton New Town (LA04), Business (Inverness Airport) (LA14) and Tornagrain New Town (LA15), all of which have planning permission granted in principle.
- 16.4.17 A summary of the development land is provided in Table 16.3 along with the development land reference (e.g. LA01) which has been developed for the purposes of this assessment. Where planning applications are located within areas of development land this is highlighted. Further details, including reference to the land allocation within the relevant policies, are provided in Part 6 (Appendices), Appendix A16.1 (Development Land) of this report.
- 16.4.18 The location of development land in relation to the route options, shown on Figures 16.19 to 16.22.

Table 16.3: Development land allocations and extant planning applications (Inverness to Gollanfield)

Ref	Type/Name	Overview	Planning Permission
Development Land Allocation			
LA01	Retail (Inverness Retail Park)	7.20ha of additional land for bulky goods retail.	-
LA02	Business (Eastfield Way)	1.90ha for business with a high architectural and landscape design quality.	-
LA03	Mixed Use (Ashton Farm)	105.20ha for residential, community, business, industrial, leisure and non-residential institution.	-
LA04	Mixed Use (Stratton)	73.70ha site for mixed use including 2,475 residential units, retail, business, community and leisure.	09/00141/OUTIN Planning permission in principle (PPP) was granted in 2011 and the approved Masterplan accounts for a new A96 alignment. Matters Specified in Conditions (MSC) applications have not yet been lodged.
LA05	Housing (Stratton Lodge)	2.50ha for 25 residential units.	-
LA06	Mixed Use (Milton of Culloden)	24.90ha mixed use site including 375 residential units, business and community.	-
LA07	Community (Culloden Academy)	10.10ha for the relocation and expansion of school playing fields.	-

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Ref	Type/Name	Overview	Planning Permission
LA08	Industry (Allanfearn)	Scottish Water proposes to adapt the sludge treatment and storage facilities to enable manufacture of a recycled product for use as a sterilised agricultural fertiliser, soil conditioner and fuel source.	-
LA09	Housing (Upper Cullernie Farm)	Approximately 0.40ha for 12 residential units.	12/03711/FUL and 13/02472FUL. Full planning permission was granted in 2013 for seven residential units.
LA10	Mixed Use (Upper Cullernie)	1ha for housing and community/open space.	12/04666/PIP. PPP was granted in February 2013 for a new church.
LA11	Business (Castle Stuart)	36.50ha for business, leisure and tourism.	-
LA12	Community (Balloch Primary School)	0.40ha adjacent to Balloch Primary School allocated for open space.	-
LA13	Industry (Morayhill)	10.60ha for industrial use.	13/2803/FUL. Planning permission granted for part of site (storage of wood and access).
LA14	Business (Inverness Airport)	200ha for business/research and development park/hotel/conference centre/transport interchange/distribution centre/industry/warehouse.	08/00215/OUTIN, 13/01826/MSC and 13/04789/MSC. PPP has been granted for the overall Masterplan of the site. Two MSC permissions have also approved in February 2014.
LA15	Mixed Use (Tornagrain New Town)	226ha New Town with the potential to deliver 4,960 new homes, shops, schools and community facilities over a series of phases.	09/00038/OUTIN. PPP granted for the overall Masterplan of the site in 2013.
LA16	Mixed Use (Lochside)	1.10ha for housing, 0.60ha for business/tourist related use and 0.20ha for amenity.	07/01165/REMIN. Planning permission was granted in 2007 for residential development at this site. The site is currently under development and an additional planning application is currently under consideration for an additional four dwellings.
Planning Applications			
PA01	Micro Wind Turbines (Tesco)	Erection of 3 micro wind turbines and associated works.	Planning permission granted.
PA02	New Town (Stratton)	New Town comprising town centre, housing and commercial development.	PPP granted. Refer to Development Land Allocations LA4.
PA03	House (Friars Croft)	Erect two houses (amendment to 03/00201/FULIN).	Planning permission granted.
PA04	House (Garden of Scalasaig)	Erect 1 1/2 storey dwelling.	Planning in principle granted.
PA05	Church (Upper Cullernie)	New church.	PPP granted. Refer to Development Land Allocation LA10.
PA06	House (Upper Cullernie Farm)	2 no. new build residential terraces.	Planning permission granted. Refer to Development Land Allocation LA9.
PA07	Access Track/Storage (Norbord Factory)	Formation of access tracks and storage of round wood.	Planning permission granted. Refer to Development Land Allocation LA13.
PA08	Business Park (Inverness Airport)	Business park.	PPP granted and approval of some MSC. Refer to Development Land Allocation LA14.

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Ref	Type/Name	Overview	Planning Permission
PA09	New Town (Tornagrain)	New Town.	PPP granted. Refer to Development Land Allocation LA15.
PA10	Hotel (Taste of Moray)	Renewal of consent: erection of hotel (09/00539/FULIN).	Planning permission granted.
PA11	House (Gollanfield)	Proposed amendment to site boundary (10/02819/FUL – Erection of bungalow).	Planning permission granted.

Nairn Bypass

Local Communities

16.4.19 The main communities within and in close proximity to the study area are Nairn and Auldearn. Nairn is located to the north of the route options and Auldearn is located to the south of the existing A96. Other smaller settlements along the route options include Gollanfield, Lochside, Moss-side, Delnies and Newmill. The location of these local communities in relation to the route options are shown on Figures 16.5 to 16.9.

Residential, Commercial and Industrial Property

16.4.20 Most residential properties are located within the communities listed in paragraph 16.4.19, with the remainder of residential properties made up of a number of scattered rural dwellings, including a number of farmhouses and their associated cottages.

16.4.21 The SIMD identifies areas of multiple deprivation across Scotland. None of the areas identified in paragraph 16.4.19 are listed in the top 20% of multiple deprivation (Scottish Government, 2012).

16.4.22 Commercial and Industrial property includes, but is not limited to, Blackcastle Sand and Gravel Quarry, Delnies Wood Caravan Park, Carnach House Hotel, John Gordon and Son Ltd Sawmill, Broadley Garden Centre, Househill Farm Shop, Balmakeith Industrial Estate, Tulloch Sawmill, Grigorhill Industrial Estate and Sub-Station, Inverness and Nairn Heliport, Boath House and grounds and Covenanters Inn.

16.4.23 The main residential areas and commercial and industrial properties in relation to the route options are shown on Figures 16.5 to 16.9.

Community Facilities

16.4.24 The majority of community facilities are located outside of the study area in the centre of Nairn. However, there are a number of community facilities which are located within Auldearn including a church, a post office and a primary school. The location of these community facilities in relation to the route options are shown on Figures 16.5 to 16.9.

Community Land

16.4.25 The Highland Council's Audit of Greenspace (The Highland Council, 2010) for Nairn shows that there are a number of areas where land is identified as open space, mainly as natural/semi-natural woodland. A review of this document identifies Moss-side playing field and a number of woodlands to the south of Nairn as open space. However, for the purposes of this assessment the woodland areas have been included in the agricultural and forestry assessment as forestry is considered to be its primary land use (refer to paragraph 16.2.7).

16.4.26 Community land within the study area, not referenced within the Highland Council's Audit of Greenspace (The Highland Council, 2010), consists of Dunbar Recreation Ground and

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Auldearn Community Trust Football Pitch. The location of these in relation to the route options is shown on Figures 16.5 to 16.9.

- 16.4.27 There are also a number of footpaths (e.g. core paths) within the study area which provide access for the public which may be used by the local community for recreational purposes. The potential impacts of the route options on these paths are provided in Chapter 15 (Effects on All Travellers) of this report.

Agriculture and Forestry Land

- 16.4.28 The predominant land use in the study area is agriculture with parcels of forestry and woodland. The land mainly supports intensive arable based agricultural systems with livestock (cattle and sheep) as generally secondary enterprises.
- 16.4.29 Figures 16.14 to 16.18 show the distribution of LCA classes in this section of the study area. The land, particularly to the south of Nairn, is some of the more productive land in Scotland with both LCA Class 2 and 3.1 found. Class 2 land is very flexible and a wide range of crops can be grown (including field vegetables), whilst Class 3.1 land is capable of producing high yields of a narrow range of crops and/or moderate yields, including cereals and potatoes.
- 16.4.30 Within the study area, 49 land interests have been identified that are affected by one or more of the route options. For the purposes of this DMRB Stage 2 Assessment the land use for each land interest has been characterised as arable, grassland or woodland. A summary of the affected land interests is provided in Table 16.4, with their location in relation to the route options shown on Figures 16.14 to 16.18. The land interest reference relates to information as provided by Brodies LLP in October 2013.

Table 16.4: Agricultural and forestry land Interests affected by the route options (Nairn Bypass)

Land Interest Reference	Type of Land Use	Land Interest Reference	Type of Land Use
1	Grassland	102	Woodland
4	Grassland	103	Arable and grassland
9	Arable, woodland	104	Arable, grassland and woodland
10	Woodland	106	Arable and grassland
11	Grassland	108	Arable
12	Grassland	111	Arable and grassland
14	Grassland	112	Arable
15	Woodland	119	Arable and grassland
16	Woodland	123	Woodland
18	Arable, grassland and woodland	138	Woodland
22	Arable and grassland	139	Arable and woodland
24	Grassland and woodland	140	Arable, grassland and woodland
29	Grassland	159	Arable, grassland and woodland
31	Arable, grassland and woodland	160	Arable, grassland and woodland
32	Arable and grassland	163	Arable, grassland and woodland
38	Grassland	161, 162 & 163	Grassland
41	Arable and woodland	164	Grassland and woodland
45	Woodland	165	Arable and grassland
52	Grassland	215	Arable and grassland
54	Arable and grassland	216	Arable, grassland and woodland
55	Arable, grassland and woodland	223	Grassland and woodland
81	Arable, grassland and woodland	229	Grassland
91	Grassland and woodland		

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Land Interest Reference	Type of Land Use
230	Grassland
239	Arable and grassland

Land Interest Reference	Type of Land Use
XX/1	Arable and woodland
XX/2	Arable and woodland

- 16.4.31 There is land allocated to land plot reference 104 that is used for the annual Nairn Show. This includes livestock exhibitions, trade stands, show jumping and vintage machinery displays. The next show is due to take place on 1 August 2015 (Nairn Show Website, 2014).

Development Land

- 16.4.32 The HwLDP sets out the overarching vision, spatial strategy and general planning policies for the whole of the Highland Council area. It was adopted in April 2012 and supersedes the General Policies and other related material of the Inverness Local Plan and the Nairnshire Local Plan. However, a number of land allocations from these Local Plans continue in force until the IMFPLDP is formally adopted. The IMFPLDP sets out the Highland Council's site allocations to guide development in the Inner Moray Firth area over the next 20 years. This was published for consultation between 01 November and 13 December 2013 and is currently under formal examination by the Scottish Ministers. Although not yet adopted in its final form, it can currently be used as a material consideration in the determination of planning applications
- 16.4.33 There are 18 development land allocations and 28 extant planning applications (i.e. those consented within the last five years) located within the study area. The majority of the area allocated for development is allocated for mixed use and include the following larger development sites; Delnies (LA17), Sandown (LA18), Nairn South (LA24), Nairn South Long Term (LA25) and Lochloy (LA30). Of these, LA30 currently has planning permission for a small number of residential dwellings. It should be noted that planning permission for 319 residential units was refused in 2013 at LA24 and at the time of writing (June, 2014) this is currently under appeal.
- 16.4.34 A summary of the development land is provided in Table 16.5 along with the development land reference (e.g. LA16) which has been developed for the purposes of this assessment. Where planning applications are located within areas of development land this is highlighted. Further details including reference to the land allocation within the relevant policies are provided in Part 6 (Appendices), Appendix A16.1 (Development Land) of this report.
- 16.4.35 The location of development land in relation to the route options, shown on Figures 16.23 to 16.27.

Table 16.5: Development land allocations and extant planning applications (Nairn Bypass)

Ref	Type/Name	Overview of Allocation	Planning Permission
Development Land Allocation			
LA16	Mixed Use (Lochside)	1.1ha for housing, 0.60ha for business/tourist related use and 0.20ha for amenity.	07/01165/REMIN Planning permission was granted in 2007 for residential development at this site. The site is currently under development and an additional planning application is currently under consideration for an additional four dwellings.
LA17	Mixed Use (Delnies)	27.27ha site for up to 300 houses over the next 10 years and longer term opportunities for small scale leisure and hotel development including a new golf course.	-
LA18	Mixed Use (Sandown)	Approximately 35.00ha for 350 residential units, business and community development.	-

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Ref	Type/Name	Overview of Allocation	Planning Permission
LA19	Housing (Ord View)	1.20ha for 25 houses.	-
LA20	Industry (Sawmill)	5.10ha for expansion sawmill.	-
LA21	Mixed Use (Balblair)	Subject to land assembly at Balblair the Council will encourage expansion of timber processing, related activities and development of freight rail sidings.	11/04730/FUL. Planning permission granted in 2011 for the erection of a building to house new timber sorting line.
LA22	Mixed Use (Balblair)	Development/expansion of commuter parking and health or related facilities.	-
LA23	Housing (Firhall)	4ha for housing development.	Planning permission was granted in 1999 for the development of a concept village providing a managed environment for people of middle age and advancing years (conversion of house into 6 flats, office and shop, erection of 12 new flats, erection of 84 houses). The site has since been largely developed and has not been included as a land allocation in the IMFPLDP.
LA24	Mixed Use (Nairn South)	25.90ha including 520 residential units, business and community.	11/04355/FUL Planning permission for a residential development consisting of 319 units was refused in 2013 and at the time of writing (June 2014) is currently under appeal.
LA25	Mixed Use (Nairn South Long Term)	17.60ha for retail, 410 residential units, business and community development.	-
LA26	Industry (Grigorhill)	2.10ha for industrial use.	-
LA27	Community (Grigorhill)	3.10ha for a new cemetery.	-
LA28	Business (Balmakeith)	3.20ha allocated for business use in the IMFPLDP. The Nairnshire Local Plan previously included a much larger area (11.00ha).	-
LA29	Retail (South of Balmakeith)	4.20ha for industrial/business use.	The western extent of this site has been developed as a supermarket. The eastern extent has not been included in the IMFPLDP.
LA30	Mixed Use (Lochloy)	21ha for 200 residential units, education and community development.	12/04592/FUL. Planning permission has been granted for 24 dwellings. The IMFPLDP states that the Council will support the completion of presently allocated land at Lochloy in the short-term. Since 2000 there have been various versions of the Masterplan and numerous planning applications. A revision of the Masterplan in line with the IMFPLDP allocation is currently under consideration by The Highland Council.
LA31	Housing (Montrose)	5.42ha for 39 residential units.	05/00080/OUTNA PPP was granted under application in 2007 for 65 dwellings and development of the site has commenced. Planning application 13/01655/FUL was approved in July 2013 for the erection of 3 no dwellings within the site.
LA32	Housing (Meadowfield)	0.65ha for 10 residential units.	-
LA33	Housing (Meadowfield Steadings)	1.10ha for 12 residential units.	-

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Ref	Type/Name	Overview of Allocation	Planning Permission
Planning Application			
PA11	House (Longhouse)	Proposed amendment to site boundary (10/02819/FUL – Erection of bungalow).	Permission granted.
PA12	House (Stoneyfield Cottage)	Erection of house.	Permission granted.
PA13	Former Fabrication Yard (Port Services)	Establish a port and port related services.	PPP granted.
PA14	House (Moss-Side)	Erection of house.	Permission granted.
PA15	House (Balnaspirach)	Erection of house.	PPP granted.
PA16	House (Balnaspirach)	Erection of house.	PPP granted.
PA17	House (Lochdhu)	Erection of a house and garage.	Permission granted.
PA18	House (Moss-side)	Renewal of planning consent for house plot.	PPP granted.
PA19	House (Seaforth Road)	Erection of 2 semi-detached replacement houses.	Planning permission granted
PA20	House (Little Balblair)	Alterations to form 6 no apartments.	Planning permission granted.
PA21	Cattle Shed (Lochdu Farm)	Erect cattle shed.	Planning permission granted.
PA22	Wind Turbine (Nairn Academy)	Erection of 10m high wind turbine.	Planning permission granted.
PA23	Science Lab/Library (Nairn Academy)	Erect new science lab and library.	Planning permission granted.
PA24	Industry (Sawmill)	Erection of building to house new timber sorting line.	Planning permission granted. Refer to Development Land Allocation LA21 and LA22.
PA25	Housing (Nairn South)	Residential development consisting of 319 units and associated infrastructure and public open space.	Refused (Under appeal) See Development Land Allocation LA2.
PA26	Cattle Court (Harmony)	Erection of cattle court and storage building (re-submission).	Planning permission granted.
PA27	Livestock Shed (Househill Mains)	Livestock Shed	Planning permission granted.
PA28	Housing (Lochroy)	Erect Housing development of 24 Affordable units, with roads and associated infrastructure.	Planning permission granted. Refer to Development Land Allocation LA30.
PA29	House (The Cottage)	Erect new dwelling house and agricultural store.	Planning permission granted.
PA30	Storage Shed (East Lodge Cottage)	Erection of storage/wood shed & formation of vehicular access.	Planning permission granted.

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Ref	Type/Name	Overview of Allocation	Planning Permission
PA31	Houses (Lion Hotel)	Residential development on site of former Lion Hotel, comprising 10 flats with associated car parking and landscaping.	Planning permission granted.
PA32	Housing (Bogside of Boath)	Proposed conversion and replacement to form 6 units.	Planning permission granted.
PA33	Housing (Montrose)	Erection of 3no dwellings.	Planning permission granted. Refer to Development Land Allocation LA31.
PA34	House (Alder's Edge)	Formation of house plot.	PPP granted
PA35	House (Meadows)	Erect house and formation of new access track.	PPP granted
PA36	House (Courage Farm)	Erection of dwelling.	Planning permission granted.
PA37	Polytunnels (Wester Hardmuir)	Erection of 8 polytunnels.	Planning permission granted.
PA38	House (Heathfield)	Erection of dwelling.	Planning permission granted.

16.5 Impact Assessment: Introduction

16.5.1 This section provides an introduction to the impact assessment of the route options within Section 16.6 (Impact Assessment: Inverness to Gollanfield) and Section 16.7 (Impact Assessment: Nairn Bypass).

16.5.1 The impact assessments in Section 16.6 and 16.7 have been undertaken with reference to the following:

- Potential impacts of the route options on community and private assets are described in the absence of mitigation and hence represent the worst-case scenario. Mitigation to reduce these impacts will be developed for the preferred option during the DMRB Stage 3 Assessment.
- At this stage in the design, the likely nature and location of the construction activities (e.g. location of construction compounds) is not available. As such, it is not possible to undertake an assessment of the impacts as a result of construction, and therefore the assessment of impacts focuses on the operational impacts only.
- Impacts on agricultural and forestry land are reported collectively with specific reference to impacts on prime agricultural land. Therefore, the total land-take for non-prime agricultural land includes both non-prime agricultural land and forestry.

16.5.2 To provide context to the impact assessment, an overview of the potential impacts during the construction and operation of road schemes, in relation to community and private assets are discussed below.

- Temporary land-take during the construction phase (e.g. for construction compounds) and permanent land-take during the operational phase resulting in total loss (e.g. demolition) or part loss of community and private assets.
- Reduction in amenity (i.e. visual, dust impacts and noise) both during construction and operation.
- Disruption to access during construction for those in close proximity to the construction works due to traffic management measures, and during operation for those where existing access is stopped-up or where longer alternatives are provided.

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- Severance of agricultural fields, farmland and woodland which would lead to the land becoming fragmented and this can result in permanent restrictions to access including land locking (e.g. where no access is available). In other cases field accesses and farm tracks could be severed necessitating the provision of alternative access.
- Watercourses and drainage systems on agricultural land may be required to be redirected, disrupting the existing field drainage systems. This would require redesign and alternative systems to be developed to avoid increasing flood risk or waterlogging of soils and farmland.
- Boundary features of agricultural land may be disrupted requiring the provision of suitable alternative boundary features to secure the boundaries of individual fields and woodland parcels.
- Public and private utilities such as field water supplies may be disrupted, necessitating localised diversion or provision of alternative supplies.

16.6 Impact Assessment: Inverness to Gollanfield

16.6.1 This section describes the impacts on community and private assets that are specific to the Inverness to Gollanfield section. Impacts that are common to all route options are discussed, followed by those impacts which are additional to these, for each route option.

Impacts Common to all Route Options

Community Severance

16.6.2 All route options would be category 7A dual carriageways as described in Part 2, Chapter 4 (Engineering Overview) of this report and therefore at-grade crossings would not be permitted. This may lead to increased journey lengths for some communities due to traffic being required to access the route options via the nearest junction. However, this is expected to improve safety as there would be no at-grade crossings of the preferred option.

16.6.3 Residents located north of the A96 wishing to take access to community facilities within Smithton, Culloden and Balloch would still be able to access these facilities by the use of the Smithton Junction or Newton Junction A, B or C.

16.6.4 Overall, impacts in relation to community severance for any properties to the north of the A96 wishing to access community facilities to the south for any route option are expected to be minimal and similar across all route options.

Residential, Commercial and Industrial Property

16.6.5 All route options would require approximately 0.39ha of land-take from one residential and two commercial/industrial properties. Land-take is either as a result of the widening of the existing A96 (online sections) or through the provision of local roads. There are no impacts on access for any residential/commercial/industrial properties that are common to all route options. A summary of these impacts is provided in Table 16.6.

Table 16.6: Residential, commercial and industrial land-take - common to all route options (Inverness to Gollanfield)

Property Name	Category	Approx. Land-take (ha)	Access
Seafield House, Culloden	Residential	0.01ha	-
Inverness Business and Retail Park	Commercial/Industrial	0.29ha	-
Polfalden Kennels and Cattery	Commercial/Industrial	0.09ha	-

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- 16.6.6 It should be noted that all route options would result in land-take (0.16ha) from Taste of Moray restaurant as a result of the construction of the Brackley Junction. However, as this site has an extant planning application for the erection of a hotel (PA10), these potential impacts are considered within the development land section (refer to paragraph 16.6.10 and 16.6.11).

Community Facilities

- 16.6.7 No potential impacts are expected on community facilities for any of the route options. As such this is not discussed further in this section.

Community Land

- 16.6.8 No potential impacts are expected on community land for any of the route options. As such this is not discussed further in this section.

Agriculture and Forestry Land

- 16.6.9 Potential impacts on agricultural and forestry land are reported for each route option, and as such no impacts are reported in this section as common to all.

Development Land

- 16.6.10 All route options are expected to have potential impacts on the amenity of seven areas of development land, with approximately 13.8ha of direct land-take from four of these sites. The potential impacts are either as a result of the route option alignment or the Smithton, Newton and Brackley Junctions. A summary of the impact assessment is provided in Table 16.7. Further details of the impact assessment are provided in Part 6 (Appendices), Appendix A16.2 (Development Land – Impact Assessment Tables) of this report.

Table 16.7: Potential impacts on development land – common to all route options

Ref.	Development Type	Approx. Land-take (ha)	Amenity
Development Land Allocations			
LA03	Mixed Use (Ashton Farm)	-	Yes
LA04	Mixed Use (Stratton New Town)	12.50ha	Yes
LA05	Housing (Stratton Lodge)	-	Yes
LA06	Mixed Use (Milton of Culloden)	1.00ha	Yes
LA09	Housing (Upper Cullerine Farm)	-	Yes
Planning Applications			
PA01	Micro Wind Turbines (Tesco)	0.14ha	No
PA10	Hotel (Taste of Moray)	0.16ha	Yes

- 16.6.11 In relation to the development capacity of the sites, no impacts are expected as a result of the potential impacts in relation to amenity. In relation to land-take, total loss of the development capacity of PA10 (Taste of Moray) is expected, as a result of the construction of the Brackley Junction. No other potential impacts on development capacity are expected either due to the land-take equating to a small amount of the overall site. In the case of LA04 (Stratton New Town), further details on the Masterplan for the site are still to be confirmed, with the expectation that any of the route options could be accommodated within this plan.

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Option 1A

Residential, Industrial and Commercial Property

- 16.6.12 Option 1A would require an additional 0.36ha of land-take from two residential and two commercial/industrial properties. Land-take impacts are either as a result of the widening of the existing A96 (online sections) or through the provision of local roads. No properties are expected to be demolished. However, due to the scale of the potential impact of land-take at two residential properties (Allanfearn Farmhouse and Allanfearn Cottages), the District Valuer has noted that these properties are likely to have to be acquired.
- 16.6.13 Option 1A would have potential impacts on access for two residential properties as a result of the direct accesses to the A96 being stopped-up. No alternative access is provided within the current design for this route option. However, if this route option is selected as the preferred option, alternative access proposals to these properties would be considered further during the DMRB Stage 3 Assessment. A summary of the impact assessment is shown in Table 16.8.

Table 16.8: Residential, commercial and industrial land-take and impacts on access – additional for Option 1A

Property Name	Category	Potential Impacts	
		Approx. Land-take (ha)	Access
Allanfearn Farmhouse	Residential	0.14ha. Expected acquisition of property due to land-take.	-
Allanfearn Cottages	Residential	0.06ha. Expected acquisition of property due to land-take.	Direct access to existing A96 stopped-up. No provision for alternative access within the design at present.
Oakdene, Allanfearn	Residential	-	Direct access to existing A96 stopped-up. No provision for alternative access within the design at present.
Allanfearn Sewage Works	Commercial/Industrial	0.13ha	-
Norbord Factory	Commercial/Industrial	0.03ha	-

Agriculture and Forestry Land

- 16.6.14 Option 1A is expected to result in a land-take of approximately 99.07ha from 17 land interests of which 47.79ha (48%) is prime agricultural land. For a full breakdown of the areas of land classification affected by each route option please refer to Part 6 (Appendices), Appendix A16.3 (Agricultural Land Classification) of this report.
- 16.6.15 Of the 99.07ha affected by Option 1A, 85.30ha are lost by the six land interests with impacts of medium or above magnitude. Of this, 41.4ha (49%) is prime agricultural land. The largest land-take and magnitude of impact is associated with land interest 269A, which is a tenant farmer on land owned by the Moray Estate. A summary of the impacts that are of medium magnitude or above is provided in Table 16.9. Full details of the impact assessment, including details of impacts of magnitude lower than medium, are provided in Part 6 (Appendices), Appendix A16.4 (Agricultural and Forestry Land – Impact Assessment Tables) of this report.

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Table 16.9: Potential impacts (medium magnitude or above) for agricultural and forestry land – Option 1A

Land Interest Reference	Approx. Land-take (ha)			No. fields affected	Magnitude of Land Use Impact
	Prime	Non-Prime	Total		
269A	17.54	16.26	33.80	27	High
269E	3.99	6.15	10.14	9	Medium
269B	1.43	12.68	14.11	9	Medium
312	6.73	4.56	11.29	6	Medium
313	6.18	1.74	7.92	8	Medium
317	5.53	2.51	8.04	8	Medium

Development Land

- 16.6.16 Option 1A is expected to have potential impacts on the amenity value of three additional areas of development land, with approximately 12ha of direct land-take from LA14 (Inverness Airport). The potential impacts are either as a result of the route option alignment, Newton Junction A or Mid Coul Junction A. A summary of the impact assessment is provided in Table 16.10. Further details of the impact assessment are provided in Part 6 (Appendices), Appendix A16.2 (Development Land – Impact Assessment Tables) of this report.

Table 16.10: Potential impacts on development land – additional for Option 1A

Ref.	Development Type	Approx. Land-take (ha)	Amenity
Development Land Allocations			
LA11	Business (Castle Stuart)	-	Yes
LA14	Business (Inverness Airport)	12.00ha	Yes
LA15	Mixed Use (Tornagrain New Town)	-	Yes

- 16.6.17 No impacts are expected on the development capacity of these sites. In relation to the direct land-take of LA14 (Inverness Airport), Planning Permission in Principle (PPP) is extant for the overall Masterplan and this includes an indicative route for the new road which is broadly in line with Option 1A. As such, although there is direct land-take at this site no impact is expected in relation to its development capacity.

Option 1A (MV)

Residential, Industrial and Commercial Property

- 16.6.18 The potential impacts for Option 1A (MV) are the same as Option 1A, with the exception of the land-take at the Norbord Factory. Option 1A (MV) is not expected to have land-take at this site due to the route option alignment being located to the south of Morayston. Please refer to paragraph 16.6.12 and 16.6.13 for a description of the potential impacts.

Agriculture and Forestry Land

- 16.6.19 Option 1A (MV) is expected to result in a land-take of approximately 100.45ha from 17 land interests of which 44.38ha (44%) is prime agricultural land. For a full breakdown of the areas of land classification affected by each route option please refer to Part 6 (Appendices), Appendix A16.3 (Agricultural Land Classification) of this report.
- 16.6.20 Of the 100.45ha affected by Option 1A (MV), 84.87ha are lost by the five land interests with impacts of medium or above magnitude. Of this 36.63ha (43%) is prime agricultural land. The largest land-take and magnitude of impact is associated with land interest 269A, which is a tenant farmer on land owned by the Moray Estate. A summary of the impacts that are of a medium magnitude or above is provided in Table 16.11. Full details of the impact

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assessment, including details of impacts of magnitude lower than medium, are provided in Part 6 (Appendices), Appendix A16.4 (Agricultural and Forestry Land –Impact Assessment Tables) of this report.

Table 16.11: Potential impacts (medium magnitude or above) for agricultural and forestry land – Option 1A (MV)

Land Interest Reference	Approx. Land-take (ha)			No. fields affected	Magnitude of Land Use Impact
	Prime	Non-Prime	Total		
269A	21.30	25.44	46.74	35	High
269E	3.99	6.15	10.14	9	Medium
269B	1.43	12.68	14.11	9	Medium
313	4.38	1.47	5.85	8	Medium
317	5.53	2.50	8.03	8	Medium

Development Land

- 16.6.21 Option 1A (MV) is expected to have the same potential impacts in relation to impacts on development land as Option 1A. Please refer to paragraphs 16.6.16 and 16.6.17 for a description of the potential impacts.

Option 1B

Residential, Industrial and Commercial Property

- 16.6.22 Option 1B would require an additional 0.54ha of land-take from four residential properties and two commercial/industrial properties. One residential property is expected to be demolished. Due to the scale of the potential impact of land-take at two residential properties (Allanfearn Farmhouse and Allanfearn Cottages), the District Valuer has noted that these properties are likely to have to be acquired. Land-take is as a result of the widening of the existing A96 (online sections), the provision of local roads, or the provision of Mid Coul Junction B.
- 16.6.23 Option 1B would have potential impacts on access for two residential properties as a result of the direct accesses to the A96 being stopped-up. No alternative access is provided within the current design for this route option. However, if this route option is selected as the preferred option, alternative access proposals to these properties would be considered further during the DMRB Stage 3 Assessment. A summary of the impact assessment is shown in Table 16.12.

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Table 16.12: Residential, commercial and industrial land-take and impacts on access – additional for Option 1B

Property Name	Category	Potential Impacts	
		Approx. Land-take (ha)	Access
Allanfearn Farmhouse	Residential	0.14ha. Expected acquisition of property due to land-take.	-
Allanfearn Cottages	Residential	0.06ha. Expected acquisition of property due to land-take.	Direct access to existing A96 stopped-up. No provision for alternative access within the design at present.
Oakdene, Allanfearn	Residential	-	Direct access to existing A96 stopped-up. No provision for alternative access within the design at present.
Drumin Bungalow, Gollanfield	Residential	0.02ha	-
3 Mid Coul Cottages	Residential	0.16ha. Expected to be demolished as a result of Mid Coul Junction B.	-
Allanfearn Sewage Works	Commercial/Industrial	0.13ha	-
Norbord Factory	Commercial/Industrial	0.03ha	-

Agriculture and Forestry Land

- 16.6.24 Option 1B is expected to result in a land-take of approximately 89.71ha from 19 land interests, of which 42.12ha (47%) is prime agricultural land. For a full breakdown of the areas of land classification affected by each route option please refer to Part 6 (Appendices), Appendix A16.3 (Agricultural Land Classification) of this report.
- 16.6.25 Of the 89.71ha affected by Option 1B, 78.20ha are lost by the six land interests with impacts of medium or above magnitude. Of this 35.65ha (46%) is prime agricultural land. The largest land-take and magnitude of impact is associated with land interest 269A, which is a tenant farmer on land owned by the Moray Estate. A summary of the impacts that are of a medium magnitude or above is provided in Table 16.13. Full details of the impact assessment, including details of impacts of magnitude lower than medium, are provided in Part 6 (Appendices), Appendix A16.4 (Agricultural and Forestry Land – Impact Assessment Tables) of this report.

Table 16.13: Potential impacts (medium magnitude or above) for agricultural and forestry land – Option 1B

Land Interest Reference	Approx. Land-take (ha)			No. fields affected	Magnitude of Land Use Impact
	Prime	Non-Prime	Total		
269A	14.40	16.24	30.64	31	High
269E	1.36	4.13	5.49	6	Medium
269B	1.43	13.41	14.84	12	Medium
312	6.73	4.56	11.29	6	Medium
313	6.20	1.71	7.91	8	Medium
317	5.53	2.50	8.03	8	Medium

Development Land

- 16.6.26 Option 1B is expected to have potential impacts on the amenity value of three additional areas of development land, with approximately 24.50ha of direct land-take from LA14 (Inverness Airport) and LA15 (Tornagrain New Town). The potential impacts are either as a result of the route option alignment, Newton Junction A or Mid Coul Junction B. A summary

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of the impact assessment is provided in Table 16.14. Further details of the impact assessment are provided in Part 6 (Appendices), Appendix A16.2 (Development Land – Impact Assessment Tables) of this report.

Table 16.14: Potential impacts on development land – additional for Option 1B

Ref.	Development Type	Approx. Land-take (ha)	Amenity
Development Land Allocations			
LA11	Business (Castle Stuart)	-	Yes
LA14	Business (Inverness Airport)	5.50	Yes
LA15	Mixed Use (Tornagrain New Town)	19.00	Yes

16.6.27 Potential impacts are expected on the development capacity of LA14 (Inverness Airport) and LA15 (Tornagrain New Town) in relation to the direct land-take associated with Mid Coul Junction B. Both of these sites have PPP which includes an overall Masterplan for the site. The Masterplan for LA14 includes an indicative route for the new A96, however, this does not align with Option 1B. Mid Coul Junction B would impact the design of these Masterplans and this is expected to lead to a partial (LA14) and total (LA15) loss of the development capacity of these sites.

Option 1B (MV)

Residential, Industrial and Commercial Property

16.6.28 The potential impacts for Option 1B (MV) are the same as Option 1B, with the exception of the land-take at the Norbord Factory. Option 1B (MV) is not expected to have land-take at this site due to the alignment being located to the south of Morayston. Please refer to paragraphs 16.6.22 and 16.6.23 for a description of the potential impacts.

Agriculture and Forestry Land

16.6.29 Option 1B (MV) would result in a land-take of 92.80ha from 19 land interests, of which 37.38ha (40%) is prime agricultural land. For a full breakdown of the areas of land classification affected by each route option please refer to Part 6 (Appendices), Appendix A16.3 (Agricultural Land Classification) of this report.

16.6.30 Of the 92.80ha affected by Option 1B (MV), 83.39ha are lost by the six land interests with impacts of medium or above magnitude. Of this 29.76ha (36%) is prime agricultural land. The largest land-take and magnitude of impact is associated with land interest 269A, which is a tenant farmer on land owned by the Moray Estate. A summary of the impact assessment is provided in Table 16.15. Full details of the impact assessment, including details of impacts of magnitude lower than medium, are provided in Part 6 (Appendices), Appendix A16.4 (Agricultural and Forestry Land – Impact Assessment Tables) of this report.

Table 16.15: Potential impacts (medium magnitude or above) for agricultural and forestry land – Option 1B (MV)

Land Interest Reference	Approx. Land-take (ha)			No. fields affected	Magnitude of Land Use Impact
	Prime	Non-Prime	Total		
269A	16.78	26.96	43.74	37	High
268	0.28	5.16	5.44	12	Medium
269E	1.36	4.13	5.49	6	Medium
269B	1.43	13.41	14.84	12	Medium
313	4.38	1.47	5.85	8	Medium
317	5.53	2.50	8.03	8	Medium

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Development Land

- 16.6.31 Option 1B (MV) is expected to have the same potential impacts in relation to impacts on development land as Option 1B. Please refer to paragraphs 16.6.26 and 16.6.27 for a description of the potential impacts.

Option 1C

Residential, Industrial and Commercial Property

- 16.6.32 Option 1C would require an additional 0.03ha of land-take from one commercial/industrial property. Land-take is as a result of the widening of the existing A96 (online sections). No properties are expected to be demolished and no impacts are expected in relation to access. A summary of the impact assessment is shown in Table 16.16.

Table 16.16: Residential, commercial and industrial land-take and impacts on access – additional for Option 1C

Property Name	Category	Potential Impacts	
		Approx. Land-take (ha)	Access
Norbord Factory	Commercial/ Industrial	0.03ha	-

Agriculture and Forestry Land

- 16.6.33 Option 1C would result in a land-take of 92.65ha from 17 land interests, of which 46.82ha (51%) is prime agricultural land. For a full breakdown of the areas of land classification affected by each route option please refer to Part 6 (Appendices), Appendix A16.3 (Agricultural Land Classification) of this report.
- 16.6.34 Of the 92.65ha affected by Option 1C, 70.85ha are lost by the four land interests with impacts of medium or above magnitude. Of this 32.38ha (46%) is prime agricultural land. The largest land-take and magnitude of impact is associated with land interest 269A, which is a tenant farmer on land owned by the Moray Estate. A summary of the impact assessment is provided in Table 16.17. Full details of the impact assessment, including details of impacts of magnitude lower than medium, are provided in Part 6 (Appendices), Appendix A16.4 (Agricultural and Forestry Land – Impact Assessment Tables) of this report.

Table 16.17: Potential impacts (medium magnitude or above) for agricultural and forestry land – Option 1C

Land Interest Reference	Approx. Land-take (ha)			No. fields affected	Magnitude of Land Use Impact
	Prime	Non-Prime	Total		
269A	18.50	14.44	32.94	23	High
269E	4.00	6.21	10.21	9	Medium
269B	1.43	12.68	14.11	9	Medium
312	8.45	5.14	13.59	7	Medium

Development Land

- 16.6.35 Option 1C is expected to have potential impacts on the amenity of three additional areas of development land, with approximately 12ha of direct land-take from LA14 (Inverness Airport). The potential impacts are either as a result of the route option alignment, Newton Junction B or Mid Coul Junction A. A summary of the impact assessment is provided in Table 16.18. Further details of the impact assessment are provided in Part 6 (Appendices), Appendix A16.2 (Development Land – Impact Assessment Tables) of this report.

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Table 16.18: Potential impacts on development land allocations – additional for Option 1C

Ref.	Development Type	Approx. Land-take (ha)	Amenity
Development Land Allocation			
LA07	Community (Culloden Academy).	-	Yes
LA14	Business (Inverness Airport)	12.00ha	Yes
LA15	Mixed Use (Tornagrain New Town)	-	Yes

- 16.6.36 No impacts are expected on the development capacity of these sites. In relation to the direct land-take of LA14 (Inverness Airport), PPP is extant for the overall Masterplan and this includes an indicative route for the new A96 which is broadly in line with Option 1C. Therefore, even though there is land-take, no impacts are expected on the development capacity of the site.

Option 1C (MV)

Residential, Industrial and Commercial Property

- 16.6.37 No additional impacts in relation to residential, industrial and commercial property are expected for Option 1C (MV).

Agriculture and Forestry Interests

- 16.6.38 Option 1C (MV) would result in a land-take of 93.42ha from 17 land interests, of which 46.20ha (49%) is prime agricultural land. For a full breakdown of the areas of land classification affected by each route option please refer to Part 6 (Appendices), Appendix A16.3 (Agricultural Land Classification) of this report.
- 16.6.39 Of the 93.42ha affected by Option 1C (MV), 71.50ha are lost by the four land interests with impacts of medium or above magnitude. Of this 31.75ha (44%) is prime agricultural land. The largest land-take and magnitude of impact is associated with land interest 269A, which is a tenant farmer on land owned by the Moray Estate. A summary of the impact assessment is provided in Table 16.19. Full details of the impact assessment, including details of impacts of magnitude lower than medium, are provided in Part 6 (Appendices), Appendix A16.4 (Agricultural and Forestry Land – Impact Assessment Tables) of this report.

Table 16.19: Potential impacts (medium magnitude or above) for agricultural and forestry land – Option 1C (MV)

Land Interest Reference	Approx. Land-take (ha)			No. fields affected	Magnitude of Land Use Impact
	Prime	Non-Prime	Total		
269A	17.87	15.77	33.64	25	High
269E	4.00	6.16	10.16	9	Medium
269B	1.43	12.68	14.11	9	Medium
312	8.45	5.14	13.59	7	Medium

Development Land

- 16.6.40 Option 1C (MV) is expected to have the same potential impacts in relation to impacts on development land as Option 1C. Please refer to paragraphs 16.6.35 and 16.6.36 for a description of the potential impacts.

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Option 1D

Residential, Industrial and Commercial Property

- 16.6.41 Option 1D would require an additional 0.21ha of land-take from two residential and one commercial/industrial property. One residential property is expected to be demolished. Land-take is either as a result of the widening of the existing A96 (online sections), provision of local roads or Mid Coul Junction B. No impacts on access are expected. A summary of the impact assessment is shown in Table 16.20.

Table 16.20: Residential, commercial and industrial land-take and impacts on access – additional for Option 1D

Property Name	Category	Potential Impacts	
		Approx. Land-take (ha)	Access
Drumin Bungalow, Gollanfield	Residential	0.02ha	-
3 Mid Coul Cottages	Residential	0.16ha. Property expected to be demolished as a result of Mid Coul Junction B.	-
Norbord Factory	Commercial/ Industrial	0.03ha	-

Agriculture and Forestry Interests

- 16.6.42 Option 1D would result in a land-take of 83.25ha from 19 land interests, of which 41.14ha (49%) is prime agricultural land. For a full breakdown of the areas of land classification affected by each route option please refer to Part 6 (Appendices), Appendix A16.3 (Agricultural Land Classification) of this report.
- 16.6.43 Of the 83.25ha affected by Option 1D, 63.70ha are lost by the four land interests with impacts of medium or above magnitude. Of this 26.62ha (42%) is prime agricultural land. The largest land-take and magnitude of impact is associated with land interest 269A, which is a tenant farmer on land owned by the Moray Estate. A summary of the impact assessment is provided in Table 16.21. Full details of the impact assessment, including details of impacts of magnitude lower than medium, are provided in Part 6 (Appendices), Appendix A16.4 (Agricultural and Forestry Land – Impact Assessment Tables) of this report.

Table 16.21: Potential impacts (medium magnitude or above) for agricultural and forestry land – Option 1D

Land Reference	Interest	Approx. Land-take (ha)			No. fields affected	Magnitude of Land Use Impact
		Prime	Non-Prime	Total		
269A		15.37	14.41	29.78	27	High
269E		1.36	4.13	5.49	6	Medium
269B		1.43	13.41	14.84	12	Medium
312		8.46	5.13	13.59	7	Medium

Development Land

- 16.6.44 Option 1D is expected to have potential adverse impacts on the amenity of three additional areas of development land, with approximately 24.5ha of direct land-take from two of these sites; LA14 (Inverness Airport) and LA15 (Tornagrain New Town). These potential impacts are either as a result of Newton Junction B or Mid Coul Junction B. A summary of the impact assessment is provided in Table 16.22. Further details of the impact assessment are provided in Part 6 (Appendices), Appendix A16.2 (Development Land – Impact Assessment Tables) of this report.

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Table 16.22: Potential impacts on development land allocations – additional for Option 1D

Ref.	Development Type/Location	Approx. Land-take (ha)	Amenity
Development Land Allocation			
LA07	Community (Culloden Academy)	-	Yes
LA14	Business (Inverness Airport)	5.50	Yes
LA15	Mixed Use (Tornagrain New Town)	19.00	Yes

- 16.6.45 Potential impacts are expected on the development capacity of LA14 (Inverness Airport) and LA15 (Tornagrain New Town) in relation to the direct land-take associated with Mid Coul Junction B. Both of these sites have PPP which includes an overall Masterplan for the site. The Masterplan for LA14 includes an indicative route for the new A96, however this does not align with Option 1D. Mid Coul Junction B would impact the design of the Masterplan and this is expected to lead to a partial (LA14) and total (LA15) loss of the development capacity of the site.

Option 1D (MV)

Residential, Industrial and Commercial Property

- 16.6.46 The potential impacts for Option 1D (MV) are the same as Option 1D, with the exception of the land-take at the Norbord Factory. Option 1D (MV) is not expected to have land-take at this site due to the alignment being located to the south of Morayston. Please refer to paragraph 16.6.41 for a description of the potential impacts.

Agriculture and Forestry Interests

- 16.6.47 Option 1D (MV) would result in a land-take of 87.08ha from 19 land interests, of which 39.54ha (45%) is prime agricultural land. For a full breakdown of the areas of land classification affected by each route option please refer to Part 6 (Appendices), Appendix A16.3 (Agricultural Land Classification) of this report.
- 16.6.48 Of the 87.08ha affected by Option 1D (MV), 71.21ha are lost by the five land interests with impacts of medium or above magnitude and of this 25.24ha (35%) is prime agricultural land. The largest land-take and magnitude of impact is associated with land interest 269A, which is a tenant farmer on land owned by the Moray Estate. A summary of the impact assessment is provided in Table 16.23. Full details of the impact assessment, including details of impacts of magnitude lower than medium, are provided in Part 6 (Appendices), Appendix A16.4 (Agricultural and Forestry Land – Impact Assessment Tables) of this report.

Table 16.23: Potential impacts (medium magnitude or above) for agricultural and forestry land – Option 1D (MV)

Land Interest Reference	Approx. Land-take (ha)			No. fields affected	Magnitude of Land Use Impact
	Prime	Non-Prime	Total		
269A	13.71	18.05	31.76	28	High
268	0.28	5.25	5.53	12	Medium
269E	1.36	4.13	5.49	6	Medium
269B	1.43	13.41	14.84	12	Medium
312	8.46	5.13	13.59	7	Medium

Development Land

- 16.6.49 Option 1D (MV) is expected to have the same potential impacts in relation to impacts on development land as Option 1D. Please refer to paragraphs 16.6.44 and 16.6.45 for a description of the potential impacts.

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16.7 Impact Assessment: Nairn Bypass

16.7.1 This section describes the impacts on community and private assets that are specific to the Nairn Bypass section. Impacts that are common to all route options are discussed, followed by those impacts which are additional to these, for each route option.

Impacts Common to all Route Options

Community Severance

16.7.2 All route options would be category 7A dual carriageways as described in Part 2, Chapter 4 (Engineering Overview) of this report and therefore at-grade crossings would not be permitted. This may lead to increased journey lengths for some communities due to traffic being required to access the route options via the nearest junction. However, this is expected to improve safety as there would be no at-grade crossings of the preferred option.

16.7.3 Residents wishing to take access to the community facilities within the main communities of Nairn and Auldearn would still be able to do so through the use of the existing A96 or through the use of the local roads and junctions provided as part of the route options. As such impacts in relation to community severance are expected to be minimal and similar across all route options.

Residential, Commercial and Industrial Property

16.7.4 There are no impacts on land-take that are common to all route options for residential, commercial and industrial property receptors. None of the route options are expected to have any impacts in relation to access.

Community Facilities

16.7.5 No potential impacts are expected on community facilities for any of the route options. As such this is not discussed further in this section.

Community Land

16.7.6 There are no impacts on land-take that are common to all route options in relation to community land. None of the route options are expected to have any impacts in relation to access.

Agriculture and Forestry Land

16.7.7 Potential impacts on agriculture and forestry interests are reported against each route option. As such no impacts are reported here as being common to all.

Development Land

16.7.8 All route options are expected to have potential impacts on the amenity of four consented planning applications; PA14 (House, Moss-side), PA15 (House, Balnaspirach), PA16 (House, Balnaspirach) and PA36 (House, Courage Farm). The potential impacts are mainly due to the type of application (e.g. erection of residential dwelling) and/or the proximity of the main route option alignment and/or junctions to the sites. No impact on the development capacity of these sites is expected. Further details of the impact assessment are provided in Part 6 (Appendices), Appendix A16.2 (Development Land – Impact Assessment Tables) of this report.

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Option 2A

Residential, Commercial and Industrial Property

- 16.7.9 Option 2A would require an additional 6.30ha of land-take from seven residential properties and six commercial/industrial properties. Land-take is either as a result of the widening of the existing A96 (online sections), the provision of local roads or Nairn West Junction A. A summary of these potential impacts is provided in Table 16.24.

Table 16.24: Residential, commercial and industrial land-take - Option 2A

Property Name	Category	Approx. Land-take (ha)
Drumdelnies, Delnies	Residential	0.02ha
Beldorney, Delnies	Residential	0.07ha
Woodside Cottage, Delnies	Residential	0.04ha
Tanelhorn, Delnies	Residential	0.01ha
Woodside, Cockhill Farm	Residential	0.08ha
Grianflur, Gollanfield	Residential	0.03ha
Ashleigh, Delnies	Residential	0.02ha
Land associated with Scottish Water	Commercial/ Industrial	0.01ha
Boath House	Commercial/ Industrial	0.07ha
Carnach House Hotel, Delnies	Commercial/ Industrial	0.30ha
Ardersier Fabrication Yard	Commercial/ Industrial	0.31ha
Blackcastle Quarry	Commercial/ Industrial	3.95ha
Delnies Wood Caravan Park	Commercial/ Industrial	1.39ha

- 16.7.10 The largest amount of land-take is expected at Blackcastle Quarry (3.95ha). This land-take is associated with the online widening of the existing A96 on the edge of the quarry land boundary. As such, no impacts on the future viability of this business are expected. There is also a relatively large amount of land-take at Delnies Wood Caravan Park (1.39ha). As this land-take is associated with the area currently used by the caravan park, impacts on the future viability of this business are expected.

Community Land

- 16.7.11 Option 2A would result in land-take of approximately 0.10ha at the Dunbar Recreation Ground, due to provision for a local road associated with Nairn East Junction A. This land-take is not expected to impact on the use of this site as a recreation ground.

Agriculture and Forestry Land

- 16.7.12 Option 2A would result in a land-take of 125.11ha from 34 land interests, of which 21.61ha (17%) is prime agricultural land. For a full breakdown of the areas of land classification affected by each route option please refer to Part 6 (Appendices), Appendix A16.3 (Agricultural Land Classification) of this report.
- 16.7.13 Of the 125.11ha affected by Option 2A, 91.03ha are lost by the eight land interests with impacts of medium or above magnitude. Of this 21.20ha (23%) is prime agricultural land. A summary of the impact assessment is provided in Table 16.25. Full details of the impact assessment, including details of impacts of magnitude lower than medium, are provided in Part 6 (Appendices), Appendix A16.4 (Agricultural and Forestry Land – Impact Assessment Tables) of this report.

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Table 16.25: Potential impacts (medium magnitude or above) for agricultural and forestry land – Option 2A

Land Interest Reference	Approx. Land-take (ha)			No. fields affected	Magnitude of Land Use Impact
	Prime	Non-Prime	Total		
163	3.99	21.04	25.03	23	High
18	0.54	5.42	5.96	3	Medium
24	9.94	2.11	12.05	5	Medium
81	6.37	3.77	10.14	10	Medium
119	-	11.21	11.21	6	Medium
139	0.36	4.72	5.08	4	Medium
159	-	6.61	6.61	18	Medium
160	-	14.95	14.95	8	Medium

Development Land

- 16.7.14 Option 2A is expected to have potential impacts on eight additional development land sites as a result of direct land-take and/or impacts on amenity. Direct land-take of approximately 2.90ha is expected from three of these sites; LA24 (Nairn South), LA25 (Nairn South Long Term) and PA13 (Former Fabrication Yard, Port Services). The potential impacts are mainly due to the type of allocation (e.g. housing/mixed use) and/or the construction of the route option alignment and/or local roads. A summary of the impact assessment is provided in Table 16.26. Further details of the impact assessment are provided in Part 6 (Appendices), Appendix A16.2 (Development Land – Impact Assessment Tables) of this report.

Table 16.26: Potential impacts on development land allocations – additional for Option 2A

Ref.	Development Type/Location	Approx. Land-take (ha)	Amenity
Development Land Allocations			
LA19	Housing (Ord View)	-	Yes
LA23	Housing (Firhall)	-	Yes
LA24	Mixed Use (Nairn South)	0.40ha	Yes
LA25	Mixed Use (Nairn South Long Term)	2.17ha	Yes
LA27	Community (Grigorhill)	-	Yes
Planning Applications			
PA13	Former Fabrication Yard (Port Services)	0.33ha	No
PA17	House (Lochdhu)	-	Yes
PA32	Housing (Bogside of Boath)	-	Yes

- 16.7.15 No impacts on the development capacity of these sites are expected as a result of the amenity impacts or land-take. In relation to LA24 (Nairn South) and LA25 (Nairn South Long Term), the realignment of the local roads would result in the loss of approximately 0.4ha and 2.17ha of land at these sites, respectively. While this could impact the site layouts along these boundaries, it is not expected to impact on the development capacity of the site as a whole.

Option 2B

Residential, Commercial and Industrial Property

- 16.7.16 Option 2B would require approximately 6.83ha of land-take from seven residential properties and six commercial/industrial properties. Land-take would be either as a result of the widening of the existing A96 (online sections), the provision of local roads, or the provision of Nairn West Junction A. A summary of these potential impacts is provided in Table 16.27.

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Table 16.27: Residential, commercial and industrial land-take - Option 2B

Property Name	Category	Approx. Land-take (ha)
Drumdelnies, Delnies	Residential	0.02ha
Beldorney, Delnies	Residential	0.07ha
Tanelhorn, Delnies	Residential	0.01ha
Woodside, Cockhill Farm	Residential	0.08ha
Woodside Cottages, Delnies	Residential	0.04ha
Grianflur, Gollanfield	Residential	0.03ha
Ashleigh, Delnies	Residential	0.02ha
Land associated with Scottish Water	Commercial/Industrial	0.06ha
Boath House Hotel, Auldearn	Commercial/Industrial	0.55ha
Carnach House Hotel, Delnies	Commercial/Industrial	0.30ha
Ardersier Fabrication Yard, Ardersier	Commercial/Industrial	0.31ha
Blackcastle Quarry	Commercial/Industrial	3.95ha
Delnies Wood Caravan Park	Commercial/Industrial	1.39ha

- 16.7.17 The largest amount of land-take is expected at Blackcastle Quarry (3.95ha). This land-take is associated with the online widening of the existing A96 on the edge of the quarry land boundary. As such, no impacts on the future viability of this business are expected. There is also a relatively large amount of land-take at Delnies Wood Caravan Park (1.39ha). As this land-take is associated with the area currently used by the caravan park, impacts on the future viability of this business are expected.

Community Land

- 16.7.18 Option 2B would result in land-take of approximately 0.47ha of land-take from community land. This would be at the Dunbar Recreation Ground (0.19ha), due to provision for a local road associated with Nairn East Junction A, and at the Auldearn Community Trust Football Pitch (0.28ha), due to widening of the existing A96. The land-take at Dunbar Recreation Ground is not expected to impact the use of this site as a recreation ground.

Agriculture and Forestry Land

- 16.7.19 Option 2B would result in a land-take of 115.43ha from 34 land interests, of which 14.89ha (13%) is prime agricultural land. For a full breakdown of the areas of land classification affected by each route option please refer to Part 6 (Appendices), Appendix A16.3 (Agricultural Land Classification) of this report.
- 16.7.20 Of the 115.43ha affected by Option 2B, 88.44ha are lost by the eight land interests with impacts of medium or above magnitude. Of this 14.60ha (17%) is prime agricultural land. A summary of the impact assessment is provided in Table 16.28. Please note that land-take associated with land interest 104 may also potentially impact on the Nairn Show. Full details of the impact assessment, including details of impacts of magnitude lower than medium, are provided in Part 6 (Appendices), Appendix A16.4 (Agricultural and Forestry Land – Impact Assessment Tables) of this report.

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Table 16.28: Potential impacts (medium magnitude or above) for agricultural and forestry land – Option 2B

Land Interest Reference	Approx. Land-take (ha)			No. fields affected	Magnitude of Land Use Impact
	Prime	Non-Prime	Total		
163	3.96	20.99	24.95	23	High
18	2.50	3.95	6.45	3	Medium
32	7.78	6.48	14.26	11	Medium
104	-	8.23	8.23	3	Medium
119	-	7.88	7.88	6	Medium
139	0.36	4.67	5.03	4	Medium
159	-	6.70	6.70	18	Medium
160	-	14.94	14.94	8	Medium

Development Land

16.7.21 Option 2B is expected to have potential impacts on 11 additional sites as a result of direct land-take and/or impacts on amenity. Direct land-take of approximately 2.90ha is expected from three of these sites; LA24 (Nairn South), LA25 (Nairn South Long Term) and PA13 (Former Fabrication Yard, Port Services). The potential impacts are mainly due to the type of allocation (e.g. housing/mixed use) and/or the construction of the route option alignment and/or local roads. A summary of the impact assessment is provided in Table 16.29. Further details of the impact assessment are provided in Part 6 (Appendices), Appendix A16.2 (Development Land – Impact Assessment Tables) of this report.

Table 16.29: Potential Impacts on Development Land Allocations – additional for Option 2B

Ref.	Development Type/Location	Approx. Land-take (ha)	Amenity
Development Land Allocations			
LA19	Housing (Ord View)	-	Yes
LA23	Housing (Firhall)	-	Yes
LA24	Mixed Use (Nairn South)	0.40ha	Yes
LA25	Mixed Use (Nairn South Long Term)	2.17ha	Yes
LA27	Community (Grigorhill)	-	Yes
LA32	Housing (Meadowfield)	-	Yes
LA33	Housing (Meadowfield Steadings)	-	Yes
Planning Applications			
PA13	Former Fabrication Yard (Port Services)	0.33ha	No
PA17	House (Lochdhu)	-	Yes
PA34	House (Alder's Edge)	-	Yes
PA35	House (Meadows)	-	Yes

16.7.22 The impacts in relation to the development capacity of the sites are the same as for Option 2A. Please refer to paragraph 16.7.15 for further details.

Option 2C

Residential, Commercial and Industrial Property

16.7.23 Option 2C would require approximately 6.22ha of land-take from seven residential properties and four commercial/industrial properties. Land-take is either as a result of the widening of the existing A96 (online sections), the provision of local roads, or the provision of Nairn West Junction A. A summary of these potential impacts is provided in Table 16.30.

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Table 16.30: Residential, commercial and industrial land-take – Option 2C

Property Name	Category	Approx. Land-take (ha)
Drumdelnies, Delnies	Residential	0.02ha
Beldorney, Delnies	Residential	0.07ha
Woodside Cottage, Delnies	Residential	0.04ha
Tanelhorn, Delnies	Residential	0.01ha
Woodside, Cockhill Farm	Residential	0.08ha
Grianflur, Gollanfield	Residential	0.03ha
Ashleigh, Delnies	Residential	0.02ha
Carnach House Hotel, Delnies	Commercial/ Industrial	0.30ha
Ardersier Fabrication Yard, Ardersier	Commercial/ Industrial	0.31ha
Blackcastle Quarry	Commercial/ Industrial	3.95ha
Delnies Wood Caravan Park	Commercial/ Industrial	1.39ha

- 16.7.24 The largest amount of land-take is expected at Blackcastle Quarry (3.95ha). This land-take is associated with the online widening of the existing A96 on the edge of the quarry land boundary. As such, no impacts on the future viability of this business are expected. There is also a relatively large amount of land-take at Delnies Wood Caravan Park (1.39ha). As this land-take is associated with the area currently used by the caravan park, impacts on the future viability of this business are expected.

Community Land

- 16.7.25 There are no impacts on community land for Option 2C.

Agriculture and Forestry Land

- 16.7.26 Option 2C would result in a land-take of approximately 128.02ha from 39 land interests, of which 12.19ha (10%) is prime agricultural land. For a full breakdown of the areas of land classification affected by each route option please refer to Part 6 (Appendices), Appendix A16.3 (Agricultural Land Classification) of this report.
- 16.7.27 Of the 128.02ha affected by Option 2C, 100.17ha are lost by the nine land interests with impacts of medium or above magnitude. Of this 11.58ha (12%) is prime agricultural land. Please note that land-take associated with land interest 104 may also potentially impact on the Nairn Show. A summary of the impact assessment is provided in Table 16.31. Full details of the impact assessment, including details of impacts of magnitude lower than medium, are provided in Part 6 (Appendices), Appendix A16.4 (Agriculture and Forestry Land – Impact Assessment Tables) of this report.

Table 16.31: Potential impacts (medium magnitude or above) for agricultural and forestry land – Option 2C

Land Interest Reference	Land-take (ha)			No. fields affected	Magnitude of Land Use Impact
	Prime	Non-Prime	Total		
163	3.98	20.99	24.97	23	High
18	3.49	7.37	10.86	7	Medium
32	1.65	10.01	11.66	11	Medium
41	2.46	7.69	10.15	7	Medium
55	-	5.24	5.24	5	Medium
102	-	8.52	8.52	8	Medium
104	-	7.13	7.13	4	Medium
159	-	6.70	6.70	18	Medium
160	-	14.94	14.94	8	Medium

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- 16.7.28 Option 2C is expected to have potential impacts on 11 additional sites as a result of direct land-take and/or impacts on amenity. Direct land-take of approximately 2.90ha is expected from three of these sites; LA24 (Nairn South), LA25 (Nairn South Long Term) and PA13 (Former Fabrication Yard, Port Services). The potential impacts are mainly due to the type of allocation (e.g. housing/mixed use) and/or the construction of the route option alignment, local roads and Nairn East Junction D. A summary of the impact assessment is provided in Table 16.32. Further details of the impact assessment are provided in Part 6 (Appendices), Appendix A16.2 (Development Land – Impact Assessment Tables) of this report.

Table 16.32: Potential impacts on development land allocations – additional for Option 2C

Ref.	Development Type/Location	Approx. Land-take (ha)	Amenity
Development Land Allocations			
LA19	Housing (Ord View)	-	Yes
LA23	Housing (Firhall)	-	Yes
LA24	Mixed Use (Nairn South)	0.40ha	Yes
LA25	Mixed Use (Nairn South Long Term)	2.17ha	Yes
LA31	Housing (Montrose House)	-	Yes
LA32	Housing (Meadowfield)	-	Yes
LA33	Housing (Meadowfield Steading)	-	Yes
Planning Applications			
PA13	Former Fabrication Yard (Port Services)	0.33ha	No
PA17	House (Lochdhu)	-	Yes
PA29	House (Newton of Park)	-	Yes
PA35	House (Meadows)	-	Yes

- 16.7.29 The impacts in relation to the development capacity of the sites are the same as for Option 2A. Please refer to paragraph 16.7.15 for further details.

Option 2D

Residential, Commercial and Industrial Property

- 16.7.30 Option 2D would require approximately 6.34ha of land-take from eight residential properties and four commercial/industrial properties. Land-take is either as a result of the widening of the existing A96 (online sections), the provision of local roads and Nairn West Junction A. A summary of the land-take is shown in Table 16.33.

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Table 16.33: Residential, commercial and industrial land-take – Option 2D

Property Name	Category	Approx. Land-take (ha)
Kinstearry House, Auldearn	Residential	0.11ha
Drumdelnies, Delnies	Residential	0.02ha
Beldorney, Delnies	Residential	0.07ha
Woodside Cottage, Delnies	Residential	0.04ha
Tanelhorn, Delnies	Residential	0.01ha
Woodside, Cockhill Farm	Residential	0.08ha
Grianflur, Gollanfield	Residential	0.03ha
Ashleigh, Delnies	Residential	0.02ha
Carnach House Hotel, Delnies	Commercial/Industrial	0.30ha
Ardersier Fabrication Yard, Ardersier	Commercial/Industrial	0.31ha
Blackcastle Quarry	Commercial/Industrial	3.95ha
Delnies Wood Caravan Park	Commercial/Industrial	1.39ha

- 16.7.31 The largest amount of land-take is expected at Blackcastle Quarry (3.95ha). This land-take is associated with the online widening of the existing A96 on the edge of the quarry land boundary. As such, no impacts on the future viability of this business are expected. There is also a relatively large amount of land-take at Delnies Wood Caravan Park (1.39ha). As this land-take is associated with the area currently used by the caravan park, impacts on the future viability of this business are expected.

Community Land

- 16.7.32 There are no impacts on community land for Option 2D.

Agriculture and Forestry Land

- 16.7.33 Option 2D would result in a land-take of 135.55ha from 38 land interests, of which 20.36ha (15%) is prime agricultural land. For a full breakdown of the areas of land classification affected by each route option please refer to Part 6 (Appendices), Appendix A16.3 (Agricultural Land Classification) of this report.
- 16.7.34 Of the 135.55ha affected by Option 2D, 111.21ha are lost by the eight land interests with impacts of medium or above magnitude. Of this 15.83ha (14%) is prime agricultural land. A summary of the impact assessment is provided in Table 16.34. Full details of the impact assessment, including details of impacts of magnitude lower than medium, are provided in Part 6 (Appendices), Appendix A16.4 (Agricultural and Forestry Land – Impact Assessment Tables) of this report.

Table 16.34: Potential impacts (medium magnitude or above) for agricultural and forestry land – Option 2D

Land Interest Reference	Approx. Land-take (ha)			No. fields affected	Magnitude of Land Use Impact
	Prime	Non-Prime	Total		
32	1.65	15.45	17.10	14	High
159	-	15.16	15.16	23	High
160	-	15.04	15.04	8	High
163	2.51	24.06	26.57	24	High
18	3.49	7.36	10.85	7	Medium
41	3.75	6.10	9.85	10	Medium
55	0.36	10.25	10.61	7	Medium
108	4.07	1.96	6.03	6	Medium

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- 16.7.35 Option 2D is expected to have potential impacts on eight additional sites as a result of direct land-take and/or impacts on amenity. Direct land-take of approximately 0.33ha is expected from PA13 (Former Fabrication Yard, Port Services). The potential impacts are mainly due to the type of allocation (e.g. housing) and/or the construction of the route option alignment, local roads and Nairn East Junction D. A summary of the impact assessment is provided in Table 16.35. Further details of the impact assessment are provided in Part 6 (Appendices), Appendix A16.2 (Development Land – Impact Assessment Tables) of this report.

Table 16.35: Potential impacts on development land allocations – additional for Option 2D

Ref.	Development Type/Location	Approx. Land-take (ha)	Amenity
Development Land Allocation			
LA19	Housing (Ord View)	-	Yes
LA31	Housing (Montrose House)	-	Yes
LA32	Housing (Meadowfield)	-	Yes
LA33	Housing (Meadowfield Steading)	-	Yes
Planning Applications			
PA13	Former Fabrication Yard (Port Services)	0.33ha	No
PA17	House (Lochdhu)	-	Yes
PA29	House (Newton of Park)	-	Yes
PA35	House (Meadows)	-	Yes

- 16.7.36 No impacts on the development capacity of these sites are expected as a result of the amenity impacts or land-take.

Option 2E

Residential, Commercial and Industrial Property

- 16.7.37 Option 2E would require an additional 16.73ha of land-take from four commercial/industrial properties. Land-take would either be as a result of the widening of the existing A96 (online sections), the provision of local roads or Nairn West Junction B. A summary of these impacts are provided in Table 16.36.

Table 16.36: Residential, commercial and industrial land-take - Option 2E

Property Name	Category	Approx. Land-take (ha)
Land associated with Scottish Water	Commercial/Industrial	0.01ha
Boath House Hotel, Auldearn	Commercial/Industrial	0.07ha
Ardersier Fabrication Yard, Ardersier	Commercial/Industrial	0.11ha
Blackcastle Quarry	Commercial/Industrial	16.54ha

- 16.7.38 The largest amount of land-take is expected at Blackcastle Quarry (16.54ha) as a result of Nairn West Junction B. Following discussions with operators at Blackcastle Quarry, it is understood that the majority of this land-take is associated with land which has already been quarried. As such, no impacts on the future viability of this business are expected.

Community Land

- 16.7.39 Option 2E would result in land-take of approximately 0.10ha at the Dunbar Recreation Ground, due to a local road associated with Nairn East Junction A. This land-take is not expected to impact on the use of this site as a recreation ground.

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Agriculture and Forestry Land

- 16.7.40 Option 2E would result in a land-take of 116.53ha from 31 land interests, of which 28.49ha (24%) is prime agricultural land. For a full breakdown of the areas of land classification affected by each route option please refer to Part 6 (Appendices), Appendix A16.3 (Agricultural Land Classification) of this report.
- 16.7.41 Of the 116.53ha affected by Option 2E, 77.23ha are lost by the seven land interests with impacts of medium or above magnitude. Of this 27.79ha (36%) is prime agricultural land. A summary of the impact assessment is provided in Table 16.37. Full details of the impact assessment, including details of impacts of magnitude lower than medium, are provided in Part 6 (Appendices), Appendix A16.4 (Agricultural and Forestry Land – Impact Assessment Tables) of this report.

Table 16.37: Potential impacts (medium magnitude or above) for agricultural and forestry land – Option 2E

Land Interest Reference	Approx. Land-take (ha)			No. fields affected	Magnitude of Land Use Impact
	Prime	Non-Prime	Total		
163	4.94	16.97	21.91	13	High
18	0.54	5.42	5.96	3	Medium
24	9.89	2.11	12.00	5	Medium
81	6.37	3.78	10.15	10	Medium
119	-	11.18	11.18	6	Medium
159	-	5.84	5.84	6	Medium
165	6.05	4.14	10.19	6	Medium

Development Land

- 16.7.42 Option 2E is expected to have potential impacts on six additional sites as a result of direct land-take and/or impacts on amenity. Direct land-take of approximately 1.44ha is expected from two of these sites; LA25 (Nairn South Long Term) and PA13 (Former Fabrication Yard, Port Services). The potential impacts are mainly due to the type of allocation (e.g. housing/mixed use) and/or the construction of the route option alignment, local roads and Nairn West Junction B. A summary of the impact assessment is provided in Table 16.38. Further details of the impact assessment are provided in Part 6 (Appendices), Appendix A16.2 (Development Land – Impact Assessment Tables) of this report.

Table 16.38: Potential impacts on development land allocations – additional for Option 2E

Ref.	Development Type/Location	Approx. Land-take (ha)	Amenity
Development Land Allocation			
LA23	Housing (Firhall)	-	Yes
LA24	Mixed Use (Nairn South)	-	Yes
LA25	Mixed Use (Nairn South Long Term)	0.80ha	Yes
LA27	Community (Grigorhill)	-	Yes
Planning Applications			
PA13	Former Fabrication Yard (Port Services)	0.64ha	No
PA32	Housing (Bogside of Boath)	-	Yes

- 16.7.43 No impacts on the development capacity of these sites are expected as a result of the amenity impacts or land-take. In relation to LA25 (Nairn South Long Term), the realignment of the local roads would result in the loss of approximately 0.80ha of land and while this could impact the site layout along these boundaries, it is not expected to impact on the development capacity of the site as a whole.

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Option 2F

Residential, Commercial and Industrial Property

- 16.7.44 Option 2F would require an additional 17.26ha of land-take from four commercial/industrial properties. Land-take would either be as a result of the widening of the existing A96 (online sections), the provision of local roads or Nairn West Junction B. A summary of these impacts is provided in Table 16.39.

Table 16.39: Residential, commercial and industrial land-take - Option 2F

Property Name	Category	Approx. land-take (ha)
Land associated with Scottish Water	Commercial/Industrial	0.06ha
Boath House Hotel, Auldearn	Commercial/Industrial	0.55ha
Ardersier Fabrication Yard, Ardersier	Commercial/Industrial	0.11ha
Blackcastle Quarry	Commercial/Industrial	16.54ha

- 16.7.45 The largest amount of land-take is expected at Blackcastle Quarry (16.54ha) as a result of Nairn West Junction B. Following discussions with operators at Blackcastle Quarry, it is understood that the majority of this land-take is associated with land which has already been quarried. As such, no impacts on the future viability of this business are expected.

Community Land

- 16.7.46 Option 2F would result in land-take of approximately 0.47ha of land-take from community land. This would be at the Dunbar Recreation Ground (0.19ha), due to provision for a local road associated with Nairn East Junction A, and at the Auldearn Community Trust Football Pitch (0.28ha), due to widening of the existing A96. The land-take at Dunbar Recreation Ground is not expected to impact on the use of this site as a recreation ground.

Agriculture and Forestry Interests

- 16.7.47 Option 2F would result in a land-take of 107.01ha from 31 land interests, of which 21.82ha (20%) is prime agricultural land. For a full breakdown of the areas of land classification affected by each route option please refer to Part 6 (Appendices), Appendix A16.3 (Agricultural Land Classification) of this report.
- 16.7.48 Of the 107.01ha affected by Option 2F, 74.67ha are lost by the seven land interests with impacts of medium or above magnitude and of this 21.24ha (28%) is prime agricultural land. A summary of the impact assessment is provided in Table 16.40. Please note that land-take associated with land interest 104 may also potentially impact on the Nairn Show. Full details of the impact assessment, including details of impacts of magnitude lower than medium, are provided in Part 6 (Appendices), Appendix A16.4 (Agricultural and Forestry Land – Impact Assessment Tables) of this report.

Table 16.40: Potential impacts (medium magnitude or above) for agricultural and forestry land – Option 2F

Land Reference	Interest	Approx. Land-take (ha)			No. affected fields	Magnitude of Land Use Impact
		Prime	Non-Prime	Total		
163		4.91	17.02	21.93	13	High
18		2.50	3.94	6.44	3	Medium
32		7.78	6.47	14.25	11	Medium
104		-	8.21	8.21	3	Medium
119		-	7.81	7.81	6	Medium
159		-	5.83	5.83	6	Medium
165		6.05	4.15	10.20	6	Medium

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Development Land

- 16.7.49 Option 2F is expected to have potential impacts on nine additional sites as a result of direct land-take and/or impacts on amenity. Direct land-take of approximately 1.44ha is expected from two of these sites; LA25 (Nairn South Long Term) and PA13 (Former Fabrication Yard, Port Services). The potential impacts are mainly due to the type of allocation (housing/mixed use) and/or the construction of the route option alignment, local roads and Nairn West Junction B. A summary of the impact assessment is provided in Table 16.41. Further details of the impact assessment are provided in Part 6 (Appendices), Appendix A16.2 (Development Land – Impact Assessment Tables) of this report.

Table 16.41: Potential impacts on development land allocations – additional for Option 2F

Ref.	Development Type/Location	Land-take (ha)	Amenity
Development Land Allocations			
LA23	Housing (Firhall)	-	Yes
LA24	Mixed Use (Nairn South)	-	Yes
LA25	Mixed Use (Nairn South Long Term)	0.80ha	Yes
LA27	Community (Grigorhill)	-	Yes
LA32	Housing (Meadowfield)	-	Yes
LA33	Housing (Meadowfield Steading)	-	Yes
Planning Applications			
PA13	Former Fabrication Yard (Port Services)	0.64ha	No
PA34	House (Alder's Edge)	-	Yes
PA35	House (Meadows)	-	Yes

- 16.7.50 The impacts in relation to the development capacity of these sites are the same as for Option 2E. Please refer to paragraph 16.7.43 for further details.

Option 2G

Residential, Commercial and Industrial Property

- 16.7.51 Option 2G would require approximately 16.65ha of land-take from two commercial properties. Land-take would either be as a result of the widening of the existing A96 (online sections), the provision of local roads or Nairn West Junction B. A summary of these impacts is shown in Table 16.42.

Table 16.42: Residential, commercial and industrial land-take - Option 2G

Property Name	Category	Approx. Land-take (ha)
Ardersier Fabrication Yard	Commercial/Industrial	0.11ha
Blackcastle Quarry	Commercial/Industrial	16.54ha

- 16.7.52 The largest amount of land-take is expected at Blackcastle Quarry (16.54ha) as a result of Nairn West Junction B. Following discussions with operators at Blackcastle Quarry, it is understood that the majority of this land-take is associated with land which has already been quarried. As such, no impacts on the future viability of this business are expected.

Community Land

- 16.7.53 No impacts on community land are expected for Option 2G.

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Agriculture and Forestry Land

- 16.7.54 Option 2G would result in a land-take of 118.29ha from 36 land interests, of which 19.06ha (16%) is prime agricultural land. For a full breakdown of the areas of land classification affected by each route option please refer to Part 6 (Appendices), Appendix A16.3 (Agricultural Land Classification) of this report.
- 16.7.55 Of the 118.29ha affected by Option 2G, 91.14ha are lost by the seven land interests with impacts of medium or above magnitude. Of this 18.55ha (20%) is prime agricultural land. A summary of the impact assessment is provided in Table 16.43. Please note that land-take associated with land interest 104 may also potentially impact on the Nairn Show. Full details of the impact assessment, including details of impacts of magnitude lower than medium, are provided in Part 6 (Appendices), Appendix A16.4 (Agricultural and Forestry Land – Impact Assessment Tables) of this report.

Table 16.43: Potential impacts (medium magnitude or above) for agricultural and forestry land – Option 2G

Land Reference	Interest	Land-take (ha)			No. fields affected	Magnitude of Land Use Impact
		Prime	Non-Prime	Total		
163		4.90	17.02	21.92	13	High
18		3.49	7.37	10.86	7	Medium
32		1.65	9.86	11.51	11	Medium
41		2.46	7.69	10.15	7	Medium
55		-	5.27	5.27	5	Medium
102		-	8.27	8.27	8	Medium
104		-	7.13	7.13	4	Medium
159		-	5.84	5.84	6	Medium
165		6.05	4.14	10.19	6	Medium

Development Land

- 16.7.56 Option 2G is expected to have potential impacts on nine additional sites as a result of direct land-take and/or impacts on amenity. Direct land-take of approximately 1.44ha is expected from two of these sites; LA25 (Nairn South Long Term) and PA13 (Former Fabrication Year, Port Services). The potential impacts are mainly due to the type of allocation (housing/mixed use) and/or the construction of the route option alignment, local roads, Nairn West Junction B and Nairn East Junction D. A summary of the impact assessment is provided in Table 16.44. Further details of the impact assessment are provided in Part 6 (Appendices), Appendix A16.2 (Development Land – Impact Assessment Tables) of this report.

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Table 16.44: Potential impacts on development land allocations – additional for Option 2G

Ref.	Development Type/Location	Land-take (ha)	Amenity
Development Land Allocations			
LA23	Housing (Firhall)	-	Yes
LA24	Mixed Use (Nairn South)	-	Yes
LA25	Mixed Use (Nairn South Long Term)	0.80ha	Yes
LA31	Housing (Montrose House)	-	Yes
LA32	Housing (Meadowfield)	-	Yes
LA33	Housing (Meadowfield Steadings)	-	Yes
Planning Applications			
PA13	Port related services	0.64ha	No
PA29	Erection of House and agricultural store.	-	Yes
PA35	Erection of House and access track.	-	Yes

16.7.57 The impacts in relation to the development capacity of these sites are the same as for Option 2E. Please refer to paragraph 16.7.43 for further details.

Option 2H

Residential, Commercial and Industrial Property

16.7.58 Option 2H would require an additional 16.73ha of land-take from four commercial/industrial properties. Land-take would either be as a result of either the widening of the existing A96 (online sections), the provision of local roads or Nairn West Junction B. A summary of these impacts is provided in Table 16.45.

Table 16.45: Residential, commercial and industrial land-take – Option 2H

Property Name	Category	Approx. Land-take (ha)
Land associated with Scottish Water	Commercial Industrial	0.01ha
Boath House Hotel, Auldearn	Commercial/Industrial	0.07ha
Ardersier Fabrication Yard, Ardersier	Commercial/Industrial	0.11ha
Blackcastle Quarry	Commercial/Industrial	16.54ha

16.7.59 The largest amount of land-take is expected at Blackcastle Quarry (16.54ha) as a result of Nairn West Junction B. Following discussions with operators at Blackcastle Quarry, it is understood that the majority of this land-take is associated with land which has already been quarried. As such, no impacts on the future viability of this business are expected.

Community Land

16.7.60 Option 2H would result in land-take of 0.10ha at the Dunbar Recreation Ground, due to provision for a local road associated with Nairn East Junction C. This land-take is not expected to impact the use of this site as a recreation ground.

Agriculture and Forestry Land

16.7.61 Option 2H would result in a land-take of 126.44ha from 30 land interests, of which 26.90ha (21%) is prime agricultural land. For a full breakdown of the areas of land classification affected by each route option please refer to Part 6 (Appendices), Appendix A16.3 (Agricultural Land Classification) of this report.

16.7.62 Of the 126.44ha affected by Option 2H, 98.52ha are lost by the nine land interests with impacts of medium or above magnitude. Of this 26.49ha (27%) is prime agricultural land. A

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summary of the impact assessment is provided in Table 16.46. Please note that land-take associated with land interest 104 may also potentially impact on the Nairn Show. Full details of the impact assessment, including details of impacts of magnitude lower than medium, are provided in Part 6 (Appendices), Appendix A16.4 (Agricultural and Forestry Land – Impact Assessment Tables) of this report.

Table 16.46: Potential impacts (medium magnitude or above) for agricultural and forestry land – Option 2H

Land Reference	Interest	Land-take (ha)			No. fields affected	Magnitude of Land Use Impact
		Prime	Non-Prime	Total		
163		3.54	12.90	16.44	13	High
18		0.54	5.42	5.96	3	Medium
24		9.89	2.11	12.00	5	Medium
32		-	8.55	8.55	12	Medium
81		6.39	3.87	10.26	10	Medium
104		-	8.71	8.71	5	Medium
119		-	11.36	11.36	6	Medium
159		-	14.08	14.08	11	Medium
165		6.13	5.03	11.16	7	Medium

Development Land

16.7.63 Option 2H is expected to have potential impacts on three additional sites as a result of direct land-take and/or impacts on amenity. Direct land-take of approximately 0.64ha is expected from PA13 (Former Fabrication Yard, Port Services). The potential impacts are mainly due to the type of allocation (e.g. housing/community) and/or the construction of the route option alignment, local roads and Nairn West Junction B. A summary of the impact assessment is provided in Table 16.47. Further details of the impact assessment are provided in Part 6 (Appendices), Appendix A16.2 (Development Land – Impact Assessment Tables) of this report.

Table 16.47: Potential impacts on development land allocations – additional for Option 2H

Ref.	Development Type/Location	Land-take (ha)	Amenity
Development Land Allocations			
LA27	Community (Grigorhill)	-	Yes
Planning Applications			
PA13	Former Fabrication Yard (Port Services)	0.64ha	No
PA32	Housing (Bogside of Boath)	-	Yes

16.7.64 No impacts on the development capacity of these sites are expected as a result of the amenity impacts or land-take.

Option 2I

Residential, Commercial and Industrial Property

16.7.65 Option 2I would require an additional 16.76ha of land-take from one residential property and two commercial/industrial properties. Land-take would be either as a result of the widening of the existing A96 (online sections), the provision of local roads or as a result of Nairn West Junction B. A summary of these impacts is provided in Table 16.48.

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Table 16.48: Residential, commercial and industrial land-take – Option 2I

Property Name	Category	Approx. Land-take (ha)
Kinsteary House, Auldearn	Residential	0.11ha
Ardersier Fabrication Yard	Commercial/ Industrial	0.11ha
Blackcastle Quarry	Commercial/ Industrial	16.54ha

16.7.66 The largest amount of land-take is expected at Blackcastle Quarry (16.54ha) as a result of Nairn West Junction B. Following discussions with operators at Blackcastle Quarry, it is understood that the majority of this land-take is associated with land which has already been quarried. As such, no impacts on the future viability of this business are expected.

Community Land

16.7.67 No impacts on community land are expected for Option 2I.

Agriculture and Forestry Land

16.7.68 Option 2I would result in a land-take of 118.13ha from 37 land interests, of which 25.81ha (22%) is prime agricultural land. For a full breakdown of the areas of land classification affected by each route option please refer to Part 6 (Appendices), Appendix A16.3 (Agricultural Land Classification) of this report.

16.7.69 Of the 118.13ha affected by Option 2I, 96.32ha are lost by the eight land interests with impacts of medium or above magnitude. Of this 22.99ha (24%) is prime agricultural land. A summary of the impact assessment is provided in Table 16.49. Full details of the impact assessment, including details of impacts of magnitude lower than medium, are provided in Part 6 (Appendices), Appendix A16.4 (Agricultural and Forestry Land – Impact Assessment Tables) of this report.

Table 16.49: Potential impacts (medium magnitude or above) for agricultural and forestry land – Option 2I

Land Interest Reference	Land-take (ha)			No. fields affected	Magnitude of Land Use Impact
	Prime	Non-Prime	Total		
32	1.65	15.44	17.09	14	High
163	3.54	12.90	16.44	13	High
18	3.49	7.37	10.86	7	Medium
41	3.75	6.10	9.85	10	Medium
55	0.36	10.25	10.61	7	Medium
108	4.07	1.95	6.02	6	Medium
159	-	14.29	14.29	11	Medium
165	6.13	5.03	11.16	7	Medium

Development Land

16.7.70 Option 2I is expected to have potential impacts on six additional sites as a result of direct land-take and/or impacts on amenity. Direct land-take of approximately 0.64ha is expected from PA13 (Former Fabrication Yard). The potential impacts are mainly due to the type of allocation (e.g. housing) and/or as a result of the route option alignment, local roads, Nairn West Junction B and Nairn East Junction D. A summary of the impact assessment is provided in Table 16.50. Further details of the impact assessment are provided in Part 6 (Appendices), Appendix A16.2 (Development Land – Impact Assessment Tables) of this report.

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Table 16.50: Potential impacts on development land allocations – additional for Option 2H

Ref.	Development Type/Location	Land-take (ha)	Amenity
Development Land Allocations			
LA31	Housing (Montrose House)	-	Yes
LA32	Housing (Meadowfield)	-	Yes
LA33	Housing (Meadowfield Steading)	-	Yes
Planning Applications			
PA13	Former Fabrication Yard (Port Services)	0.64ha	No
PA29	House (Newton of Park)	-	Yes
PA35	House (Meadows)	-	Yes

16.7.71 No impacts on the development capacity of these sites are expected as a result of the amenity impacts or land-take.

16.8 Compliance with Policies and Plans

16.8.1 An assessment of the compliance of the route options in relation to the policies and plans discussed in Section 16.3 (Policies and Plans) is presented below for each section; Inverness to Gollanfield and the Nairn Bypass. Where impacts are the same for both sections this is identified and reported collectively.

16.8.2 It should be noted that in relation to Policy 28 (Sustainable Design) of the HwLDP, the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme is considered to have a demonstrable overriding strategic benefit and as such there is scope to consider that there would be no conflict with this policy. The scheme is included in the Strategic Transport Projects Review (STPR) (Transport Scotland, 2008) which identifies a programme of strategic transport interventions necessary to support the future effective operation of Scotland's transport network. The Infrastructure Investment Plan (Scottish Government, 2011) also identifies investment in Scotland's transport as a key enabler for enhancing productivity and delivering sustainable growth, and has made a commitment to dual the A96 between Inverness and Aberdeen by 2030. The strategic benefits are also reflected in the HwLDP, which states that key transport improvements must be delivered in order to support the development of the A96 corridor.

Community Severance

16.8.3 Impacts in relation to community severance are expected to be minimal and similar across all route options for both sections; Inverness to Gollanfield and the Nairn Bypass. As such no conflict with relevant planning policies is expected.

Residential, Commercial and Industrial Property

Inverness to Gollanfield

16.8.4 All of the route options have the potential to conflict with Policy 28 (Sustainable Design) of the HwLDP and General Policies B, H and I of the Inverness Local Plan as a result of land-take from residential and commercial/industrial properties. However, there is scope to consider that no conflict would be expected with Policy 28 (Sustainable Design) of the HwLDP due to the strategic benefits of the A96 Inverness to Nairn (including Nairn Bypass) scheme (refer to paragraph 16.8.2).

16.8.5 Following the initial assessment of the potential impacts of the route options on the future viability of local businesses (e.g. through an assessment of the impacts in relation to land-take and access), no conflict with the economic objectives of SPP and Policy 28 (Sustainable Design) of the HwLDP are expected.

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Nairn Bypass

- 16.8.6 All of the route options have the potential to conflict with Policy 28 (Sustainable Design) of the HwLDP and General Policies S2 (Housing), S3 (Business) and S4 (Industry) of the Nairnshire Local Plan as a result of land-take from residential and commercial/industrial properties. However, there is scope to consider that no conflict would be expected with Policy 28 (Sustainable Design) of the HwLDP due to the strategic benefits of the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme (refer to paragraph 16.8.2).
- 16.8.7 Options 2A, 2B, 2C and 2D could potentially conflict with the economic objectives of SPP and Policy 28 (Sustainable Development) of the HwLDP with respect to land-take and potential impacts on the future viability of Delnies Wood Caravan Park. However, there is scope to consider that no conflict would be expected with these policies due to the localised impact and the strategic benefits of the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme (refer to paragraph 16.8.2).

Community Facilities

- 16.8.8 No impacts are expected in relation to community facilities for both sections; Inverness to Gollanfield and the Nairn Bypass. All of the route options are therefore expected to comply with SPP, Policy 28 (Sustainable Design) of the HwLDP and General Policy S (Special Uses) of the Inverness Local Plan in this regard.

Community Land

Inverness to Gollanfield

- 16.8.9 No potential impacts are expected for community land for any of the route options within the Inverness to Gollanfield section. Therefore, no conflicts are expected with SPP, Policy 76 (Playing Fields and Sports Pitches) of the HwLDP or General Policy A: Amenity of the Inverness Local Plan.
- 16.8.10 In relation to Policy 75 (Open Space), it is noted that all of the route options may impact on areas of open space identified within the Highland Council's Greenspace Audit (The Highland Council, 2010). However, for the purposes of this DMRB Stage 2 Assessment these areas were considered (due to their primary land use) to fall within land assessed within other baseline categories (e.g. commercial/industrial or agricultural or forestry land). Furthermore, as the A96 Dualling Inverness to Nairn (including Nairn Bypass) is considered to be of strategic importance and would contribute to the spatial strategy for the area, no conflict with this policy would be expected.

Nairn Bypass

- 16.8.11 A number of the route options would have the potential to conflict with SPP and Policy 28 (Sustainable Development) and Policy 76 (Playing Fields and Sports Pitches) of the HwLDP as a result of land-take from Dunbar Recreation Ground (Options 2A, 2B, 2E, 2F and 2H) and Auldearn Community Trust Football Pitch (Options 2B and 2F).
- 16.8.12 In relation to the impacts on Dunbar Recreation Ground, no conflict with relevant planning policies is expected as the land-take is not considered to adversely affect the use of this site as a recreation ground.
- 16.8.13 However, in relation to the impacts on the Auldearn Community Trust Football Pitch, further assessment would be required to determine whether Options 2B and 2F would adversely affect the use and potential for sport and training at this site. Should these impacts be confirmed, the proposals would only be acceptable where the preferred option is ancillary to the principal use of the site as a playing field, would involve a minor part of the playing field which would not affect its use, the area lost would be replaced or where it can be clearly

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demonstrated that there is an excess of sports pitches to meet current and anticipated future demand in the area.

- 16.8.14 In relation to Policy 75 (Open Space), the same should be noted here as for the Inverness to Gollanfield route options. Please refer to paragraph 16.8.10 for further details.

Agriculture and Forestry Land

- 16.8.15 All of the route options for both sections, Inverness to Gollanfield and the Nairn Bypass, have the potential to conflict with SPP and Policy 28 (Sustainable Design) of the HwLDP as a result of loss of prime agricultural land and forestry.

- 16.8.16 As prime quality agricultural land is a finite national resource, SPP emphasises that development on it would not be permitted unless it is an essential component of the settlement strategy or it is necessary to meet an essential need (e.g. essential infrastructure) where no other suitable site is available. In support of this, Policy 28 (Sustainable Design) of the HwLDP states that developments will be assessed on a number of criteria including the extent to which they impact on prime quality agricultural land, and developments which are judged to be significantly detrimental in terms of these criteria will not accord with the HwLDP. However, there is scope to consider that no conflict would be expected with SPP or Policy 28 (Sustainable Design) of the HwLDP due to the strategic benefits of the A96 Inverness to Nairn (including Nairn Bypass) scheme (refer to paragraph 16.8.2).

- 16.8.17 All of the route options for both sections, Inverness to Gollanfield and the Nairn Bypass, have the potential to conflict with Policy 52 (Principle of Development in Woodland) of the HwLDP in relation to their potential impacts on forestry. As the A96 Inverness to Nairn (including Nairn Bypass) scheme is a major development, further assessment of the socio-economic impact on the local forestry industry, the economic maturity of the woodland and the opportunity for the scheme to co-exist with forestry operations would be required to confirm this conflict.

Development Land

Inverness to Gollanfield

- 16.8.18 All route options have the potential to conflict with a number of local planning policies as a result of impacts on amenity and land-take from land allocations. While the development capacity of the majority of the allocated sites is not expected to be impacted, Options 1B, 1B (MV), 1D and 1D (MV) are expected to impact the development capacity of the Inverness Airport and Tornagrain allocation sites (LA14 and LA15). These route options therefore conflict with:

- HwLDP Policy 13 (Tornagrain, Development Allocation);
- IA1 (Inverness Airport Business Park) and TG1 (Tornagrain) of the IMFPLDP; and
- Policy A96 Corridor Policy 3 of the Inverness Local Plan.

- 16.8.19 In relation to planning applications, all of the route options are expected to result in the total loss of the development capacity of PA10 (Taste of Moray), as a result of the construction of the Brackley Junction. This is a consented planning application for the erection of a hotel at an existing business. Although there are no direct conflicts with planning policies in relation to the planning application, there is the potential to conflict with the economic objectives of SPP and Policy 28 (Sustainable Development) of the HwLDP with respect to the future viability of the business. However, there is scope to consider that no conflict would be expected with these policies due to the localised impacts and the strategic benefits of the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme (refer to paragraph 16.8.2).

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Nairn Bypass

- 16.8.20 Options 2A, 2B, 2C, 2E, 2F and 2G have the potential to conflict with HwLDP Policy 18 and IMFPLDP Development Plan Allocations NA8 and NA9 in relation to land-take and amenity impacts at LA24 (Nairn South) and LA25 (Nairn South Long Term). However, as there are no impacts on the development capacity of these sites, no conflict is expected.

16.9 Potential Mitigation

- 16.9.1 For a DMRB Stage 2 Assessment the design has not been sufficiently developed to allow the mitigation measures to be defined in detail at this stage. The objective of this section is to identify potential mitigation taking into account best practice, legislation and guidance, which would be further developed and refined during the DMRB Stage 3 Assessment. As part of DMRB Stage 3, the design of the preferred option would be reviewed and, where possible, the preferred option would be further developed (pre-DMRB Stage 3 Assessment mitigation) to minimise impacts on community and private assets. The potential mitigation measures as part of the DMRB Stage 3 Assessment, for both the construction and operational phases are described in this section.

Generic Construction Mitigation

- 16.9.2 As noted above, detailed mitigation will be developed as part of the DMRB Stage 3 Assessment when additional construction information is known and can be assessed in further detail. Typical mitigation measures to reduce impacts on community and private assets in relation to construction include:

- restriction of construction activities to an agreed working corridor;
- restoring areas used for temporary construction compounds to previous use post-construction;
- introduction of traffic management/calming measures to help alleviate amenity impacts; and
- applying best-practice construction methods to reduce disturbance and consideration of timing of construction to avoid peak seasonal use if practicable.

- 16.9.3 Mitigation to reduce noise, air quality and landscape and visual impacts on the local community and development land during construction is covered in more detail in Chapter 8 (Air Quality), Chapter 9 (Noise and Vibration) and Chapter 10 (Landscape and Visual) of this report.

Residential, Commercial and Industrial Property

- 16.9.4 Where vehicular access to residential, commercial and industrial properties would be temporarily or permanently impacted, reinstatement or an alternative would be provided.

Community Facilities

- 16.9.5 Mitigation for potential impacts on community facilities would be the same as for residential, commercial and industrial property. Please refer to paragraphs 16.9.4 for further details.

Community Land

- 16.9.6 Where appropriate, where land-take is required, and where this would result in the loss of all or part of community land, consideration would be given to the provision of exchange land as part of the preferred option.

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Agricultural and Forestry Land

- 16.9.7 Mitigation measures with respect to agricultural and forestry interests would be developed during the DMRB Stage 3 Assessment with the aim of protecting the agricultural capability of land and soils and the maintenance of the viability of farming units.
- 16.9.8 Mitigation measures to avoid or reduce the effects on agricultural and forestry interest are likely to include:
- providing access to farms, fields and forestry during and post construction;
 - providing temporary and where appropriate, permanent fencing for the protection of the health and safety of the public and animals;
 - reinstatement of soils, boundary features (fences, walls and hedges), water supplies and drainage systems;
 - precautions to avoid the spread of soil borne pests and diseases, animal and crop diseases, tree diseases and invasive species; and
 - arboriculture and/or wind throw assessments and any felling limited to that necessary to allow the safe construction and operation of the road.
- 16.9.9 In addition to the above mitigation measures, it may be appropriate to provide accommodation overbridges or underpasses to maintain access and reduce the impacts.
- 16.9.10 Redundant structures would be identified and in discussion with the landowner may be returned to them for their use or grubbed up and returned to agriculture.

Development Land

- 16.9.11 The permanent loss of proposed development land cannot be mitigated. However, where a route option would result in land-take from a large development site in its early stages of design/masterplanning there may be potential to accommodate the route option within the masterplan.
- 16.9.12 Potential mitigation measures relating to development land would include reducing any potential impacts on amenity. Mitigation to reduce noise, air quality and landscape and visual impacts on development land is covered in more detail in Chapter 8 (Air Quality), Chapter 9 (Noise and Vibration) and Chapter 10 (Landscape and Visual) of this report.

16.10 Summary of Route Options

- 16.10.1 This section provides a summary of the impact assessment for each section; Inverness to Gollanfield and the Nairn Bypass. The summary includes those impacts which are common to all and those that vary between the options.
- 16.10.2 A discussion of the potential residual impacts is then presented taking into account the possible mitigation measures outlined in Section 16.9 (Potential Mitigation).

Inverness to Gollanfield

Community Severance

- 16.10.3 Impacts in relation to community severance are expected to be minimal and similar across all route options.

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Residential, Commercial and Industrial Property

- 16.10.4 Table 16.51 provides a summary of the total land-take and impacts on access for residential, commercial and industrial property. The total number of properties that are expected to be adversely impacted is also summarised for each route option.

Table 16.51: Summary of land-take and access impacts on residential, commercial and industrial property (Inverness to Gollanfield)

Route Option	Total Land-take (ha)	No of Properties with Adverse Impacts on Access	Total No of Properties with Adverse Impacts
1A	0.75	2	8
1A (MV)	0.72	2	7
1B	0.93	2	10
1B (MV)	0.90	2	9
1C	0.42	-	4
1C (MV)	0.39	-	3
1D	0.60	-	6
1D (MV)	0.57	-	5

- 16.10.5 Options 1C and 1C (MV) are expected to have the least overall total land-take from residential, commercial and industrial properties, with Option 1C (MV) having no additional impacts to those which are common to all route options. Options 1B and 1B (MV) are expected to have the largest overall land-take.
- 16.10.6 Options 1A, 1A (MV), 1B and 1B (MV) are expected to have two residential properties that as a result of the land-take are expected to be acquired and two residential properties that are expected to be impacted in relation to access (i.e. where current access is stopped-up with no alternative access provided within the current design). These impacts are mainly due to the online section of the route options near Allanfearn.
- 16.10.7 Options 1B, 1B (MV), 1D and 1D (MV) are expected to result in the demolition of one residential property as a result of Mid Coul Junction B.
- 16.10.8 Options 1C and 1C (MV) have the least number of residential, commercial or industrial properties impacted by either land-take or by severance of access, closely followed by 1D and 1D (MV). Options 1B and 1B (MV) have the most number of residential, commercial or industrial properties impacted by either land-take or by severance of access, closely followed by Options 1A and 1A (MV).
- 16.10.9 Overall, Option 1C and 1C (MV) are expected to have the least impact on residential, commercial or industrial properties, having the least land-take, no impact on access and the lowest number of properties impacted overall. These route options are also not expected to result in the acquisition or demolition of properties. Options 1B and 1B (MV) are expected to have the greatest impact on residential, commercial or industrial properties, having the greatest land-take, impacts on access and the potential for acquisition or demolition of properties. These impacts are mainly due to a number of residential, commercial and industrial properties being located close to the existing A96 and Options 1B and 1B (MV) being the route options with most online construction. Options 1C and 1C (MV) are the options with least online construction and are therefore expected to have less of an impact on the residential, commercial and industrial properties that are located close to the existing A96.
- 16.10.10 In relation to impacts on access, mitigation in the form of alternative access would reduce these impacts.

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- 16.10.11 All the route options have the potential to conflict with General Policies B, H and I of the Inverness Local Plan. There is scope to consider that there would be no conflict with Policy 28 (Sustainable Design) of the HwLDP due to the strategic benefits of the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme.

Community Facilities

- 16.10.12 No impacts are expected in relation to community facilities as a result of the route options.

Community Land

- 16.10.13 No impacts are expected in relation to community land as a result of the route options.

Agriculture and Forestry Land

- 16.10.14 Table 16.52 provides a summary of the potential impacts on agricultural and forestry land. This includes a summary of total land-take (as prime and non-prime land), the number of fields and land interests potentially affected and the number of land interests with potential impacts of medium magnitude or above. As explained in Section 16.2 (Approach and Methods) the magnitude of impact has been used to provide an indication of the level of potential impact, as at this stage it is not possible to fully determine the sensitivity of the land interest and therefore the significance of impact. The magnitude of impact has been determined through consideration of the area of land-take and number of fields which are impacted, which provides an indication on potential severance and disruption of agricultural and forestry activity.

Table 16.52: Summary of the potential impacts on agricultural and forestry land (Inverness to Gollanfield)

Potential Impacts	Option							
	1A	1A (MV)	1B	1B (MV)	1C	1C (MV)	1D	1D (MV)
Prime land-take (ha)	47.79	44.38	42.12	37.38	46.82	46.20	41.14	39.54
Non-prime land-take (ha)	51.28	56.07	47.59	55.42	45.83	47.22	42.11	47.54
Total land-take (ha)	99.07	100.45	89.71	92.80	92.65	93.42	83.25	87.08
No. land Interests affected	17	17	19	19	17	17	19	19
No. fields affected	107	110	118	119	91	93	102	103
No. land interests with magnitude of impact medium or above	6	5	6	6	4	4	4	5

- 16.10.15 Options 1A and 1A (MV) are expected to have the greatest amount of agricultural and forestry land-take. This is mainly related to a combination of the local road to Alturie Point and the route option alignment east of Tornagrain. Option 1D is expected to have the least amount of agricultural and forestry land-take. This is mainly due to this route option being the most online to the east of Tornagrain, combined with its lesser land-take at its western end in comparison to Options 1A, 1A (MV), 1B and 1B (MV) and south of Morayston in comparison to Option 1D (MV). The land-take from Options 1A, 1A (MV), 1B and 1B (MV) at the western end is expected to be greater due to the local road to Alturie Point.
- 16.10.16 Option 1A is expected to have the greatest amount of prime land land-take, closely followed by Option 1C. This is mainly due to Newton Junction A or B and the route option alignment east of Tornagrain. Options 1B (MV) and 1D (MV) are expected to have the least amount of prime-land land-take. This is mainly due to the route option alignment to the east of Tornagrain where it is mainly online, combined with the route option alignment south of Morsyston which cuts through non-prime agricultural land.

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- 16.10.17 All route options impact on a similar number of land interests, with the additional impacts for Options 1B, 1B (MV), 1D and 1D (MV) related to the route option alignment to the east of Tornagrain. The route options also have a similar number of potential impacts which are of medium magnitude or above, with Options 1C, 1C (MV) and 1D expected to have the least number of impacts within this category. The differences mainly relate to the land-take of agricultural and forestry land as a result of the local road to Alturie Point (Options 1A, 1A (MV), 1B, 1B (MV)), the Newton Junctions (Newton Junction A and C (Options 1A, 1B, 1C, 1C (MV), 1D and 1D (MV))) have a greater land-take than Newton Junction B (Options 1A (MV) and 1B (MV)), and the local roads for Options 1B (MV) and 1D (MV) located to the east of Morayston.
- 16.10.18 Overall, taking into account the potential impacts noted above, and whereby land-take of prime agricultural land is considered to be an important differentiator between the route options, Options 1A and 1A (MV) are expected to have the greatest impact on agricultural and forestry land and Option 1D is expected to have the least impact. Options 1A and 1A (MV) have the highest overall land-take and some of the highest areas of land-take of prime quality agricultural land. This is mainly due to a combination of the local road to Alturie Point and the route option alignment east of Tornagrain. Although, Option 1D impacts on one of the highest number of land interests, it has the lowest amount of land-take overall and one of lowest amounts of land-take from prime quality agricultural land.
- 16.10.19 Mitigation as described in Section 16.9 (Potential Mitigation) is expected to reduce the impacts on agricultural and forestry land from those reported above, but at this stage in the assessment it is not possible to confirm by how much these impacts would reduce.
- 16.10.20 In relation to the potential impacts on agricultural land there is scope to consider that due to the strategic benefits and essential need of the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme that there are no conflicts with SPP or Policy 28 (Sustainable Design) of the HwLDP in this regard. In relation to the potential impacts on woodland, further assessment would be required to confirm the socio-economic impact of the route options, the economic maturity of the woodland and the opportunity for the scheme to co-exist with forestry operations, to confirm whether there would be a conflict with Policy 52 (Principle of Development in Woodland) of the HwLDP.

Development Land

- 16.10.21 Table 16.53 provides a summary of the potential impacts on development land allocations and consented planning applications.

Table 16.53: Summary of potential impacts on development land (Inverness to Gollanfield)

Option	Direct Land-take				Total Land-take area		Amenity Impacts		Total Amenity Impacts
	Development Land Allocation		Planning Application				Development Land Allocation	Planning Application	
	ha	No	ha	No	ha	No			
1A	25.50	3	0.30	2	25.80	5	8	1	9
1A (MV)	25.50	3	0.30	2	25.80	5	8	1	9
1B	38.00	4	0.30	2	38.30	6	8	1	9
1B (MV)	38.00	4	0.30	2	38.30	6	8	1	9
1C	25.50	3	0.30	2	25.80	5	8	1	9
1C (MV)	25.50	3	0.30	2	25.80	5	8	1	9
1D	38.00	4	0.30	2	38.30	6	8	1	9
1D (MV)	38.00	4	0.30	2	38.30	6	8	1	9

- 16.10.22 All route options would result in direct land-take from two consented planning applications due to the widening of the existing A96 near to the Inverness Retail Park and the Brackley Junction. In relation to development land allocations, all route options would result in direct

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land-take, with Options 1A, 1A (MV), 1C and 1C (MV) resulting in the least land-take and Options 1B, 1B (MV), 1D and 1D (MV) resulting in the greatest land-take. This is mainly due to the additional land-take at LA15 (Tornagrain) as a result of Mid Coul Junction B. While the development capacity of the majority of the sites is not expected to be impacted, Options 1B, 1B (MV), 1D and 1D (MV) are expected to impact the development capacity of LA14 (Inverness Airport) and LA15 (Tornagrain New Town), as a result of the construction of Mid Coul Junction B. In addition, all route options are expected to impact on the development capacity of PA10 (Taste of Moray) due to the construction of the Brackley Junction.

- 16.10.23 In addition to direct land-take, all of the route options would result in amenity impacts at nine sites. This is mainly due to the type of allocation (e.g. housing or mixed use) and the proximity of the route options to these sites.
- 16.10.24 Overall, taking into account the area of development land that would be lost and the potential impacts on the amenity of development sites, Options 1B, 1B (MV), 1D and 1D (MV) are expected to result in the greatest impacts to development land and Options 1A, 1A (MV), 1C and 1C (MV) are expected to result in the least impacts to development land. This is mainly due to the additional impacts of Options 1B, 1B (MV), 1D and 1D (MV) on LA14 (Inverness Airport) and LA15 (Tornagrain New Town).
- 16.10.25 The mitigation measures outlined in Section 16.9 (Potential Mitigation) are expected to reduce the amenity impacts on development land for all the route options. However, at this stage it is not possible to determine by how much these mitigation measures would reduce the impacts.
- 16.10.26 In relation to compliance with policy and plans, Options 1B, 1B (MV), 1D and 1D (MV) are expected to conflict with HwLDP Policy 13 (Tornagrain, Development Allocations), IA1 (Inverness Airport Business Park) and TG1 (Tornagrain) of the IMFPLDP and Policy A96 Corridor Policy 3 of the Inverness Local Plan, in relation to their potential impacts on the development capacity of LA14 (Inverness Airport) and (LA15) Tornagrain New Town.

Nairn Bypass

Community Severance

- 16.10.27 Impacts in relation to community severance are expected to be minimal and similar across all route options.

Residential, Commercial and Industrial Property

- 16.10.28 Table 16.54 provides a summary of the total land-take from residential, commercial and industrial properties and the total number of properties with adverse impacts as a result of this land-take. There are no impacts in relation to access for residential, commercial and industrial properties.

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Table 16.54: Summary of land-take of residential, commercial and industrial property (Nairn Bypass)

Option	Total Land-take (ha)	Number of Properties with Adverse Impacts
2A	6.30	13
2B	6.83	13
2C	6.22	11
2D	6.34	12
2E	16.73	4
2F	17.26	4
2G	16.65	2
2H	16.73	4
2I	16.76	3

- 16.10.29 Options 2A, 2B, 2C and 2D have the least amount of land-take overall, but are expected to impact on a larger number of individual properties. The land-take associated with these route options is mainly due to the widening of the existing A96 near Blackcastle Quarry and Nairn West Junction A. The construction of Nairn West Junction A is expected to require land-take from residential properties in this area and Delnies Wood Caravan Park. As a result of the land-take at the Caravan Park, there are potential impacts on the future viability of this business.
- 16.10.30 Options 2E, 2F, 2G, 2H and 2I have the greatest amount of land-take overall, but are expected to impact on the least number of individual properties. The land-take associated with these route options is mainly due to the construction of Nairn West Junction B and the associated land-take from Blackcastle Quarry. Following discussions between Transport Scotland and the landowner at Blackcastle Quarry, it is understood that the location of the junction would be on land that has already been quarried and therefore, based on land-take, no impacts on the future viability of this business are expected.
- 16.10.31 In considering the route options which are expected to have the greatest impact on residential, commercial and industrial property overall, it is considered appropriate to remove the land-take associated with Blackcastle Quarry for Options 2E, 2F, 2G, 2H, and 2I (16.54ha). This land is associated with an area of the quarry which has already been quarried. Taking this into account, Options 2A, 2B, 2C and 2D are expected to have the greatest impact overall, with Option 2B having a slightly higher land-take mainly due to the route option alignment near Boath House.
- 16.10.32 All the route options are expected to have the potential to conflict with General Policies S2 (Housing), S3 (Business) and S4 (Industry) of the Nairnshire Local Plan. There is scope to consider that there would be no conflict with Policy 28 (Sustainable Design) of the HwLDP due to the strategic benefits of the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme.

Community Facilities

- 16.10.33 No impacts are expected in relation to community facilities as a result of the route options.

Community Land

- 16.10.34 Table 16.55 provides a summary of the total land-take from community land and the total number of areas of community land with adverse impacts.

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Table 16.55: Summary of impacts on land-take for community land areas (Nairn Bypass)

Option	Total Land-take (ha)	No of Community Land Areas
2A	0.10	1
2B	0.47	2
2C	-	-
2D	-	-
2E	0.10	1
2F	0.47	2
2G	-	-
2H	0.10	1
2I	-	-

- 16.10.35 Options 2B and 2F have the greatest amount of land-take overall and this is from both the Dunbar Recreation Ground and the Auldearn Community Trust Football Pitch. This is due to the local road associated with Nairn East Junction B and the route option alignment to the east of Auldearn. Options 2A, 2E and 2H would also result in land-take at Dunbar Recreation Ground, and this is related to the local road associated with Nairn East Junction A and C. The small amount of land-take associated with the Dunbar Recreation Ground is not considered to adversely affect the use of this site as a recreation ground.
- 16.10.36 Mitigation in relation to land-take would involve, where appropriate, the consideration of the provision of exchange land and where required, this is expected to reduce the impacts on community land.
- 16.10.37 In relation to compliance with policies and plans and the potential impacts on the Auldearn Community Trust Football Pitch, there is the potential for conflict with Policy 76 (Playing Fields and Sports Pitches) of the HwLDP. Further assessment would be required to confirm whether Options 2B and 2F would have an acceptable impact and whether mitigation in relation to replacement of the area of land lost could be implemented.

Agriculture and Forestry Interests

- 16.10.38 Table 16.56 provides a summary of the potential impacts on agricultural and forestry land. This includes a summary of total land-take (as prime and non-prime land), the number of fields and land interests potentially affected and the number of land interests with potential impacts of medium magnitude or above. As noted in Section 16.2 (Approach and Methods) the magnitude of impact has been used to provide an indication of the level of potential impact, as at this stage in the assessment it is not possible to fully determine the sensitivity of the land interest and therefore the significance of impact. The magnitude of impact has been determined through consideration of the area of land-take and number of fields which are impacted, which provides an indication on potential severance and disruption of agricultural and forestry activity.

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Table 16.56: Summary of the potential impacts on agricultural and forestry land (Nairn Bypass)

Potential Impacts	Option								
	2A	2B	2C	2D	2E	2F	2G	2H	2I
Prime land-take (ha)	21.61	14.89	12.19	20.36	28.49	21.82	19.06	26.90	25.81
Non-prime land-take (ha)	103.50	100.54	115.83	115.19	88.04	85.19	99.23	99.54	92.32
Total land-take (ha)	125.11	115.43	128.02	135.55	116.53	107.01	118.29	126.44	118.12
No. land Interests affected	34	34	39	38	31	31	36	30	37
No. fields affected	140	137	147	151	110	107	116	121	119
No. land interests with magnitude of impact medium or above	8	8	9	8	7	7	9	9	8

- 16.10.39 Option 2D is expected to have the greatest amount of agricultural and forestry land-take, closely followed by Option 2C. This is mainly related to the route option alignment through Delnies Wood and the land-take associated with agricultural and forestry land to the south of Auldearn. Option 2F is expected to have the least amount of agricultural and forestry land-take, closely followed by Option 2B. This is mainly due to these route options closely following the alignment of the existing A96 to the east of Auldearn.
- 16.10.40 Option 2E is expected to have the greatest amount of prime land land-take, closely followed by Options 2H and 2I. This is mainly due to the route option alignment to south of Moss-side (Option 2E, 2H and 2I), north-east of Auldearn (Option 2E and 2H), south-west of Newmill and near Kinsteary House (Options 2H and 2I). Option 2C is expected to have the least amount of prime land land-take, closely followed by Option 2B. This is mainly due to these route options avoiding areas of prime quality land to the south of Moss-side, north-east of Auldearn and south-west of Newmill.
- 16.10.41 All route options have a similar number of impacts which are of medium magnitude or above, with Options 2C, 2G and 2H having the largest number of impacts within this category.
- 16.10.42 Overall, taking into account the potential impacts noted above, and whereby land-take of prime agricultural land is considered to be an important differentiator between the route options, Options 2D and 2H are expected to have the greatest impact on agricultural and forestry land and Options 2B and 2F the least impact. Although Options 2D and 2H do not have the highest amount of land-take of prime quality land, they do have some of the largest amount of land-take overall, with Option 2D having the most land-take of all the route options. Option 2H, has a slightly lower land-take than Option 2D, but has a larger amount of land-take of prime agricultural land. This is mainly due to the route option alignment for Option 2H to the north-east of Auldearn. Option 2C also has one of the highest land-takes overall, but this route option has the lowest amount of prime land land-take of all the route options. Option 2F has the lowest amount of land-take overall, closely followed by Option 2B, which has a lower amount of land-take from prime agricultural land than Option 2F. The lesser impacts associated with Options 2B and 2F are mainly related to the route option alignment at their eastern end, which closely follows the alignment of the existing A96.
- 16.10.43 Mitigation as described in Section 16.9 (Potential Mitigation) is expected to reduce the impacts on agricultural and forestry land from those reported above, but at this stage in the assessment it is not possible to confirm by how much these impacts would reduce.
- 16.10.44 In relation the potential impacts on agricultural land there is scope to consider that due to the strategic benefits and essential need of the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme that there are no conflicts with SPP or Policy 28 (Sustainable Design) of the HwLDP in this regard. In relation to the potential impacts on woodland further assessment would be required to confirm the socio-economic impact of the route options, the economic

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maturity of the woodland and the opportunity for the scheme to co-exist with forestry operations, to confirm whether there would be a conflict with Policy 52 (Principle of Development in Woodland) of the HwLDP.

Development Land

- 16.10.45 Table 16.57 provides a summary of the potential impacts on development land allocations and consented planning applications.

Table 16.57: Summary of potential land-take (ha) from development land (Nairn Bypass)

Option	Direct Land-take				Total Land-take area		Amenity Impacts		Total Amenity Impacts
	Development Land Allocation		Planning Application				Development Land Allocation	Planning Application	
	ha	No	ha	No	ha	No			
2A	2.57	2	0.33	1	2.90	3	5	7	12
2B	2.57	2	0.33	1	2.90	3	7	7	14
2C	2.57	2	0.33	1	2.90	3	7	7	14
2D	-	-	0.33	1	0.33	1	4	7	11
2E	0.80	1	0.64	1	1.44	2	4	5	9
2F	0.80	1	0.64	1	1.44	2	6	6	12
2G	0.80	1	0.64	1	1.44	2	6	6	12
2H	-	-	0.64	1	0.64	1	1	5	6
2I	-	-	0.64	1	0.64	1	3	6	9

- 16.10.46 All the route options would result in direct land-take from one consented planning applications (PA13) due to either the construction of a local road from Blackcastle (Options 2A, 2B, 2C and 2D) or the construction of Nairn West Junction B (Options 2E, 2F, 2G, 2H and 2I). In relation to development land allocations, Options 2A, 2B and 2C would result in direct land-take from LA24 (Nairn South) and Options 2A, 2B, 2C, 2E, 2F and 2G would result in direct land-take from LA25 (Nairn South Long Term). Only Options 2D, 2H, and 2I would not result in direct land-take from development land allocations. The potential impacts are due to the realignment of the local roads in these locations. Despite this land-take, it is not considered that any of the route options would impact the development capacity of these sites.
- 16.10.47 In addition to direct land-take, all of the route options could result in impacts to amenity at a number of sites. Option 2H is expected to result in amenity impacts at the fewest number of development sites and Options 2B and 2C are expected to result in amenity impacts at the greatest number of development sites. This is mainly due to the type of allocation (e.g. housing or mixed use) and the proximity of the route options to these sites.
- 16.10.48 Overall, taking into account the area of development land that would be lost and the potential impacts on the amenity of development sites, Options 2B and 2C are expected to result in the greatest impacts to development land. This is mainly due to the potential impacts of Options 2B and 2C on the development land to the south of Nairn and to the east of Auldearn. Options 2D, 2H and 2I are expected to result in the least impact to development land. This is mainly due to these route options avoiding the impacts on development land to the south of Nairn.
- 16.10.49 The mitigation measures outlined in Section 16.9 (Potential Mitigation) are expected to reduce the amenity impacts on development land for all the route options. However, at this stage it is not possible to determine by how much these mitigation measures would reduce the impacts.

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16.10.50 Options 2A, 2B, 2C, 2E, 2F and 2G have the potential to conflict with HwLDP Policy 18 and IMFPLDP Development Plan Allocations NA8 and NA9 in relation to land-take and amenity impacts at LA24 (Nairn South) and LA25 (Nairn South Long Term). However, as the development capacity is not expected to be impacted, no conflict is expected.

16.11 Scope of DMRB Stage 3 Assessment

16.11.1 Following the selection of the preferred option, it is expected that the DMRB Stage 3 Assessment for community and private assets would be undertaken in accordance with DMRB Pedestrians, Cyclists, Equestrians and Community Effects and DMRB Land Use and is likely to include the following:

- Detailed consideration of properties at risk of demolition or land-take including consideration of likely effect on the future viability of businesses.
- Further consultation to identify community land including any areas of importance for informal use.
- A review of any new planning applications or changes in the status of applications previously identified. The local planning authority would be consulted in relation to how the preferred option may affect its development designations.
- Consultation with affected landowners. In relation to the agricultural and forestry land use assessment, information gathered as part of this consultation would be used to determine the sensitivity of land interests, magnitude of impacts and to identify appropriate mitigation and therefore the overall significance of impacts.
- A socio-economic assessment to provide information in relation to business land use impacts as well as inputting to the assessment of community impacts.

16.12 References

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17 Materials

17.1 Introduction

- 17.1.1 This chapter presents the DMRB Stage 2 Assessment for the use of material resources and the generation and management of waste during construction for the route options.
- 17.1.2 There are many ways that material use and waste can impact the environment, such as damage due to extraction, release of carbon during extraction and processing, the use of water in refinement, fuel use in transportation, leaching of contaminants during construction and use, and other issues associated with disposal and storage.
- 17.1.3 This assessment does not attempt to extensively quantify the impacts, but rather, uses estimates of quantities and costs of known materials and an indication on likely types of waste to highlight the potential for impact, and allow differentiation and comparison between the route options.
- 17.1.4 As described in Part 1 (The Scheme), Chapter 3 (Description of Route Options) of this report, the proposed scheme is divided into two sections; Inverness to Gollanfield and the Nairn Bypass. The information presented in Section 17.2 (Approach and Methods), Section 17.3 (Policies and Plans) Section 17.4 (Baseline Conditions) and Section 17.7 (Potential Mitigation) is appropriate to both sections. The information presented in Sections 17.5 (Impact Assessment), Section 17.6 (Compliance with Policies and Plans) and Section 17.8 (Summary of Route Options) is reported for each section and where appropriate under the headings Inverness to Gollanfield and the Nairn Bypass.
- 17.1.5 Section 17.9 provides details on the proposed scope for the DMRB Stage 3 Assessment and Section 17.10 provides a full list of references that are noted within this chapter.

17.2 Approach and Methods

Scope and Guidance

- 17.2.1 For the purposes of this assessment, 'Materials' are defined as per DMRB Interim Advice Note 153/11 Guidance on the Environmental Assessment of Material Resources (The Highways Agency, 2011) (hereafter referred to as IAN153/11), as comprising the:
- use of material resources; and
 - generation and management of waste.
- 17.2.2 This assessment follows the interim guidance as set out in IAN153/11. It predominately follows the recommendations for a Simple Assessment, covering broad resource consumption and waste generation for each route option.
- 17.2.3 The assessment focuses on the construction phase of the route options. Operational impacts, in terms of material use and waste generation, are likely to be insignificant in relation to construction and are therefore not considered to be a key factor for route option differentiation.
- 17.2.4 It is outside the scope of this assessment to consider the environmental impacts associated with the extraction of raw materials and the manufacture of products. It is expected that the impacts associated with the extraction of materials and manufacture of products have been the subject of separate consent procedures (such as applications for planning permission), which may have included environmental assessments.
- 17.2.5 This assessment does not attempt to extensively quantify the impacts, but rather, uses estimates of quantities and costs of known materials and an indication on the likely types of

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waste to highlight the potential for impact, and allow differentiation between the route options.

- 17.2.6 Due to the level of information available at this stage, the results of this assessment are not reported using the Simple Assessment Reporting Matrix or the Mitigation Measures Reporting Matrix as shown in IAN153/11 Annex 1 (Tables A and B) and Annex 3 (Table D). Alternative reporting measures have been provided reflecting the information, where available, as outlined in IAN153/11.

Material Resources

- 17.2.7 Material resources include both primary raw materials, such as aggregates and minerals, and secondary manufactured products. Many material resources originate off-site and some arise on-site, such as excavated soils or recycled road planings (old road surface materials removed from redundant carriageways or areas to be re-surfaced).
- 17.2.8 Road schemes require significant quantities of both primary raw materials and secondary manufactured products. The production, sourcing, transport, handling, storage and use of these materials, as well as the disposal of any surplus, have the potential to have an adverse impact on the environment.

Generation and Management of Waste

- 17.2.9 Waste is defined by the Waste Framework Directive (European Directive 2006/12/EC, as amended by Directive 2008/98/EC) as any substance or object that the holder discards or is required to discharge.
- 17.2.10 Some types of waste are harmful to human health, or to the environment, either immediately or following exposure over an extended period of time. These are called special (or hazardous) wastes.
- 17.2.11 Once a material has become waste, it remains waste until it has been fully recovered and no longer poses a potential threat to the environment or to human health, at which point it is no longer subject to the controls and other measures required by the Directive. These principles are applied by the Scottish Environment Protection Agency (SEPA) to waste used as aggregate/construction material in civil engineering applications, which ceases to be a waste once it is incorporated in the construction.

Study Area

- 17.2.12 The study area for this assessment considers impacts that occur within the boundaries of the construction sites for the route options. The construction site is defined as the area within which materials would be used and wastes would be generated and managed.
- 17.2.13 The construction site is deemed to include the footprint of the route options, together with any land that would be used temporarily during construction. Such temporary land includes site compounds, temporary storage areas for soils and other materials, haul-roads, and potentially land for temporary construction site drainage.

Baseline Assessment

- 17.2.14 Due to the nature of the assessment, the baseline assessment identifies receptors that could be impacted as a result of material use and the production and management of waste. This includes, for example, quarries and waste treatment facilities as well as environmental receptors such as watercourses, groundwater, habitats and protected species and human receptors.

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Impact Assessment

- 17.2.15 Impacts from use of material resources and the generation and management of waste, such as resource depletion and carbon release, are largely dispersed or generalised. Therefore, potential impacts are best determined from an assessment of the anticipated quantities of material required and waste generated from the route options. Impacts on baseline receptors (e.g. quarries, waste treatment facilities and environmental receptors) are, where appropriate, covered within the other assessment chapters.

Material Resources

- 17.2.16 Quantities (m³) of imported materials for each route option are assessed using estimates for the following:
- bulk earthworks (soil and rock);
 - pavement (bituminous); and
 - pavement (sub-base).
- 17.2.17 The estimated cost of the structures (e.g. bridges and culverts) required for each route option is also included in this assessment, on the basis that the cost is directly related to the quantity of materials required for its construction.

Generation and Management of Waste

- 17.2.18 The assessment of waste generation has taken into account that the route options would, where possible, aim to achieve a cut and fill balance in order to reduce the amount of materials to be disposed off-site. Recovered materials which are not suitable for use in the construction of the route options, could potentially be, where suitable, used in the creation of landscaping bunds.
- 17.2.19 At this stage in the design, there is limited information available regarding the quantities of waste to be generated by each route option. However, information is available on the following activities that are expected to generate waste:
- felling of woodlands during the construction period is expected to result in the generation of wood waste, for which a suitable end-use (e.g. re-use, recycling or treatment) would be required;
 - direct interaction with contaminated land sites is expected to result in the generation of hazardous waste, which would require treatment at facilities suitable for treating this type of waste; and
 - demolition of buildings is expected to result in the generation of demolition waste, for which a suitable end market would be required.
- 17.2.20 During consultation, SEPA stated that *'the assessment should consider the potential that the different routes have for a requirement for forest felling and the likely use of felled material'*. At this stage, limited information is available on the density, age and type of forestry to be removed, and therefore the assessment uses total area of woodland to be removed as an indication of quantity of potential waste from this activity. No distinction between the types of woodland lost has been made as part of this assessment. Further details are provided in Chapter 11 (Habitats and Biodiversity) of this report.
- 17.2.21 It should be noted that the estimated number of contaminated land sites with direct interaction with the route options and the number of buildings to be demolished, do not provide a quantification of the waste to be generated from these activities, but provide an indication of additional sources of waste. Further details are provided in Chapter 12 (Geology and Soils) and Chapter 16 (Community and Private Assets) of this report.

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Mitigation

17.2.22 Potential mitigation measures to reduce impacts have been considered during this assessment and are discussed in Section 17.7 (Potential Mitigation).

Limitations to Assessment

17.2.23 Baseline information, potential impacts and mitigation are described based on available information. Estimated quantities are approximate, based on the available information following the development of the route options.

17.2.24 The level of detail provided at this time is limited by the available design information which is required to estimate material use and waste management. Therefore, estimates will need to be refined at later stages when additional design information is available (i.e. design development during the DMRB Stage 3 Assessment, pre-construction preparation or during the construction period).

17.2.25 The haulage distances for delivery of materials and the removal of waste have not been included in the assessment. This is because the source of materials and the location of where the waste would be treated have not yet been determined.

17.2.26 The generation of hazardous waste has been estimated based on the number of direct interactions with potentially contaminated land sites. However, the extent and quantum of contaminated land cannot be determined at this stage, and as such, it is not possible to confirm the amount and type of contaminated land to be removed from site. Ground investigations during the DMRB Stage 3 Assessment will assist in identifying contaminated land and quantifying the amount to be directly impacted by the preferred option.

17.2.27 The limitations above are considered to be normal for a DMRB Stage 2 Assessment and this assessment is considered to be sufficient to enable differentiation between the route options. Further information on the source and quantity of materials and waste will be considered as part of the DMRB Stage 3 Assessment following the selection of a preferred option.

17.3 Policies and Plans

17.3.1 This section considers the national, regional and local planning policies and guidance relevant to material resources and waste management. An assessment of the compliance of the route options in relation to these policies is provided in Section 17.6 (Compliance with Policies and Plans).

17.3.2 Section 6.2 of IAN153/11 sets out that a Simple Assessment should also provide details on any statutory requirements and high level policy and strategy targets which influence use of material resources and management of waste. Therefore, further information on the relevant statutory requirements, strategies and targets is also provided below.

National Planning Policy and Guidance

17.3.3 National planning policy on a variety of themes is contained within Scottish Planning Policy (SPP) (Scottish Government, 2014) (hereafter referred to as SPP). In terms of the impact of the use of material resources and management of waste, SPP is focused on:

- supporting sustainable development;
- encouraging the use of sustainable and recycled materials in construction; and
- promoting development design that would contribute positively to the built and natural environment.

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- 17.3.4 SPP supports Scotland's Zero Waste Plan (Scottish Government, 2010) (hereafter referred to as Zero Waste Plan) and its goals of eliminating the unnecessary use of raw materials, sustainable design, resource efficiency and waste prevention, re-using products wherever possible, and recovering value from products when they reach the end of their lives in accordance with the waste hierarchy.
- 17.3.5 Circulars and Planning Advice Notes (PANs) published by the Scottish Government provide further guidance on specific topics. PAN 63: Waste Management Planning (Scottish Government, 2002) is applicable to use of material resources and management of waste and the details of this guidance is summarised in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.

Regional and Local Planning Policy and Guidance

- 17.3.6 The Highland-wide Local Development Plan (HwLDP) (The Highland Council, 2012) (hereafter referred to as HwLDP), is the land-use Plan which will guide the development and investment in the region over the next 20 years. The relevant policies in relation to material use and waste include:
- Policy 28: Sustainable Design;
 - Policy 53: Minerals; and
 - Policy 54: Mineral Waste.
- 17.3.7 The HwLDP has a number of supporting supplementary guidance notes, and those of relevance to materials include the Sustainable Design Guide: Supplementary Guidance (The Highland Council, 2013).
- 17.3.8 The details of these policies are summarised in Part 6 (Appendices), Appendix A7.1 (Policies and Plans) of this report.
- 17.3.9 Planning policies associated with contaminated soils are discussed in Chapter 12 (Geology and Soils) of this report and those associated with pollution of the water environment are discussed in Chapter 13 (Road Drainage and Water Environment) of this report.

Review of Planning Policies

- 17.3.10 The key aspects of the relevant planning policies are discussed below in relation to their relevance for use of material resources and management of waste.

Material Resources

- 17.3.11 SPP advises that the design of new development should encourage the use of sustainable and recycled materials in construction. This is supported by Policy 28 (Sustainable Design) and Policy 54 (Mineral Waste) of the HwLDP which requires developments to use resources efficiently and encourages the re-use/recycling of mineral, construction and demolition waste.
- 17.3.12 Policy 53 (Minerals) of the HwLDP states that The Highland Council will support the use of borrow pits which are near to or on the site of the associated development. However, it must be demonstrated that borrow pits are the most suitable source of material, that they are time-limited and that appropriate environmental safeguards are in place for the workings and their reclamation. The use of borrow pits near to developments is also supported by SPP provided that the operational, community or environmental benefits of their use can be demonstrated. SPP also requires their consent to be time-limited and accompanied by full restoration proposals.

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Generation and Management of Waste

- 17.3.13 The principles of sustainable development are embedded in SPP. This highlights that a sustainable approach to waste management requires the objectives of the Zero Waste Plan and the waste hierarchy to be considered. It also aims to reduce the reliance on landfill and for waste to be dealt with as close as possible to where it is produced.
- 17.3.14 Sustainable development is also a key requirement within the HwLDP and Policy 28 (Sustainable Design) requires development to be designed with sustainability in mind. As such, developments will be assessed on a number of criteria including the extent to which they demonstrate that they have sought to minimise the generation of waste during the construction and operational phases. All developments must demonstrate compatibility with the Sustainable Design Guide: Supplementary Guidance (The Highland Council, 2013) which requires developments to minimise their environmental impact.

Statutory Requirements, Strategies and Targets

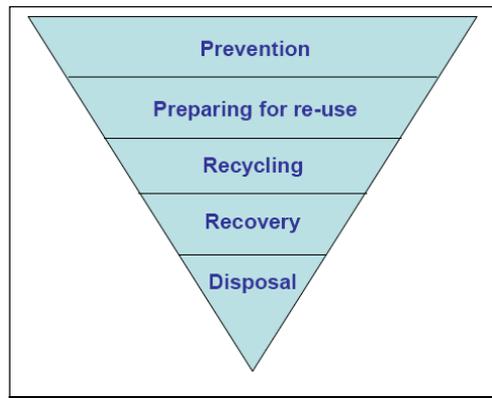
- 17.3.15 The following legislation, regulations or guidelines are applicable to the assessment:
- Waste Framework Directive 2008, as amended;
 - Waste (Scotland) Regulations 2012;
 - Waste Management Licensing (Scotland) Regulations 2011;
 - Special Waste Regulations 1996;
 - Special Waste Amendment (Scotland) Regulations 2004;
 - Pollution Prevention and Control (Scotland) Regulations 2000;
 - Environmental Protection (Disposal of Polychlorinated Biphenyls and other Dangerous Substances) (Scotland) Regulations 2000;
 - Environment Act 1995;
 - Environmental Protection Act 1990;
 - Environmental Protection (Duty of Care) Regulations 1991;
 - Wildlife and Countryside Act 1981;
 - Weeds Act 1959;
 - Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra, 2009);
 - The Definition of Waste: Development Industry Code of Practice Version 2 (CL:AIRE, 2011);
 - SEPA Technical Guidance Note Paragraph 19 Exemption Waste for construction and other 'relevant work' (SEPA, undated);
 - Strategy for Sustainable Construction (HM Government, 2008);
 - Strategy for Sustainable Construction, Progress Report 2009 (HM Government, 2009); and
 - Scotland's Zero Waste Plan (The Scottish Government, 2010).
- 17.3.16 Scotland's Zero Waste Plan sets out the Scottish Government's vision for a zero waste society and follows the principles of the waste hierarchy (Plate 17.1). This defines the order of preference of waste management options.

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Plate 17.1: Waste hierarchy



17.3.17 The vision on page 3 of the Zero Waste Plan describes a Scotland where “*all waste is seen as a resource; waste is minimised; valuable resources are not disposed of in landfills; and most waste is sorted, leaving only limited amounts to be treated*”. The Plan sets out measures to achieve this, including:

- development of a Waste Prevention Programme for all wastes, ensuring the prevention and re-use of waste is central to all the Scottish Government's actions and policies;
- restrictions on the input to all energy from waste facilities, in the past only applicable to municipal waste, therefore encouraging greater waste prevention, re-use and recycling;
- encouraging local authorities and the resource management sector to establish good practice commitments and work together to create consistent waste management services, benefitting businesses and the public;
- two new targets applying to all waste by 2025: 70% recycled and maximum 5% sent to landfill;
- improved information on different waste sources, types and management highlighting further economic and environmental opportunities; and
- measuring the carbon impacts of waste to prioritise the recycling of resources which offer the greatest environmental and climate change outcomes.

17.3.18 It is crucial to the delivery of the Zero Waste Plan to ensure that sustainable waste management is fully considered in all new developments. New developments should demonstrate that they can minimise the generation of waste during the construction and operational phases e.g. through the use of Site Waste Management Plans (SWMP).

17.4 Baseline Conditions

17.4.1 Receptor types that are likely to be at risk of impacts in relation to use of material resources and the management of waste include:

- Quarries and other sources of minerals/finite raw material resources. Specific sources of raw materials to be used for each route option have not yet been identified. Examples of materials that could be sourced from these quarries include sand, gravel, concrete, tarmac, bituminous products, rock armour and various types of stone.
- Registered landfill sites. Waste disposal facilities to be used for the route options have not yet been identified. However, SEPA's Landfill Sites and Capacity Report (SEPA, 2012) identifies that within the region there are three non-hazardous waste landfill sites.
- Soils and agricultural land in the surrounding area. Further baseline information is provided in Chapter 12 (Geology and Soils) and Chapter 16 (Community and Private Assets) of this report.

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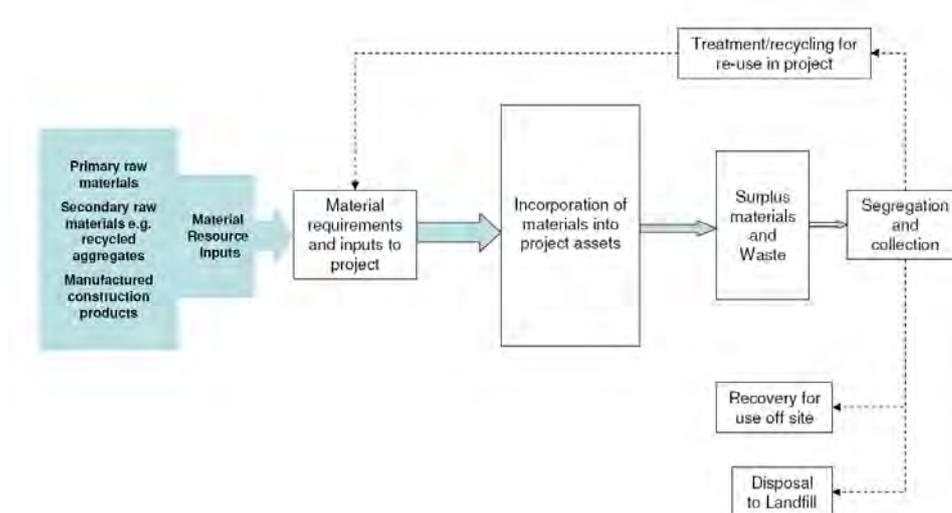
- Surface Water Features (SWFs). This includes the River Nairn and a number of smaller watercourses. Further baseline information is provided in Chapter 11 (Habitats and Biodiversity) and Chapter 13 (Road Drainage and the Water Environment) of this report.
- Groundwater resources. Further baseline information is provided in Chapter 12 (Geology and Soils) and Chapter 13 (Road Drainage and the Water Environment) of this report.
- Contaminated land sites. Further baseline information is provided in Chapter 12 (Geology and Soils) of this report.
- Human beings, particularly local residents and commercial business. Further baseline information is provided in Chapters 16 (Community and Private Assets) of this report.
- Habitats and protected species and in particular woodlands. Further baseline information is available in Chapter 11 (Habitats and Biodiversity) of this report.
- The global climate, through the use of energy and resultant greenhouse gas emissions. Further baseline information is provided in Chapter 8 (Air Quality) of this report.

17.5 Impact Assessment

17.5.1 This section describes the potential impacts from use of material resources and management of waste for the route options. In doing so the estimated quantities and costs of known materials and waste are presented. The route options are considered and reported in two sections; Inverness to Gollanfield and the Nairn Bypass.

17.5.2 Environmental impacts associated with material resources and wastes occur at each stage of the project's material flow cycle. A simplified diagrammatic representation of materials resource flows is shown on Plate 17.2, identifying the use of material resources and the management of waste.

Plate 17.2: Material flow cycle



Materials flow cycle as per Figure 1 from IAN153/11.

Material Resources

17.5.3 The types of materials likely to be required for construction are common to all road schemes. The estimated quantities of the major materials required to be imported for each route option are provided in Table 17.1. This is not an exhaustive list, but represents the key materials that are likely to be imported to site.

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Table 17.1: Estimated quantity (m³) of materials to be imported*

Option	Bulk Earthworks**	Pavement: Sub Base	Pavement: Bituminous Material	Total
Inverness to Gollanfield				
1A	2,268,000	66,000	109,000	2,443,000
1A (MV)	2,068,000	67,000	110,000	2,246,000
1B	2,352,000	65,000	107,000	2,524,000
1B (MV)	2,569,000	66,000	109,000	2,745,000
1C	1,990,000	62,000	102,000	2,154,000
1C (MV)	1,865,000	62,000	101,000	2,028,000
1D	2,070,000	61,000	100,000	2,231,000
1D (MV)	2,419,000	61,000	100,000	2,580,000
Nairn Bypass				
2A	1, 577,000	68,000	112,000	1,756,000
2B	1,954,000	69,000	114,000	2,137,000
2C	2,053,000	69,000	113,000	2,235,000
2D	1,788,000	71,000	118,000	1,977,000
2E	894,000	67,000	111,000	1,072,000
2F	1,250,000	68,000	113,000	1,431,000
2G	1,292,000	68,000	112,000	1,472,000
2H	1,700,000	69,000	114,000	1,883,000
2I	1,299,000	68,000	112,000	1,479,000

* All volumes are provided to the nearest 1,000 m³

**Includes topsoil and subsoils.

- 17.5.4 Materials are also required for the construction of structures (e.g. bridges and culverts) associated with each of the route options. At this stage in the design, the quantities of these materials have not been estimated. However, the estimated costs of the structures for each route option are available and these are considered to reflect the quantities of material required e.g. those route options with a higher cost are considered to require a larger quantity of material for the construction of the associated structures. The estimated structure costs for each route option are provided in Table 17.2.

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Table 17.2: Estimated cost of structures (£ million at Quarter 1 2014 prices and excluding VAT)

Option	Est. Cost Structure (£ million)
Inverness to Gollanfield	
1A	£9.9
1A (MV)	£9.1
1B	£10.4
1B (MV)	£10.0
1C	£8.6
1C (MV)	£8.0
1D	£9.1
1D (MV)	£9.4
Nairn Bypass	
2A	£32.4
2B	£31.0
2C	£33.9
2D	£38.4
2E	£34.6
2F	£33.2
2G	£36.1
2H	£39.2
2I	£39.0

- 17.5.5 The depletion of finite natural resources could occur through extraction of primary aggregates (e.g. sands and gravels) from local or other quarries. Structures, drainage and signage products are to be procured with consideration of the environmental impacts associated with their manufacture, as well as other considerations such as structural design, carbon footprint, energy consumption, long-life performance, visual impacts, durability and cost. Both reinforced concrete and steel structures include a measurable recycled content in their manufacture.
- 17.5.6 Existing soils and infrastructure are considered to be potential material resources. The following are expected to be generated during construction:
- Excavated natural soils and/or rocks (and made ground) produced during topsoil stripping and the construction of cuttings and embankments (collectively referred to as earthworks). These could be re-used on-site for landscaping or for other earthworks off-site.
 - Road planings, which could be incorporated into new pavements on or off-site.
- 17.5.7 Where possible, it is a key aim to achieve a cut and fill balance, such that the amount of material produced through cuttings is matched by the amount of material required to build embankments and landscaping. However, it is expected that some earthworks materials would need to be imported for each route option as detailed in Table 17.1.
- 17.5.8 Imported aggregates are also likely to be required for structures, drainage and road pavement construction. These can be either primary aggregates, such as sand, natural gravels and rocks, or secondary aggregates, such as recycled concrete, recycled road planings, Incinerator Bottom Ash Aggregate (IBAA) and reclaimed railway ballast.
- 17.5.9 The choice of whether to use primary or secondary aggregates (or a combination of both) would be made after considering a combination of factors, such as source, specification, production and transport of available materials. Secondary (recycled) aggregates may not always have the lowest impact on the environment, and materials would be selected based on a consideration of all relevant factors.

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- 17.5.10 Some of the additional earthworks or other construction materials would likely be imported to site for specialist purposes. For example, the incorporation of geotextiles (i.e. textiles that are permeable to water that can be used to reinforce structural earthworks) in earthworks can considerably reduce the quantity of fill material required by improving the strength of the material used. Similarly, this can also reduce the quantity of steel or concrete required to build structures.
- 17.5.11 Poor planning of materials re-use could lead to excessive use of plant and vehicles to move and handle bulk materials, resulting in inefficient use of energy and increased risk of spillages of fuel, lubricants, etc., potentially causing localised contamination of soils or SWFs.
- 17.5.12 Environmental impacts can also arise as a result of vehicle movements for the transportation of materials. At this stage of the assessment the source of materials is unknown, however, where feasible, materials would be sourced locally in order to reduce potential environmental impacts such as from transport emissions, and to support local businesses.
- 17.5.13 Other potential impacts associated with the use of material resources in the construction phase include:
- Nuisance to local communities and damage to farmland, wildlife, habitats and SWFs as a result of wind-blown dust arising from the excavation, movement, temporary storage and permanent placement of large quantities of topsoil and subsoil.
 - Pollution of watercourses by the creation of water-borne sediments, which can damage farmland, wildlife, habitats and particularly SWFs. Such impacts could occur by, for example, locating unmanaged stockpiles of materials close to SWFs or drainage. Silting of SWFs and drainage can occur if water containing silts, for example from dewatering of excavations, is not managed appropriately.
 - Flooding or disruption of the existing drainage network could be caused by poor stockpile management and the creation of additional impermeable areas.

Generation and Management of Waste

- 17.5.14 For wastes, surplus materials, and/or defective materials, potential environmental impacts are primarily associated with the production, movement, transport and processing (including recycling/recovery) wastes on and off-site and, if required, their disposal at licenced off-site facilities. The sterilisation of waste facilities could occur either through permanent or temporary severance of access to existing landfill sites, or by filling a local landfill site up to capacity with surplus excavated materials or other wastes. This could force locally-produced wastes to be transported greater distances for disposal elsewhere.
- 17.5.15 The following wastes are likely to require removal from site, though the potential quantities are currently unknown. It is assumed the majority would be returned to the manufacturer, re-used or recycled, though a proportion of the general and office wastes may require disposal to landfill.
- earthworks materials;
 - road planings, especially those containing coal tars;
 - bituminous macadam ('tarmac');
 - recycled concrete;
 - metals and plastics;
 - wood from tree removal and vegetation wastes; and
 - general waste and office waste.

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- 17.5.16 Existing soils and infrastructure removed during the construction works are considered to be a waste if there is no possibility of recovering the material through recycling (on-site or off-site), or other processing that would enable re-use of the materials for construction or elsewhere. Where no re-use of any material is possible on or off-site, the material would need to be discarded and would thus become classified as waste.
- 17.5.17 Where possible, each route option would aim to achieve a cut and fill balance in order to reduce the need for earthworks materials to be disposed off-site. Despite this, there may still be some surplus fill material that is required to be exported from site. However, providing the material is suitable, excess earthworks could potentially be used in the creation of landscaping bunds.
- 17.5.18 Surplus organic materials, including vegetation from shrub or tree clearance or deposits removed from within redundant drainage channels, would generate waste material that, where possible, would be re-used or recycled. Re-use could be achieved on-site in ecological improvement works; for example, as log cuttings or used for habitat creation, with appropriate consideration and control of any pollution risk. Off-site disposal through a green waste contractor or wood processor could also offer recycling opportunities.
- 17.5.19 Special wastes may comprise any contaminated soils that cannot be treated to make them suitable for use, such as any material contaminated with asbestos or Volatile Organic Compounds. Disturbance or storage of contaminated soils during construction can also lead to the release of chemical pollutants into the air, ground or water (remobilisation of contaminants). The potential for waste materials or land uses to generate contaminated soils or groundwater is discussed in Chapter 12 (Geology and Soils) of this report.
- 17.5.20 Some of the route options would require the demolition of buildings and would contribute to the quantity of the overall demolition waste generated by construction. Additionally, a small quantity of demolition waste would also be generated from removal of redundant safety barriers, lighting columns etc. However, at this stage it is not possible to accurately quantify how much waste would be generated by demolition activities.
- 17.5.21 Table 17.3 provides details for each of the route options of the estimated area of woodland to be lost, number of contaminated land sites with a direct interaction with a route option, and the estimated number of buildings to be demolished. Although, this does not provide details of the quantities of waste to be generated, it provides an indication of likely sources of waste to be generated by each route option.

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Table 17.3: Potential sources of waste

Option	Est. area of woodland lost (ha)	Est. no of contaminated land sites (direct interaction)	No of buildings to be demolished
Inverness to Gollanfield			
1A	7.8	9	-
1A (MV)	8.2	7	-
1B	13.3	14	1
1B (MV)	14.8	12	1
1C	8.0	10	-
1C (MV)	8.3	8	-
1D	13.5	14	1
1D (MV)	15.1	12	1
Nairn Bypass			
2A	38.5	13	No buildings expected to be demolished.
2B	38.8	13	
2C	43.4	13	
2D	36.2	16	
2E	21.8	6	
2F	22.2	6	
2G	25.7	6	
2H	19.9	7	
2I	19.6	9	

17.6 Compliance with Policies and Plans

17.6.1 An assessment of the compliance of the route options in relation to the policies and plans discussed in Section 17.3 (Policies and Plans) is presented below. As the impacts identified are the same for both sections of the scheme, Inverness to Gollanfield and the Nairn Bypass, they are reported collectively.

Material Resources

17.6.2 Although existing soils and infrastructure are considered to be a potential material source, with the aim of the design to achieve a cut and fill balance, it is likely that additional materials would need to be imported and the source of this material is currently unknown. All of the route options therefore have the potential to conflict with SPP, and Policy 28 (Sustainable Design) and Policy 54 (Mineral Waste) of the HwLDP. In order to comply with these policies, the design of each route option should seek to utilise sustainable and recycled materials so far as possible.

17.6.3 At this stage, information on whether any of the route options would make use of borrow pits is currently not available. Should borrow pits be required they would be supported by SPP and Policy 53 (Minerals) of the HwLDP provided they are:

- located close to the development;
- operational, community or environmental benefits can be demonstrated;
- they are the most suitable source of material;
- appropriate environmental safeguards are in place for the workings; and
- a full restoration plan is provided.

Generation and Management of Waste

- 17.6.4 All of the route options have the potential to conflict with SPP and Policy 28 (Sustainable Design) of the HwLDP in relation to the generation and management of waste. In order to comply with these policies, each route option would need to demonstrate how they have sought to minimise the generation of waste during construction. They would also be required to demonstrate sustainable waste management by selecting waste management options taking into account the waste hierarchy. Any waste produced should also be dealt with as close as possible to where it is produced.

17.7 Potential Mitigation

- 17.7.1 The objectives of the mitigation measures outlined in this section are to prevent, reduce or offset the potential impacts described in Section 17.5 (Impact Assessment). For a DMRB Stage 2 Assessment the design has not been sufficiently developed to allow mitigation measures to be defined in detail at this stage. The objective of this section is to identify potential mitigation taking into account best practice, legislation and guidance.
- 17.7.2 Measures could be implemented to mitigate the potential impacts of both the use of material resources and the generation of waste for each route option. There is significant synergy between materials re-use and the avoidance of the generation of waste. Therefore, there is a substantial overlap between the mitigation measures.
- 17.7.3 The importance of careful management of materials to promote re-use and reduce waste has been widely recognised by the construction industry. Both legislation and voluntary best practice mechanisms have been developed and implemented. These provide measurable and accountable processes that form the basis for mitigating environmental impacts associated with the use of material resources and management of waste.
- 17.7.4 Where feasible, materials should be sourced locally in order to reduce potential environmental impacts, such as from transport emissions, and to support local businesses.
- 17.7.5 Throughout the detailed design and construction stages the principles of the waste hierarchy (refer to Plate 17.1) should be applied to minimise waste generation and maximise re-use of waste arising on-site, where possible. Where re-use is not possible, alternative methods should be sought off-site such as reprocessing into aggregate or the use of inert materials on local farms.
- 17.7.6 For all potential waste arisings, the contractor should consult with SEPA and should comply, where appropriate, with The Waste Management Licensing (Scotland) Regulations 2011, the UK Forestry Standard (Forestry Commission, 2011) and associated environmental guidelines. Consideration should also be given to SEPA guidance on sustainable waste management, such as that provided in Promoting the Sustainable Re-use of Greenfield Soils in Construction (SEPA, 2010) and Guidance on the Production of Fully Recovered Asphalt Road Planings (SEPA, 2008). If wastes cannot be legitimately re-used on site, these should be removed to a licensed recycling or disposal facility in line with legislative requirements.
- 17.7.7 A Construction Environmental Management Plan (CEMP) should be developed by the appointed contractor during the detailed design phase (i.e. before the start of construction) and implemented during the construction phase. The CEMP should include the following:
- details of the approach to environmental management throughout the construction phase, with the primary aim of mitigating any adverse impacts from construction activity on the identified sensitive receptors;
 - methods for the prevention and control of any potential short-term construction-phase impacts (e.g. construction dust and the risk of accidental spillages of contaminating materials) and also permanent impacts (e.g. disturbance to vegetation, archaeology and heritage);

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- good materials management methods, such as co-location of temporary haul routes on permanent capping and recovery and re-use of temporary works materials from haul routes, plant and piling mattresses, etc; and
 - risk/impact-specific method statements and strategic details of how relevant environmental impacts would be addressed, embodying the requirements of the relevant SEPA Pollution Prevention Guidelines.
- 17.7.8 Though not mandatory in Scotland, a SWMP may be developed and updated regularly during construction. The SWMP should identify, prior to the start of construction, the types and likely quantities of wastes that may be generated. It should set out, in an auditable document, how these wastes would be reduced, re-used, managed and disposed of. The SWMP would be developed by the contractor before commencement of the construction phase and, where possible, incorporated within the CEMP as the documents are naturally interlinked.
- 17.7.9 The SWMP should contain a Materials Management Plan (MMP) which would set out the approach to the management of all construction phase materials. The MMP should include specific soils management plans developed under the following voluntary and industry regulated Codes of Practice:
- Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (DEFRA, 2009) which provides best practice guidance for the excavation, handling, storage and final placement of soils.
 - The Definition of Waste: Development Industry Code of Practice Version 2 (CL:AIRE, 2011) which provides a process whereby contaminated soils can be re-used on the site of origin (i.e. they do not become a waste), if they are proven through appropriate risk assessment to be suitable for use. It also provides for soils with naturally elevated contamination to be used directly on another site provided that they are suitable for use at that site.
- 17.7.10 If contaminated soils are encountered during the construction works, further investigation, testing and risk assessment should be undertaken to determine whether the soils could stay on-site, require treatment to make them suitable to remain on-site or would need to be disposed of off-site. Further details on mitigation measures for contaminated land sites are provided within Chapter 12 (Geology and Soils) of this report.
- 17.7.11 Implementation of the SWMP and the accompanying MMPs would aim to minimise waste at source, during detailed design and construction, by facilitating measures to maximise re-use of materials on-site and reduce the need for new construction materials.
- 17.7.12 Where materials cannot be used for the route options, opportunities should be sought to re-use materials on other projects as part of the strategic commitment to waste management. It is acknowledged that any soils or peat stored for greater than three years would require a permit under The Landfill (Scotland) Regulations 2003. For example, it may be possible to recycle all or most of the road surface (planings) for incorporation in other schemes or sale to other local construction projects.

17.8 Summary of Route Options

- 17.8.1 This section provides a summary of the route options in relation to use of material resources and generation of waste during the construction of the route options. Potential mitigation measures are also discussed in relation to how they can reduce the impacts from use of material resources and management of waste.

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Material Resources

- 17.8.2 Use of material resources can have a significant impact on the environment through the use and depletion of finite natural resources, the energy and waste used and produced in their extraction, manufacture and transportation, and the energy consumption and durability during their use. Therefore, the route options with the greatest use of material resources are expected to have the greatest impact on the environment and its receptors.
- 17.8.3 For all route options construction would, where possible, look to achieve a cut and fill balance to minimise the materials required to be imported to site. However, it is expected that some materials would be required to be imported to site.
- 17.8.4 Tables 17.4 and 17.5 show the estimated volumes of materials expected to be imported and the estimated cost of the structures for each of the route options. The information for volume of materials is based on estimated quantities of known materials including earthworks (soil/rock), pavement (bituminous) and pavement (sub-base) and does not represent all materials that would be required. The estimated cost for the structures is considered to reflect the quantity of materials required, so those route options with higher costs are expected to require a larger volume of materials to construct the structures.

Table 17.4: Estimated volumes (m³) of materials imported and cost of structures (Inverness to Gollanfield)

Option	Materials Imported (m ³) (nearest 1,000 m ³)	Cost of Structures (£ million at Q1 2014 prices and excluding VAT)
1A	2,443,000	£9.9
1A (MV)	2,246,000	£9.1
1B	2,524,000	£10.4
1B (MV)	2,745,000	£10.0
1C	2,154,000	£8.6
1C (MV)	2,028,000	£8.0
1D	2,231,000	£9.1
1D (MV)	2,580,000	£9.4

- 17.8.5 All route options within the Inverness to Gollanfield section of the scheme would require large volumes of imported materials. Option 1B (MV) and 1D (MV) have been estimated to require the import of the greatest volume of materials. Option 1C and 1C (MV) have been estimated to require the import of the least volume of materials. In relation to structures, Option 1B and 1B (MV) are expected to require the greatest quantity of materials as they have the highest estimated cost, with Options 1C and 1C (MV) expected to require the least.

Table 17.5: Estimated volumes (m³) of materials imported and cost of structures (Nairn Bypass)

Option	Materials Imported (m ³) (nearest 1,000 m ³)	Cost of Structures (£ million at Q1 2014 prices and excluding VAT)
2A	1,756,000	£32.4
2B	2,137,000	£31.0
2C	2,235,000	£33.9
2D	1,977,000	£38.4
2E	1,072,000	£34.6
2F	1,431,000	£33.2
2G	1,472,000	£36.1
2H	1,883,000	£39.2
2I	1,479,000	£39.0

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- 17.8.6 All of the route options within the Nairn Bypass section of the scheme would require large volumes of imported materials. Options 2B and 2C have been estimated to require the import of the greatest volume of materials. Option 2E has been estimated to require the import of the least volume of materials. In relation to structures, Option 2H and 2I are expected to require the greatest quantity of materials as they have the highest estimated cost, with Options 2A and 2B expected to require the least.
- 17.8.7 Mitigation as described in Section 17.7 (Potential Mitigation) is expected to reduce the impacts for materials described for all of the route options.
- 17.8.8 In relation to compliance with planning policies, without mitigation all of the route options have the potential to conflict with SPP, and Policy 28 (Sustainable Design), Policy 53 (Minerals) and Policy 54 (Mineral Waste) of the HwLDP. With regard to sourcing materials sustainably, with appropriate mitigation as outlined in Section 17.7 (Potential Mitigation), it is expected that all the route options would comply with these policies.
- 17.8.9 Should borrow pits be required as a source of material, they would be supported by SPP and Policy 53 (Minerals) of the HwLDP provided they meet the criteria identified in paragraph 17.3.12.

Generation and Management of Waste

- 17.8.10 The generation and management of waste can have a significant impact on the environment through its potential to contaminate sensitive receptors such as watercourses and soils, through its transport and processing and through the potential sterilisation of waste treatment facilities. Therefore, the route options with the greatest levels of waste are expected to have the greatest impact on the environment and its receptors.
- 17.8.11 For all the route options the construction process would, where possible, aim to achieve a cut and fill balance to reduce the amount of waste that would be required to be removed from site. This would align with the principles of the waste hierarchy, which further to waste prevention at source, would look to re-use materials on-site where possible, for example in landscaping bunds. Where materials are not able to be re-used on-site, alternative sources off-site would be reviewed and used where possible. If re-use is not possible, then appropriate treatment methods, for example recycling, would be sought.
- 17.8.12 Tables 17.6 and 17.7 show the potential for waste generation for each route option in respect of demolished buildings, loss of woodland and potential interaction with contaminated land. The latter provides an indication of likely removal of hazardous waste from the site. This information does not represent all waste that would be generated by the route options. Other wastes could include earthworks materials, road planings, metals and plastics, general waste and office waste and bituminous macadam.

Table 17.6: Potential sources of waste (Inverness to Gollanfield)

Option	Est. No of Buildings Demolished	Est. Area Woodland Lost (ha)	Est. No of Contaminated Land Sites (direct interaction)
1A	-	7.8	9
1A (MV)	-	8.2	7
1B	1	13.3	14
1B (MV)	1	14.8	12
1C	-	8.0	10
1C (MV)	-	8.3	8
1D	1	13.5	14
1D (MV)	1	15.1	12

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17.8.13 Options 1B, 1B (MV), 1D and 1D (MV) are expected to result in the demolition of one building. These route options are also expected to affect the largest areas of woodland and interact with the largest number of potentially contaminated land sites. Options 1A, 1A (MV), 1C and 1C (MV) would not result in the demolition of any buildings and these options are expected to affect a smaller area of woodland and interact with the least number of potentially contaminated land sites.

Table 17.7: Potential sources of waste (Nairn Bypass)

Option	Est. No of Buildings Demolished	Est. Area Woodland Lost (ha)	Est. No of Contaminated Land Sites (direct interaction)
2A	-	38.5	13
2B	-	38.8	13
2C	-	43.4	13
2D	-	36.2	16
2E	-	21.8	6
2F	-	22.2	6
2G	-	25.7	6
2H	-	19.9	7
2I	-	19.6	9

17.8.14 No buildings are expected to be demolished for any of the Nairn Bypass route options. In relation to woodland loss and direct interaction with contaminated land sites, Options 2A, 2B, 2C and 2D are expected to affect the largest areas of woodland and interact with the largest number of potentially contaminated land sites. Options 2H and 2I are expected to have the least amount of woodland area affected. Options 2E, 2F and 2G are expected to interact with the least number of contaminated land sites and therefore potentially generate the least amount of hazardous waste from this source.

17.8.15 The mitigation as described in Section 17.7 (Potential Mitigation) is expected to reduce the impacts for waste described above for all the route options.

17.8.16 In relation to compliance with planning policies, without mitigation all of the route options have the potential to conflict with SPP, and Policy 28 (Sustainable Design) of the HwLDP. However, with appropriate mitigation as outlined in Section 17.7 (Potential Mitigation), it is expected that all the route options would comply with these policies.

Conclusion

17.8.17 Taking into account use of material resources and the potential to generate waste the following options are expected to have the greatest and least impact on the environment:

- Options 1B and 1B (MV) are expected to have the greatest impact within the Inverness to Gollanfield section, closely followed by Option 1D and 1D (MV).
- Option 1C (MV) is expected to have the least impact within the Inverness to Gollanfield section, closely followed by Options 1A (MV) and 1C.
- Option 2D is expected to have the greatest impact within the Nairn Bypass section, closely followed by Option 2C, 2H and 2I.
- Option 2F is expected to have the least impact within the Nairn Bypass section, closely followed by Option 2A, 2B, 2E and 2G.

17.9 Scope of DMRB Stage 3 Assessment

17.9.1 The DMRB Stage 3 Assessment for materials should develop an in-depth appreciation of the environmental consequences of material use and waste for the preferred option. It should

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involve a check of the data gathered within the DMRB Stage 2 Assessment and as a minimum should identify whether the impacts are positive/negative, permanent/temporary and direct/indirect.

- 17.9.2 The DMRB Stage 3 Assessment should follow IAN153/11 and should use the methodology as described for a Detailed Assessment. This should identify and quantify the following:
- the types and quantities of materials required for the proposed scheme;
 - details of the source/origin of materials, site-won materials to replace virgin materials, materials from secondary/recycled sources or virgin/non-renewable sources;
 - the cut and fill balance;
 - the types and quantities of forecast waste arisings, including the identification of any forecast hazardous wastes;
 - surplus materials and waste falling under regulatory controls;
 - waste that requires storage on site prior to re-use, recycling or disposal;
 - waste to be pre-treated on site for re-use within the project;
 - wastes requiring treatment and/or disposal off site;
 - the impacts that will arise from the issues identified in relation to materials and waste;
 - the identification of measures to mitigate the identified impacts; and
 - a conclusion about the significance of residual impacts, having taken into account magnitude and scale of identified impacts and proposed mitigation measures.
- 17.9.3 The impacts should be presented using the Reporting Matrix as provided in Annex 2 (Table C) of IAN153/11. Mitigation measures should be presented using the Mitigation Measures Matrix in Annex 3 (Table D) of IAN153/11.

17.10 References

- CL:AIRE (2011). The Definition of Waste: Development Industry Code of Practice Version 2.
- Defra (2009). Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.
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Scottish Government (2014). Scottish Planning Policy, June 2014.

The Highland Council (2012). Highland-wide Local Development Plan, April 2012.

The Highland Council (2013). Sustainable Design Guide: Supplementary Guidance. January 2013.

The Highways Agency (2011). Design Manual for Roads and Bridges, Interim Advice Note 153/11, Guidance on the Environmental Assessment of Material Resources. October 2011.

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