A96 Corridor Review

Strategic Environmental Assessment - Scoping Report

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Transport Scotland

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Project Manager: Ted Doherty
Author: Harriet Duncan
File Name: B2356702-JAC-EGN-SCHW_00-RP-LE-0001

95 Bothwell Street
Glasgow, Scotland G2 7HX
United Kingdom
T +44 (0)141 243 8000
F +44 (0)141 226 3109
www.jacobs.com

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Contents

Abbreviations

Abbreviation	In full
APR	Annual Progress Report
AQMA	Air Quality Management Area
AQO	Air Quality Objective
BRIA	Business and Regulatory Impact Assessment
BTO	British Trust for Ornithology
CCA	Climate Compatibility Assessment
CNMA	Candidate Noise Management Area
CO_2	Carbon Dioxide
CQA	Candidate Quiet Area
CSR	Capital Spending Review
dB	Decibels
DEFRA	Department for Environment, Food and Rural Affairs
ECIA	Ecological Impact Assessment
EQIA	Equalities Impact Assessment
GCR	Geological Conservation Review
HES	Historic Environment Scotland
HGV	Heavy Goods Vehicle
HITRANS	Highlands and Islands Transport Partnership
HRA	Habitats Regulations Appraisal
IIP	Infrastructure Investment Plan
kt	Kiloton
LA	Local Authority
LCT	Landscape Character Type
LLA	Local Landscape Areas
LNR	Local Nature Reserve
NAP	Noise Action Plan
NCN	National Cycle Network
Nestrans	North East of Scotland Transport Partnership
NMA	Noise Management Area

NO_2	Nitrogen Dioxide
NOx	Nitrogen Oxides
NPF4	The Fourth National Planning Framework
NRS	National Records of Scotland
NTS2	The Second National Transport Strategy
ONS	Office for National Statistics
PCM	Pollution Climate Mapping
PfG	Programme for Government
PM	Particulate Matter
PPS	Plans, Programmes and Strategies
QA	Quiet Area
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SEPA	Scottish Environmental Protection Agency
SEQIA	Social and Equalities Impact Assessment
SFRA	Strategic Flood Risk Assessment
SIMD	Scottish Indicator of Multiple Deprivation
SPA	Special Protection Area
SSSI	Sites of Special Scientific Interest
STAG	Scottish Transport Appraisal Guidance
STPR2	The Second Strategic Transport Projects Review
TPO	Transport Planning Objective
WFD	Water Framework Directive

A96 Corridor Review SEA Scoping – Key Facts

Key Facts		
Responsible Authority	Transport Scotland	
Purpose of Plan and SEA	To undertake a transparent, evidence-based review of the A96 corridor between Inverness and Aberdeen, to assess direct and indirect impacts on the climate and the environment. This reflects the Scottish Government and Scottish Green Party Parliamentary Group Cooperation Agreement (known as the 'Bute House' agreement) and shared policy programme (August 2021).	
Transport Planning Objectives (TPO) and A96 Corridor Review Sub-Objectives	TPO 1 – A sustainable strategic transport corridor that contributes to the Scottish Government's net zero emissions target.	• Reduce transport related emissions through a shift to more sustainable modes of transport. • Increase the active travel mode share for shorter everyday journeys.
	TPO 2 – An inclusive strategic transport corridor that improves the accessibility of public transport in rural areas for access to healthcare, employment and education.	• Increase public transport mode share by improving connections between sustainable modes of transport. • Reduce the reliance on private car for access to healthcare, employment and education. • Improve mobility and inclusion, recognising the specific needs of disadvantaged and vulnerable users.
	TPO 3 – A coherent strategic transport corridor that enhances communities as places, supporting health, wellbeing and the environment.	• Reduce demand for unsustainable travel by enhancing place-making within settlements along the A96. • Increase active travel mode share for both shorter and longer distance journeys. • Reduce real and perceived severance caused by the strategic transport network both between and within communities. • Protect or enhance the natural environment and heritage.
	TPO 4 – An integrated strategic transport system that contributes towards	• Increase sustainable access to labour markets and key centres for employment, education and training.

	sustainable inclusive growth throughout the corridor and beyond.	• Increase the mode share of freight by sustainable modes. • Increase competitiveness of key sectors by improving journey time reliability for commercial transport.
	TPO 5 – A reliable and resilient strategic transport system that is safe for users.	• Reduce the accident rates and severity of transport related casualties in line with reduction targets. • Improve resilience to disruption (from climate change events and maintenance activities) through adaptation of the corridor's trunk road and rail infrastructure.
Area to be Considered	A 15km wide corridor (7.5km either side of the existing A96) between Inverness and Aberdeen. It should be noted the Inverness to Nairn (including Nairn Bypass) scheme is separate from the STAG Appraisal, however some STAG interventions may be located between Inverness and Nairn.	
Period Covered by the A96 Corridor Review and SEA	Outcome of STAG Appraisal and draft SEA to be reported by middle of 2023.	
Contact Details	Comments can be provided by email to: A96CorridorReview@jacobs.com; by phone on 07506 879562; or by post to: [Transport Scotland, Buchanan House, 58 Port Dundas Road, Glasgow, G4 0HF]	

1. Introduction

1.1 Background

1.1.1 In August 2021, the Scottish Government and Scottish Green Party Parliamentary Group agreed a Cooperation Agreement and a shared policy programme called the Bute House Agreement (Scottish Government, 2021a; 2021b). As part of this shared policy programme, various agreed principles regarding investment in the transport network were set out. In relation to the A96, the Scottish Government committed to:

- Taking forward a transport enhancements programme on the A96 corridor that improves connectivity between surrounding towns, tackles congestion and addresses safety and environmental issues. This will include:
  - Dualling from Inverness to Nairn.
  - Bypassing of Nairn, Keith, Elgin and Inverurie accompanied by measures to remove traffic from the by-passed town centres.
  - Targeted road safety improvements where needed, for example between Fochabers and Huntly and Inverurie to Aberdeen.
  - The development of an A96 “Electric Highway”.

1.1.2 The Cooperation Agreement noted the current plan is to fully dual the A96 route between Inverness and Aberdeen. The Cooperation Agreement confirmed there would be a transparent, evidence-based review to include a climate compatibility assessment to assess direct and indirect impacts on the climate and the environment. The Cooperation Agreement noted that the review will report by the end of 2022.

1.1.3 It has been agreed the review will be carried out in accordance with the Scottish Transport Appraisal Guidance (STAG). STAG is the best practice, objective-led approach to transport appraisal. The STAG appraisal shall consider all relevant transport modes within the A96 corridor, including roads-based transport, rail, public transport and active travel modes. Adopting STAG also brings the review into the same methodology as set out in the recently published second Strategic Transport Projects Review (STPR2).

1.1.4 Jacobs AECOM were subsequently appointed as consultants to assist Transport Scotland in carrying out a review of the A96 corridor, in-line with the commitment set out in the shared policy programme. The A96 Corridor Review is considering the transport problems and opportunities on the A96 corridor, changing transport habits, impact of climate change and other key considerations, such as development and growth aims for the corridor and surrounding area.

1.2 Impact Assessments

1.2.1 As part of the A96 Corridor Review, a Strategic Environmental Assessment (SEA) is required. The background to the SEA and SEA requirements is provided in Sections 1.4 and 1.5 respectively.

1.2.2 In addition to SEA, the Cooperation Agreement confirmed the requirement to produce a Climate Compatibility Assessment (CCA) to assess direct and indirect impacts on the climate and the environment. Various other assessments, including social and equality assessments, will also be required and these are described in Section 1.6.

1.3 Report Structure

- Chapter 1 (this chapter) summarises the general background to the A96 Corridor Review and SEA and various other impact assessments required.
- Chapter 2 provides a more detailed background and context for the A96 Corridor Review.
- Chapter 3 shows the key relationships between A96 Corridor Review and other Plans, Programmes and Strategies (PPS), including the environmental requirements associated with them.
- Chapter 4 provides a summary of the existing environment (the 'environmental baseline'), which is provided in full in Appendix D.
- Chapter 5 describes the approach to stakeholder engagement and consultation throughout the A96 Corridor Review and the SEA.
- Chapter 6 sets out the proposed approach for undertaking the SEA.
- Chapter 7 summarises the next steps required for consultation and key milestones
- Appendix A contains the Screening Report, used to determine the requirement for SEA.
- Appendix B contains the constraints plans, depicting nationally or internationally significant environmental, landscape and cultural heritage designations.
- Appendix C contains a comprehensive review of the relevant PPS that are summarised in Chapter 3 of this report.
- Appendix D contains the environmental baseline data for the 15km wide study area (the baseline is summarised in Chapter 4 of this report).
- Appendix E contains a review of legislation relevant to the nine principal environmental topics considered in the SEA.

1.4 Background to the A96 SEA

1.4.1 In 2015, a Design Manual for Roads and Bridges (DMRB) Stage 1 Assessment for the initial development and assessment of broadly defined improvement strategies for the upgrade of the A96 to a Category 7A all-purpose dual carriageway was published. A two-phased SEA was also carried out at this time, with reports published in 2014 and 2015, and the Post Adoption Statement published in 2016 (CH2M, 2016).

1.4.2 Due to the Bute House Agreement (see Section 1.1) requirement for a transparent, evidence-based review of A96 transport options, there was a need to undertake a new SEA Screening in 2022, to assist in the determination as to whether an SEA was

required. This SEA Screening, included as Appendix A of this Scoping Report, concluded that a new SEA would be required, to establish the likely significant environmental effects of the A96 transport options. However, some of the data and methodology from the previous SEA (Halcrow, 2014) has been incorporated into this SEA, as described in Chapter 4.

1.5 SEA Requirements

1.5.1 SEA is a means of systematically assessing the likely impact of a public plan, programme or strategy on the environment. The Environmental Assessment (Scotland) Act 2005 (hereafter referred to as the Environment Act) transposes the requirements of the European Community SEA Directive (2001/42/EC). Under the Environment Act, those bodies preparing qualifying Scottish plans are required to undertake a SEA of plans that are likely to have significant environmental effects, if implemented.

1.5.2 The SEA aims to offer greater protection to the environment by ensuring public bodies (in this case, Transport Scotland) and those organisations preparing plans of a 'public character' consider and address the likely significant environmental effects. While SEA is not legally required under the legislation (as the A96 Corridor Review does not constitute a plan, programme or strategy), SEA was proposed as the most appropriate and robust framework for identifying potential environmental effects and opportunities at a high-level. The SEA process also ensures that relevant stakeholders are given an early opportunity to comment on and influence the proposals.

1.5.3 The key stages for SEAs in Scotland are as follows:

- SEA Screening - Following the requirements of the Environment Act, Screening was undertaken to assist in the determination as to whether the A96 Corridor Review would be likely to have significant environmental effects which would require SEA. A Screening Report was submitted to Transport Scotland in March 2022 (refer to Appendix A). Following review of the Screening Report, Transport Scotland confirmed the intention to progress with the SEA for the A96 Corridor Review.
- SEA Scoping (this stage) – The purpose of this Scoping stage is to describe the environmental context, by establishing the relevant baseline information, reviewing other relevant plans, programmes and strategies (PPS) and identifying environmental problems and opportunities. The Scoping Report also provides details of the methodology and data sources that will be used in the SEA. The Scoping Report is intended to provide sufficient information about the A96 Corridor Review and its potential environmental effects to allow the Consultation Authorities to provide an informed view regarding the environmental topics to be included in the SEA. Comments from the Consultation Authorities (listed in Section 1.5.6) on this Scoping Report will be responded to in the draft Environmental Report.

- STAG Environmental Report – This report will summarise the environmental appraisal of transport options. It will be consulted on at the same time as the STAG consultation, to allow any consultation feedback on the STAG appraisal to refine the SEA methodology, if necessary, before the environmental assessment of DMRB Stage 1 options begins.
- Draft SEA Environmental Report (see Chapter 6) – The assessment stage will establish the likely significant (positive and negative) environmental effects of implementing the A96 Corridor Review options. Any potential reasonable alternatives will also be considered at this stage, along with viable mitigation measures to avoid, reduce or offset adverse effects. The assessment and a summary of key findings will be included in the draft Environmental Report, which will be made available for consultation alongside the A96 Corridor Review DMRB Stage 1 Assessment (see Section 2.4).
- Final Environmental Report (that responds to SEA consultation comments and any post-consultation updates to the A96 Corridor Review reporting).
- Post Adoption Statement - This statement will be produced after the A96 Corridor Review has been completed. It will outline how the assessment and consultation responses have been considered within the finalised A96 Corridor Review. It will also include the final environmental monitoring programme for the A96 Corridor Review. Post Adoption Statements are intended to improve the transparency of the decision-making process within options that are part of the A96 Corridor Review.

1.5.4 The SEA topics, to be considered at all SEA stages, are:

- Biodiversity, fauna and flora;
- Population and human health;
- Water and soil;
- Air;
- Climatic factors;
- Material assets;
- Cultural heritage;
- Landscape.

1.5.5 The relationships between these SEA topics will also be discussed, as described in Section 4.11 of this report.

1.5.6 The SEA is developed to incorporate the feedback from statutory Consultation Authorities. The Scottish statutory Consultation Authorities are:

- Scottish Environment Protection Agency (SEPA);
- NatureScot;
- Historic Environment Scotland (HES).

1.5.7 The role of the Consultation Authorities within SEA is to bring their individual environmental expertise to the assessment process. This can help to ensure that the future consultation process undertaken by a Responsible Authority (in this case Transport Scotland) is more robust. This in turn means that the public can gain a better understanding of the likely effect of a plan on the environment and meaningfully contribute to the plan's preparation process by offering an informed view (Scottish Government, 2013).

1.5.8 The Consultation Authorities are also members of an Environmental Steering Group (ESG) that was formed for previous projects associated with the A96 – the ESG is described in Section 5.2.

1.6 Related Assessments

1.6.1 Where not already covered by assessments for other plans, policies and programmes, the A96 Corridor Review is accompanied by other environmental-related impact assessments. These comprise this SEA, as described in Section 1.5, a strategic Habitats Regulations Appraisal (HRA), a Climate Compatibility Assessment, and potentially a Strategic Flood Risk Assessment (SFRA) (if required).

1.6.2 The need for various other assessments, including an Equalities Impact Assessment (EqIA), Fairer Scotland Duty Assessment and Child Rights and Wellbeing Assessment is currently being determined through the preparation of a separate Social and Equalities Impact Assessment (SEqIA) Scoping Report. A Partial Business and Regulatory Impact Assessment (BRIA) will also be prepared as a separate document.

1.6.3 These impact assessments will interact and complement one another and provide additional insight into key environmental concerns relating to the A96 Corridor Review.

Climate Compatibility Assessment

1.6.4 The Bute House Agreement confirmed there would be a transparent and evidence-based review of the A96 Dualling between Inverness and Aberdeen, including a climate compatibility assessment to assess direct and indirect impacts on the climate and the environment.

1.6.5 Jacobs AECOM are developing an assessment methodology, informed by existing best practice and alignment to national strategy and policy. The approach to the Climate Compatibility Assessment will be developed during the STAG Initial Appraisal (Case-for-Change) and Preliminary Appraisal stages and used to assess the options under consideration at the Detailed Appraisal stage. The CCA will remain as a separate and standalone assessment to the SEA process.

Habitats Regulations Appraisal (HRA)

1.6.6 The EU Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (hereafter referred to as the Habitats Directive) was adopted in

1992 (as amended). The primary aim of the Habitats Directive is to promote the conservation of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species of European interest listed in the Annexes to the Directive at a favourable conservation status. It also introduces robust protection for those habitats and species of European importance.

1.6.7 Article 6(3) of the EC Habitats Directive requires that any plan which is not directly connected with or necessary to the management of a European site but may be likely to have a significant effect on such a site, either individually or in combination with other plans or projects, shall be subject to an 'appropriate assessment' of its implications for the European site in view of the site's conservation objectives. The application of the precautionary principle is implicit in the Habitats Directive, which requires that the conservation objectives of European sites should prevail where there is uncertainty (European Commission, 2001). Where scientific information is insufficient, inconclusive, or uncertain, the precautionary principle is applied. This procedure is applied in Scotland through The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended), and is known as the 'Habitats Regulations Appraisal' (HRA) of plans. These regulations remained in place post 31st December 2020, with only minor changes being introduced by the Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019.

1.6.8 Under the Habitats Regulations, a network of sites has been designated across Scotland and its marine environment for the purposes of nature conservation. This network comprises sites known as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). SACs are designated for the protection of habitats, plants and non-avian animal species of conservation concern. SPAs are designated to protect rare or vulnerable species of bird, as well as certain regularly occurring migratory bird species. In addition, Candidate and Possible SACs, Potential SPAs and Ramsar wetlands (designated under the Convention on Wetlands of International Importance) should be included in appraisals as they are afforded the same level of protection as European sites under domestic policy. European sites are designated due to the presence of specific habitats and species of internationally important biodiversity value, otherwise known as 'qualifying interest features.'

1.6.9 Prior to the UK's exit from the European Union (EU), Scotland's SACs and SPAs were part of a wider European network of such sites known as the 'Natura 2000 network'. They were consequently referred to as 'European sites'. Now that the UK has left the EU, Scotland's SACs and SPAs are no longer part of the Natura 2000 network but form a part of a UK-wide network of designated sites referred to as the 'UK site network'. However, it is current Scottish Government policy to retain the term 'European site' to refer collectively to SACs and SPAs (including any which are designated following the UK's exit from the EU).

1.6.10 Each stage in the development of the A96 Corridor Review will be assessed to determine if there might be any potential indirect or direct significant effects on European sites. As the A96 Corridor Review transport options develop, including any

further spatial detail or indicative maps of transport options, they will continue to be reviewed from an HRA perspective, to determine if HRA Screening of these options is required. This approach is similar to that used for the wider STPR2 HRA and this approach will be discussed and agreed with NatureScot, the statutory nature conservation body (SNCB) for HRAs in Scotland. Discussions with NatureScot and refinement of the HRA approach will continue throughout the progression of the A96 Corridor Review. Any HRA reports will be produced independently of the SEA.

Strategic Flood Risk Assessment

1.6.11 Strategic Flood Risk Assessment (SFRA) is designed to inform the development planning process, primarily to avoid increasing overall flood risk by avoiding areas of flood hazard. It constitutes a strategic overview of flood risk to the development plan area and should involve the collection, analysis and presentation of all existing, available and readily derivable information on flood risk from all relevant sources.

1.6.12 Scottish Planning Policy (SPP) requires that the planning system should prevent development which would have a significant probability of being affected by flooding or would increase the probability of flooding elsewhere. Planning authorities must consider the probability of flooding from all sources and associated risks when preparing development plans. SPP states that development plans should use SFRA to inform choices about the location of development and policies for flood risk management.

1.6.13 The key elements of SFRA should include:

1. Information on current flood hazard for all potential sources of flooding
2. Information on current flood risk for all potential sources of flooding
3. Information on potential flood hazard and risk due to climate change
4. Information on existing flood protection schemes and other flood risk management infrastructure
5. Identification of the functional floodplain (including built-up areas and undeveloped/sparsely developed areas)
6. Identification of relevant drainage issues
7. Identification of sites or areas constrained by flood risk
8. Information on growth pressures in the area.

1.6.14 The need for potentially undertaking a SFRA is being kept under review at present.

2. A96 Corridor Review Summary

2.1 Background

2.1.1 Since publication of the STPR in 2008, progress had been made on the transport priorities for the A96, including:

- Completion of Aberdeen to Inverness Rail Improvements Phase 1, which comprises:
  - the re-doubling of the track between Aberdeen and Inverurie;
  - signalling enhancements between Nairn and Elgin;
  - platform extensions at Insch and Elgin;
  - the relocation of Forres station;
  - loop extension of the track at Forres;
  - infrastructure to facilitate the construction of new stations at Kintore and Dalcross.
- New station at Kintore, opened in October 2020.
- Construction commenced of a new station at Dalcross (due for completion in December 2022).
- Strategic Park and Ride at Dyce, opened in January 2017.
- A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme: draft orders published in November 2016, PLI held in October/November 2018, Scottish Ministers gave the go-ahead for completing of the statutory procedures in February 2021.
- A new bridge at Inveramsay, opened in March 2016.

2.1.2 In December 2011, The Agenda for Cities, “Scotland’s Cities: Delivering for Scotland”, was published by the Scottish Government. The purpose of this document was to set out the vital contribution that Scotland's major population centres can make in delivering the Government Economic Strategy. The Agenda identified connecting cities with strong, reliable and resilient transport infrastructure as a key characteristic to support growth. Published alongside this was the Scottish Government’s Infrastructure Investment Plan, providing an overview of plans for infrastructure investment over the coming decades.

2.1.3 The plan to upgrade the A96 between Inverness and Aberdeen to dual carriageway was reconfirmed in the Third National Planning Framework (NPF3) in 2014. More recently, the consultation draft NPF4 (laid to Parliament on 10 November 2021), references A96 improvements to safety.

2.1.4 In 2014, a Strategic Business Case (SBC) for the dualling was published. The SBC considered a range of options for improving transport links, recommending that full dualling of the A96 between Inverness and Aberdeen was the best performing option in terms of the transport planning objectives and the STAG criteria considered.

2.1.5 In 2015, a Design Manual for Roads and Bridges (DMRB) Stage 1 Assessment for the initial development and assessment of broadly defined improvement strategies for the upgrade of the A96 to a Category 7A all-purpose dual carriageway was published. A two-phased SEA was also carried out at this time, with reports published in 2014 and 2015, and the Post Adoption Statement published in 2016.

2.1.6 The development of the dualling proposals, the agreed principles regarding investment in the transport network and commitments relating to the A96 are provided in Section 1.1.

2.1.7 As outlined in Section 1.1, the Bute House Agreement noted that the current plan is to fully dual the A96 route between Inverness and Aberdeen, and that there would be a transparent, evidence-based review to include a climate compatibility assessment to assess direct and indirect impacts on the climate and the environment. As part of this review, this SEA is also being conducted.

2.1.8 Other commitments in the Bute House Agreement given in relation to the North-East of Scotland included developing a programme of enhanced public transport improvements. These comprise:

- work to improve the resilience, reliability and efficiency of the Aberdeen to Inverness rail corridor, alongside Transport Scotland's commitment to decarbonise the rail network, to make it more competitive to road and encourage modal shift for both passengers and freight;
- working with Nestrans, Aberdeen City and Aberdeenshire councils on the feasibility of a mass rapid transit system for the region, and also a rail link between Dyce and Ellon, and further north to Peterhead and Fraserburgh;
- reviewing the A96 corridor with a view to implementing appropriate bus priority measures.

2.1.9 Prior to the Bute House agreement in August 2021, the latest Infrastructure Investment Plan (IIP) "A National Mission with Local Impact – Infrastructure Investment Plan for Scotland 2021-22 to 2025-26" was published in February 2021 (Scottish Government, 2021g). One of the key themes of this plan is to deliver inclusive economic growth, and under the purpose of strengthening connectivity IIP states "*We will deliver a safe and sustainable, integrated and resilient strategic transport system, including … continuing the design and development work to dual the A96*" (p38).

2.1.10 Annex D of the latest IIP provides information on major projects and programmes, including phased improvements to the existing A96 from Inverness to Aberdeen (including the Nairn Bypass).

2.2 A96 Corridor Review Objectives

2.2.1 Transport Planning Objectives (TPOs) are of central importance to the STAG process. In line with STAG, TPOs should align with the outcomes sought by the study, be based on a comprehensive and evidenced understanding of problems and opportunities and lend themselves to inform a clear and transparent appraisal of transport options. The TPOs are a key element of the appraisal process from initial option identification and sifting, through to preliminary and detailed appraisal and subsequent monitoring/evaluation.

2.2.2 For the A96 Corridor Review, TPOs have been aligned to those set at the national level in STPR2, supported by corridor specific sub-objectives. An overarching set of TPOs have been established as part of STPR2, which are closely aligned with the four priorities, 12 outcomes and 24 policies contained within NTS2. To reflect the nature of the corridor, the overarching TPOs have been amended slightly from the national-level STPR2 objectives.

2.2.3 A series of sub-objectives have been developed to align with the overall direction of the TPOs (and hence the STPR2 national objectives), but with a particular focus on the specific evidence-based problems and opportunities for the corridor. The A96 Corridor Review TPOs and sub-objectives are as follows:

- TPO1 – A sustainable strategic transport corridor that contributes to the Scottish Government's net zero emissions target.
    - Reduce transport related emissions through a shift to more sustainable modes of transport.
    - Increase the active travel mode share for shorter everyday journeys.
- TPO 2 – An inclusive strategic transport corridor that improves the accessibility of public transport in rural areas for access to healthcare, employment and education.
    - Increase public transport mode share by improving connections between sustainable modes of transport.
    - Reduce the reliance on private car for access to healthcare, employment and education.
    - Improve mobility and inclusion, recognising the specific needs of disadvantaged and vulnerable users.
- TPO 3 – A coherent strategic transport corridor that enhances communities as places, supporting health, wellbeing and the environment.
    - Reduce demand for unsustainable travel by enhancing place-making within settlements along the A96.
    - Increase active travel mode share for both shorter and longer distance journeys.
    - Reduce real and perceived severance caused by the strategic transport network both between and within communities.

    - Protect or enhance the natural environment and heritage.
- TPO 4 – An integrated strategic transport system that contributes towards sustainable inclusive growth throughout the corridor and beyond.
    - Increase sustainable access to labour markets and key centres for employment, education and training.
    - Increase the mode share of freight by sustainable modes.
    - Increase competitiveness of key sectors by improving journey time reliability for commercial transport.
- TPO 5 – A reliable and resilient strategic transport system that is safe for users.
    - Reduce the accident rates and severity of transport related casualties in line with reduction targets.
    - Improve resilience to disruption (from climate change events and maintenance activities) through adaptation of the corridor's trunk road and rail infrastructure.

2.3 A96 Route Corridor Overview

2.3.1 The Inverness to Aberdeen transport corridor passes through the council areas of Highland, Moray, Aberdeenshire and Aberdeen City. The corridor includes a number of settlements including Inverness, Nairn, Forres, Elgin, Fochabers, Keith, Huntly, Inverurie, Kintore, and Aberdeen. These settlements are linked by the A96 trunk road, which provides strategic road connectivity between urban and rural areas. The surrounding environment is predominantly rural, with extensive areas of agricultural land, a number of sensitive designated natural heritage areas and a significant number of cultural heritage features, including battlefields, scheduled monuments and listed buildings. The corridor is subject to flood risk from surface water and coastal flooding.

2.4 STAG Appraisal

2.4.1 The appraisal process for the A96 Corridor Review will be carried out in accordance with STAG. The STAG appraisal shall consider all relevant transport modes within the A96 corridor, including active travel, public transport, rail and roads-based transport.

- The STAG stages to be completed for the review are:
    - Initial Appraisal: Case for Change – comprising analysis of problems and opportunities, and the development of Transport Planning Objectives.
    - Preliminary Options Appraisal - comprising TPOs, STAG criteria, Established Policy Objectives, Feasibility, Affordability and Public Acceptability, and Rationale for Selection or Rejection.
    - Detailed Options Appraisal - comprising TPOs, STAG Criteria, Cost to Government and Risk and Uncertainty.

The SEA team has been completing the environment sections of the Appraisal Summary Tables, which summarise the potential environmental impacts of each STAG option.

2.4.2 The SEA process has been integrated with the A96 Corridor Review to support assessment and selection of the preferred transport options, as described above in relation to the STAG Appraisal Summary Tables.

3. Legislative and Policy Context

3.1 Policy Context

3.1.1 The A96 Corridor Review is undertaken within the context of national, regional and local PPS in Scotland. A comprehensive review of PPS from national, regional and local levels is provided in Appendix C (Plans, Programmes and Strategies Review). A summary of the key PPS is provided below.

3.2 National Planning Framework 4 (NPF4)

3.2.1 The Scottish Government's 2022-2023 Programme for Government highlights the significance of the National Planning Framework to put planning at the heart of delivering green, inclusive and long-term sustainable development in Scotland. The National Planning Framework includes a long-term spatial strategy to 2045. This reflects the range of Scottish Government policies, including the Infrastructure Investment Plan (IIP) 2021-22 to 2025-26. It will guide spatial development, set out national planning policies, designate national developments and highlight regional spatial priorities.

3.2.2 On 8 November 2022, the Revised Draft NPF4 was laid in the Scottish Parliament. Once approved by the Scottish Parliament and adopted by the Scottish Ministers, NPF4 will become part of the statutory development plan and will directly influence planning decisions. The Revised Draft NPF4 sets out a need to "embrace and deliver radical change to tackle and adapt to climate change, restore biodiversity loss, improve health and wellbeing, build a wellbeing economy and create great places." NPF4 recognises the need to plan our places in a way that reduces the need to travel, especially by unsustainable modes, and promotes a shift to active and sustainable travel.

3.2.3 The Revised Draft NPF4 embeds, for the first time, the NTS2 Sustainable Travel Hierarchy and Sustainable Investment Hierarchy into planning decision making and development planning. The Revised Draft NPF4 spatial strategy sets out a local living approach whereby future places, homes and neighbourhoods will be connected, livable, thriving places with sustainable travel options and where car dominance is reduced.

3.2.4 To meet many of the future needs of society, it is crucial that services and facilities are easily and affordably accessed. Therefore, Revised Draft NPF4 advocates the infrastructure-first approach in planning for future development to provide communities with the opportunity to travel sustainably from the outset.

3.2.5 The A96 corridor broadly falls between two regional action areas identified in Draft NPF4. The North-East Transition action area (with a focus to move the economy away from the oil and gas sector and transition to clean, greener energy solutions), and the Northern Revitalisation action area (with priorities to create stronger, resilient rural

communities, decarbonise connectivity and make the most of exceptional natural and cultural heritage).

3.2.6 The Revised Draft NPF4 also sets out 'The Six Qualities of Successful Places':

- Designed for lifelong health and wellbeing;
- Safe and pleasant;
- Well-connected and easy to move around;
- Distinctive;
- Sustainable;
- Adaptable.

3.3 National Transport Strategy 2 (NTS2)

3.3.1 In February 2020, NTS2 was published, outlining an updated vision over a twenty-year period for a transport system which is *'sustainable, inclusive, safe and accessible transport system, helping deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitor'* 2020 (p.4).

3.3.2 The vision is underpinned by four priorities:

- Reducing inequalities through the provision of fair, easy and affordable access to transport services;
- Taking climate action by ensuring Scotland's transport system helps deliver the Scottish Government's net-zero carbon emission target by 2045, adapts to the effects of climate change and promotes the use of sustainable travel options;
- Delivering inclusive economic growth by ensuring Scotland's transport network and services will be effectively integrated with spatial and land use planning and economic development, adapt to the changing requirements of citizens, businesses and visitors, provide reliable journey times, and use new and innovative products, services and technologies;
- Improving health and wellbeing by prioritising the prevention and reduction of incidents, promoting active travel and creating cleaner and greener places and networks within the transport system.

3.3.3 NTS2 outlines the Sustainable Transport Hierarchy, and the Sustainable Investment Hierarchy as measures which will guide and influence decisions on transport priorities. The Sustainable Transport Hierarchy promotes and prioritises active travel and public transport above shared and private transport options. The Sustainable Investment Hierarchy requires that measures to reduce the need to travel unsustainably and maintaining and safely operating existing assets are priorities above measures to make better use of capacity and undertake targeted infrastructure improvements.

3.4 Strategic Transport Projects Review 2 (STPR2)

3.4.1 The second strategic transport review will inform transport investment in Scotland and help to deliver the visions, priorities and outcomes set out in the NTS2. Covering a 20-year period (2022-2042), STPR2 takes into consideration the transport needs of communities across Scotland, examining provisions available for active travel (walking, cycling, wheeling) as well as bus, rail, road and ferry links for both commercial and personal use.

3.4.2 STPR2 has five key objectives that it aims to address:

- Takes climate action;
- Addresses inequalities & accessibility;
- Improved health & wellbeing;
- Supports sustainable economic growth;
- Increases safety & resilience.

3.4.3 Public consultation on the STPR2 Technical Report (Jacobs/ AECOM, 2022a) and its accompanying SEA (Jacobs/ AECOM, 2022b) ended in April 2022. The final STPR2 SEA Environmental Report was published in December 2022 with the Post Adoption Statement expected to be published in due course.

3.5 Climate Change Plan Update

3.5.1 The Scottish Government published "Securing a Green Recovery on a Path to Net Zero: Climate Change Plan 2018–2032 – update" in December 2020 (Scottish Government, 2020a) which reflects the ambition of the new targets set in the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019. These comprise the reduction of Scotland's greenhouse gas emissions to net zero by 2045 at the latest, with interim targets of at least:

- 56% by 2020;
- 75% by 2030;
- 90% by 2040.

3.5.2 The transport chapter of the Plan sets out context around the current situation and how the shift to home working may become a longer-term trend. Coupled with the focus on 20-minute neighbourhoods, the Plan notes the opportunity to capitalise on these to reduce the need to travel, and, when travel occurs, for it to be focused on more sustainable modes.

3.5.3 The Plan includes the following statement in relation to transport: "*By 2032 our roads will contain no new petrol and diesel cars and vans; we will have decarbonised our passenger railways; and we will have begun work to decarbonise challenging transport modes such as HGVs, ferries and aviation. Car kilometres will have reduced by 20%, and sustainable transport will be the instinctive first choice for people*."

3.5.4 This statement is accompanied by a timeline to 2032 that sets out the key milestones in the intervening years:

- 2024 – majority of new buses are zero emissions.
- 2025 – need for any new petrol and diesel light commercial vehicles in public bodies phased out. Delivery of first Active Freeways: segregated active travel routes on main travel corridors.
- 2030 – conditions created to phase out the need for all new petrol and diesel vehicles in Scotland's public sector fleet. Need for new petrol and diesel cars and vans phased out. Car kilometres reduced by 20 percent.
- 2032 – Scotland's passenger rail services considerably decarbonised, with just a few years to go until they are fully decarbonised.

3.6 Route Map to Reduce Car Use

3.6.1 In January 2022, the Scottish Government and the Convention of Scottish Local Authorities (COSLA) developed a route map to deliver the shift in travel behaviours required to meet the 20 percent car kilometres reduction target, recognising the need for ongoing collaboration and partnership working between national, regional and local government as well as public, private and third sector partners (Scottish Government, 2022c). The route map sets out the suite of policies from across Government that may be implemented to support car-use reduction in order to both address climate change and deliver a healthier, fairer and more prosperous Scotland, and recognises the role of STPR2 in setting out recommendations for future investment decisions.

3.6.2 Successful implementation of the actions set out in the route map are expected to lead to a transformational way of living in Scotland, where a new localism thrives in villages, towns and city neighbourhoods; where streets become places that are safe for people of all ages to travel by walking and cycling whilst maintaining private vehicle access for those with disabilities; where longer journeys are made by convenient and affordable public or shared transport; and with greater use of on-line access to key services and opportunities. This future will both enable statutory climate change targets to be met, whilst at the same time creating better ways of living, improved health and wellbeing and the associated social and economic benefits of a society less dominated by private cars.

3.7 Regional Transport and Planning Strategies

Regional Transport Strategy for the North-East of Scotland 2040 (Nestrans)

3.7.1 Published in November 2021, Nestrans is the Regional Transport Partnership for the North-East of Scotland. It is a long-term strategy which sets the vision for transport in the region for the next 20 years. Nestrans vision is *"to provide a safer, cleaner, more inclusive, accessible and resilient transport system in the North-East, which protects the natural and built environment and contributes to healthier, more prosperous and fairer communities"* (p.22).

3.7.2 Prioritising sustainable transport is a key theme running through the Nestrans strategy, promoting active travel, and reducing the need for private cars both underpin the climate considerate approach to travel. COVID-19 and the impact this has had upon travel patterns is being continually monitored so that there can be agile and informed responses to both short-term and long-term travel use in the region.

The Highlands and Islands Regional Transport Strategy Draft 2017 (HITRANS)

3.7.3 HITRANS looks to support the improved access to transport for the communities it represents, as it recognises the social and economic opportunities this provides. Investment in rail, road, and ferry connections is a key priority of the strategy as they are a lifeline for many of the rural communities in this region. HITRANS states that each community across the region should expect good transport connections and that the transport services provided in any given area *"will be determined by the needs of that community"* (p.6).

Aberdeen City and Shire Strategic Development Plan 2020

3.7.4 The plan has been prepared by the Aberdeen City and Shire Strategic Development Planning Authority and covers the local authority areas of Aberdeen City and Aberdeenshire. This plan is one of four Strategic Development Plans in Scotland and covers a twenty-year period to 2040. It sets out concise and visionary targets for change in the region and has been written in the context of national strategies, policy and guidance provided by the Scottish Government.

Highland Indicative Regional Spatial Strategy to 2050

3.7.5 Published in 2020, the Highland Council developed an Indicative Regional Spatial Strategy (IRSS) in response to the then ongoing Scottish Government NPF4 review. The IRSS sets out a long-term sustainable vision for the Highlands' next 30 years and makes note of the important role that the Highland region plays in Scotland and that it is committed to the national net zero targets stating, "*By 2050, Highland will be an exemplar carbon action region by optimising its unique, rich and diverse assets to lead national emissions reduction targets"* (p.4).

3.8 Local Transport and Planning Strategies

Moray Local Transport Strategy 2011

3.8.1 Moray Local Transport Strategy provides a framework for developing transport policy and infrastructure within Moray. The strategy has been split into two parts which sets out the following:

3.8.2 Part One: This provides information on the main strategy, outline, key and secondary objectives along with action plans and committed schemes.

3.8.3 Part Two: This summarises the background information, achievements to date, key issues, linkages with other National, Regional and Local policies guidance as well as the relationships with other key agencies.

3.8.4 The overall vision for the strategy is "*Excellent connections and accessibility are achieved for Moray through a safe, integrated, reliable and affordable transport system that is inclusive and supports economic development and the needs of local communities whilst safeguarding the environment."* (p.6).

Aberdeen City Local Transport Strategy 2016-2021

3.8.5 The Local Transport Strategy for Aberdeen sets out the plan for development of the City's transport network over a five-year period. The strategy follows guidance from national and regional transport plans, programmes and strategies considering the relationship transport has with the economy, environment, health, people and communities.

3.8.6 Six outcomes of Aberdeen's transport system by 2021 are identified in the strategy as being:

- Increased modal share for public transport and active travel;
- Reduced the need to travel and reduced dependence on the private car;
- Improved journey time reliability for all modes;
- Improved road safety within the city;
- Improved air quality and the environment;
- Improved accessibility to transport for all.

Aberdeenshire Council Local Transport Strategy 2012

3.8.7 Aberdeenshire's Local Transport Strategy sets out how the Council aims to cater for the needs of all transport users across the region and ensuring that where possible, existing resources and infrastructure are used to their full potential. The strategy was developed with the intention of supporting the delivery of a range of wider strategic transport priorities as set out in the Nestrans Regional Transport Strategy.

3.8.8 The following objectives are noted as underpinning the Council's strategic priorities:

- Promote Sustainable Economic Growth;
- Promote Social Inclusion and Accessibility;
- Protect the Environment;
- Improve Safety;
- Improve Integration.

Moray Local Development Plan 2020

3.8.9 The Moray Local Development Plan was formally adopted in July 2020 and sets out a vision for development in Moray and provides guidance on development for the period up to 2030.

3.8.10 The overall vision for the Moray Local Plan is "*People want to live, work and invest in Moray because of the outstanding quality of life and environment*"; this is supported by a series of objectives which are described in Appendix C of this report.

3.8.11 Transportation and the provision of high-quality, well-planned transport across Moray is noted as an essential aspect of development that will aid a prosperous future. Investment in public transport and active travel will bring both environmental and health benefits for communities whilst working to address the climate emergency.

Aberdeen Local Development Plan 2017

3.8.12 Aberdeen is Scotland's third largest city and plays an important role in the country in many aspects. The Local Development Plan was created in the context of Scotland's Third National Planning Framework and supports the Aberdeen City and Shire Strategic Development Plan and sets out how it will meet the needs of the City's development to 2026 and beyond. Aberdeen City Council have published the Aberdeen Local Development Plan: Proposed Plan 2020 and, once adopted, will replace the 2017 Local Development Plan.

Aberdeenshire Local Development Plan 2017

3.8.13 This plan envisions Aberdeenshire to be an even more attractive, prosperous and sustainable place to live, work and visit. Balancing economic growth with the urgent need for sustainable development to address climate change, the plan sets out the following aims:

- Deliver quality of life;
- Help protect and improve our natural and cultural heritage;
- Can create sustainable mixed communities;
- Make the best of our existing transport network.

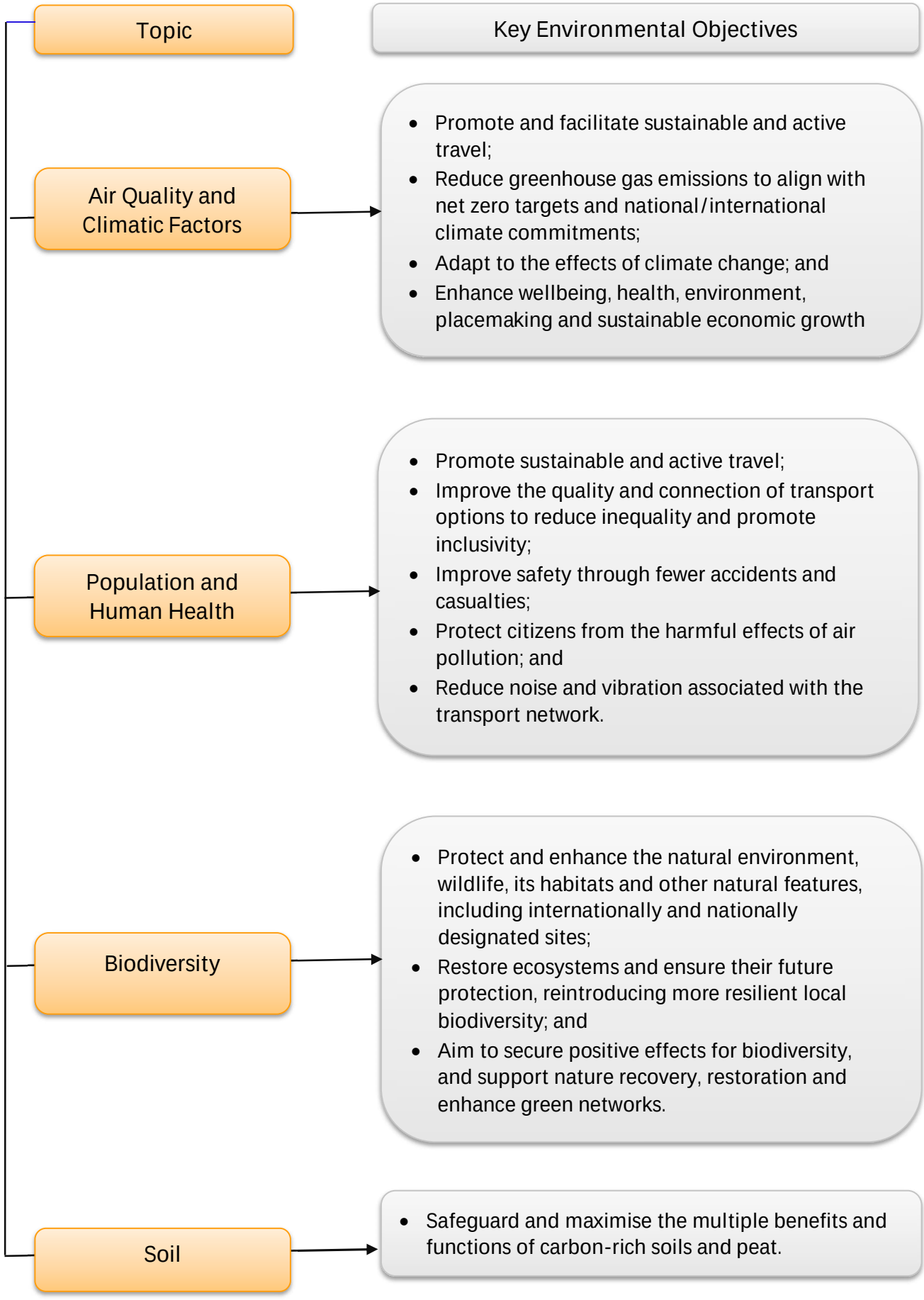
3.8.14 The Proposed Aberdeenshire Local Development Plan is currently going through examination but once adopted, it will replace the 2017 Local Development Plan.

3.9 Relationship with other PPS

3.9.1 SEA consideration of the A96 Corridor Review, within the context of the most relevant PPS, supports the identification of wider environmental protection objectives and issues that the project should take cognisance of and might support with its delivery.

3.9.2 A wide range of national and regional level policies from various PPS need to be considered in the development of the A96 Corridor Review and the SEA. The key relevant aspects of these policies are included in Appendix C (Plans, Policies and Strategies Review). A summary of the key environmental requirements and objectives identified through the review is presented in Figure 3.1.

3.9.3 A review of the associated environmental protection objectives highlights existing and potential problems, as well as opportunities for enhancement and benefits, and has served as an important base upon which to build the SEA objectives and assessment framework.


Topic
Key Environmental Objectives
Air Quality and Climatic Factors
Promote and facilitate sustainable and active travel;
Reduce greenhouse gas emissions to align with net zero targets and national/international climate commitments;
Adapt to the effects of climate change; and
Enhance wellbeing, health, environment, placemaking and sustainable economic growth
Population and Human Health
Promote sustainable and active travel;
Improve the quality and connection of transport options to reduce inequality and promote inclusivity;
Improve safety through fewer accidents and casualties;
Protect citizens from the harmful effects of air pollution; and
Reduce noise and vibration associated with the transport network.
Biodiversity
Protect and enhance the natural environment, wildlife, its habitats and other natural features, including internationally and nationally designated sites;
Restore ecosystems and ensure their future protection, reintroducing more resilient local biodiversity; and
Aim to secure positive effects for biodiversity, and support nature recovery, restoration and enhance green networks.
Soil
Safeguard and maximise the multiple benefits and functions of carbon-rich soils and peat.

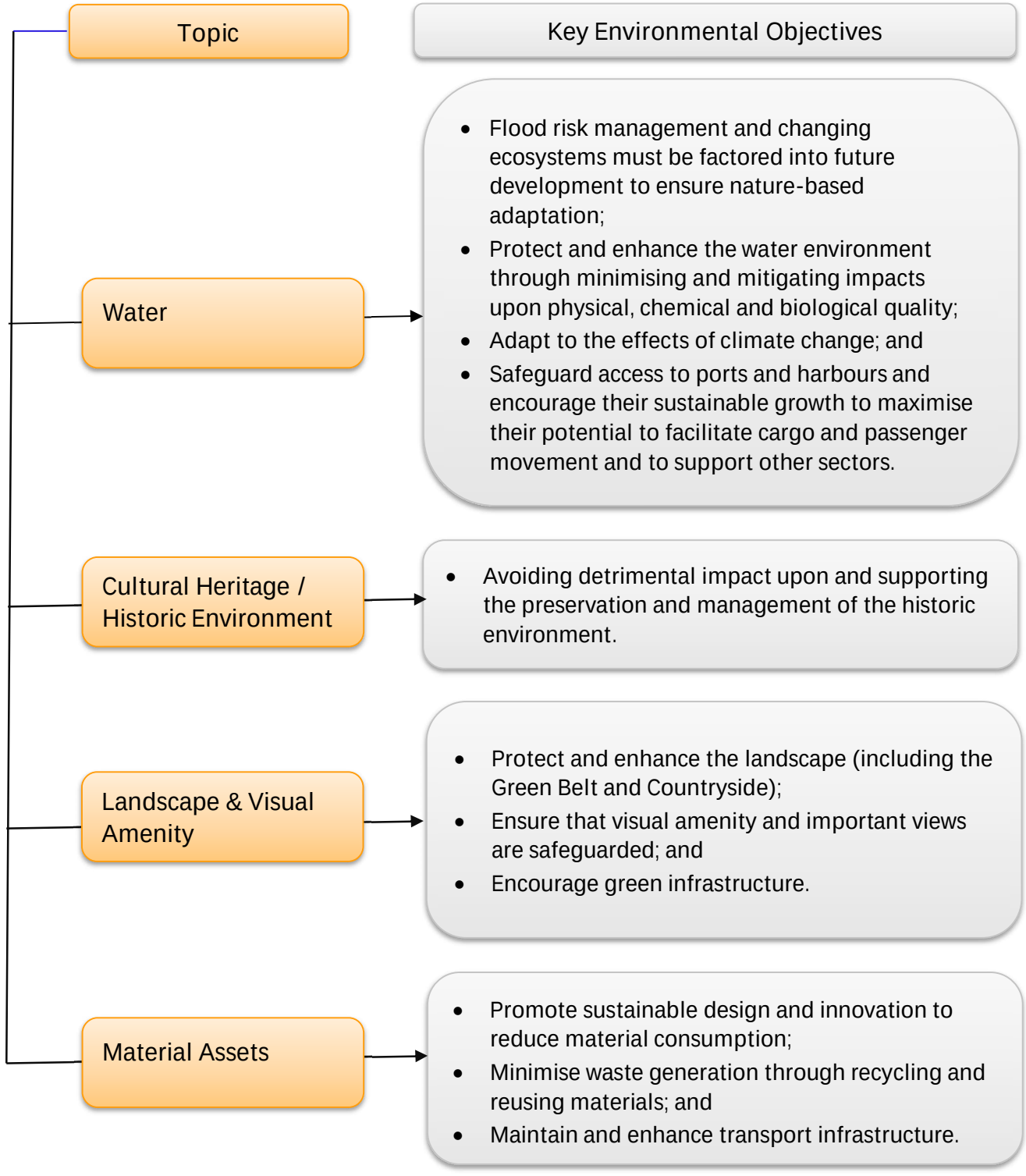


Figure 3.1: Key Environmental Objectives from PPS Review

4. Baseline Profile

4.1 Introduction

4.1.1 Schedule 3 of the Environmental Assessment (Scotland) Act 2005 requires that the following be identified when undertaking a SEA:

- relevant aspects of the current state of the environment and its likely evolution without the implementation of the plan or programme;
- environmental characteristics of areas likely to be affected;
- relevant existing environmental problems;
- relevant environmental protection objectives at the international, European or national level (as described in Figure 3.1).

4.1.2 The full national-level environmental baseline, that describes these aspects, is provided as Appendix D, which also contains discrete sections that summarise the likely evolution of the environmental baseline if the A96 Corridor Review options were not implemented (the 'do nothing' or 'without plan' scenario).

4.1.3 The study area considered in the SEA is a 15km wide corridor (7.5km either side of the existing A96). This corridor was used by the previous A96 Dualling SEA (Halcrow, 2014), described in Section 1.4, and is illustrated on the Appendix B figures. The width and extent of the study area was considered appropriate for an initial high-level review of potential effects on each SEA topic and shall be extended or reduced as required during the A96 Corridor Review and SEA process. Four council areas were identified within the 15km-wide study area:

- Aberdeenshire Council;
- Aberdeen City Council;
- The Highland Council;
- Moray Council.

4.1.4 Online mapping and publicly available resources have been used to identify environmental constraints and inform the baseline of the study area. Sources used include:

- Ordnance Survey (OS) Maps;
- Scotland's Environment website;
- SEPA Water Classification Hub;
- SEPA Flood Maps;
- NatureScot SiteLink;
- National Soil Map of Scotland;
- Historic Environment Scotland website;
- Scottish Forestry Open Data;
- Scotland's noise map (Scottish Government, 2022b);

- Local authority GIS data.

4.1.5 Internationally and nationally designated sites and key environmental constraints identified from the baseline data collection are shown in the Appendix B figures.

4.1.6 All of the SEA topics listed in the Environmental Assessment (Scotland) Act 2005 have been 'scoped in' to the A96 Corridor Review SEA, as described in Section 6.3. The environmental baseline data is provided in full in Appendix D. A summary of the key national-level baseline findings for each SEA topic is provided below:

4.2 Climatic Factors

4.2.1 According to the Scottish Transport Statistics 2021, transport accounted for 29.2% of Scotland's total greenhouse gas emissions in 2019. The largest source of transport emissions is cars at 38%, followed by HGVs at 25%, and aviation at 16% (Transport Scotland, 2021). The proportion of single occupancy car trips also shows an underlying increasing trend, with 66% in 2018 compared with a figure of 65% in 2013 and 60% in 2008 (Transport Scotland 2020).

4.2.2 Over the last few decades, Scotland has experienced a warming trend, shifting rainfall patterns, and rising sea levels (Scotland's Environment, 2021). The Met Office historic 10-year averages from the stations in Kinloss, Keith and Aberdeen Airport identify gradual warming and increased rainfall between 1961 and 2020 in the study area (Met Office, 2022b).

4.3 Air Quality

4.3.1 Principal sources of air pollution within the study area are likely to comprise road traffic emissions from the A96 itself, and other roads, as demonstrated from the following documents. Further details on the air quality impacts and existing sources of concentration data are discussed in Appendix D.

4.3.2 In June 2021, Aberdeen City Council published their 2021 Air Quality Annual Progress Report (APR), which states that '*the main pollutants of concern in Aberdeen City are nitrogen dioxide (NO_2) and particulate matter (PM_{10}), related to road traffic emissions*' (Aberdeen City Council, 2021). As such, Aberdeen City Council has declared three Air Quality Management Areas (AQMAs) due to predicted exceedances of the national air quality objectives for both NO_2 and PM_{10}. The Anderson Drive AQMA, declared for the likely exceedances of the annual mean NO_2 and PM_{10} AQOs, encompasses Haudagain Roundabout and Auchmill Road on the northern fringes of Aberdeen and includes the junction between the A96 and A92.

4.3.3 The latest Aberdeenshire Council APR was published in June 2021 and states that 'the Aberdeenshire Council area enjoys good air quality with no exceedances of the national air quality objectives'. Consequently, there is no requirement for Aberdeenshire Council to declare any AQMAs (Aberdeenshire Council, 2021).

4.3.4 The latest Moray Council APR was published in June 2020 and states that '*there are no existing significant air quality issues identified within the Moray Council administrative area. The measured 2019 annual mean concentrations of NO_2 within the Moray Council area remain well below the Air Quality Standards set by the Scottish Government and have done so for several years now*' (Moray Council, 2020).

4.3.5 The latest Highland Council APR was published in December 2020 (The Highland Council, 2020). It states that the air quality within the Highland Council area is generally good, with the exception of the existing AQMA declared for the potential exceedance of the annual mean NO_2 AQO within Inverness City Centre. Inverness City Centre is beyond the corridor review study area.

4.4 Population and Human Health

4.4.1 Aberdeen is Scotland's third largest city by population and its fourth most densely populated area (National Records of Scotland, 2021a). The largest settlement in Aberdeenshire is Peterhead, which has a population of 19,270 (National Records of Scotland (NRS), 2016). Approximately 48.4%, 47.4% and 41.6% of the populations of Aberdeenshire, Moray and Highland council areas respectively live in areas classified by the Scottish Government as 'rural'.

4.4.2 The largest settlement in The Highland Council area is Inverness, which has a population of 63,220 and is the fifth largest of Scotland's seven cities by population (National Records of Scotland, 2016). The Highland Council is also Scotland's largest local authority by area, with a total land area (including all islands at low water) of 26,484km2 (The Highland Council, undated.).

4.4.3 The largest settlement in Moray is Elgin, with a population of 24,760 (National Records of Scotland, 2016).

4.4.4 There are a number of areas of high deprivation within Aberdeen City, Aberdeenshire, Moray and Highland councils' administrative areas. These areas would be more vulnerable to changes in the environment as the communities living within deprived areas are more likely to have social and environmental characteristics that present risks to health, for example, poor housing, lack of green spaces, poorer air quality. However, the proportion of data zones within the study area that rank within the 20% most deprived in Scotland is relatively small at 6.9%. Alongside this, 27.2% of data zones are ranked within the 20% least deprived zones across Scotland, suggesting an overall trend of lower deprivation across the study area.

4.4.5 Access to services is an important consideration for rural communities and improved connectivity can reduce health inequalities.

4.4.6 Air quality and noise from transport could result in significant impacts on human health on the population, particularly the more urban areas within the study area. Air quality is discussed in Section 4.3 and noise is discussed below.

4.4.7 No baseline noise surveys have been undertaken at this stage, however Scotland's noise map (Scottish Government, 2022b) illustrates noise exposure from rail, road, air traffic and industrial sources in accordance with the European Parliament and the Council Directive for Assessment and Management of Environmental Noise (2002/49/EC). The main sources of noise within the A96 corridor are sections of the A96 itself, A947 towards Newmachar, A941 towards Rothes, A944 towards Kingsford, A940 towards Grantown on Spey, B9013 towards Burghead, some industrial sources in Aberdeen, Aberdeen Airport and sections of the Aberdeen – Inverness rail line. The greatest consolidated noise sources are at the eastern end of the A96 corridor due to proximity to Aberdeen and its associated various industrial land uses and main transport routes entering and exiting the city. Beyond this area, the main sources of noise are from the A96 and the railway line, which both follow a similar alignment through the A96 corridor. There are some peripheral roads which are also noise sources, however these are more scattered in the western extent or form direct connections with the A96. Noise emissions from airports and industry outside of Aberdeen have not been modelled as they do not meet the criteria set out in the Environmental Noise Directive.

4.5 Material Assets

4.5.1 The main transport infrastructure within the study area includes:

- the A96 Trunk Road (between Aberdeen and Inverness);
- other A-class roads;
- the rail network between Inverness and Aberdeen which includes 11 rail stations (excluding a new station at Dalcross which is currently under construction);
- six airports including Inverness and Aberdeen international airports;
- seven hospitals;
- eight operational renewable energy developments and five onshore wind farms.

4.5.2 Natural assets within the study area include:

- five designated main rivers;
- Scottish Ancient Woodland Inventory and Native Woodland Survey of Scotland sites;
- land of varying degrees of agricultural value, including approximately 53.7km^2 and 174.6km^2 of Class 2 and Class 3.1 prime agricultural land respectively (Scotland's Soils, 2017).

4.6 Water

4.6.1 There is a total of approximately 294 surface water features within the A96 Study Corridor, which includes rivers, lochs, water bodies and coastal waters. There are 11 surface water catchments within the corridor which are traversed by the A96. These include the:

- Beauly/ Inverness Firth;

- Inverness Coastal;
- River Nairn;
- Moray Coastal;
- Muckle Burn;
- River Findhorn;
- River Lossie;
- Spey Bay Coastal;
- River Spey;
- River Deveron;
- River Don.

4.6.2 A significant number of watercourses flow through the corridor and are bridged/crossed by the A96 itself. The largest watercourses in the corridor are the River Spey, to the immediate west of Fochabers, and the Riven Don (and its tributary – the River Urie) at Inverurie. Under the Water Framework Directive (WFD) classifications, these designated river catchments range from having 'Bad' to 'Good' Ecological Status, with the main reasons for not achieving 'Good' status being physical modification and chemical failings (SEPA,2020). These are large watercourses which range from having sections that are more laterally dynamic to sections that have been heavily modified, as illustrated by the existing A96 crossing of the River Urie. Most river crossings are at points where the rivers are fresh water, with the exception of the River Nairn which is tidal where it is crossed by the A96.

4.6.3 The bedrock [solid] geology of the A96 corridor varies from east to west, consisting of sands, gravels, silts and clays. To the west of the study area, the bedrock geology comprises sandstones and conglomerate, while the east bedrock includes psammite and semi-pelite formations. The central part of the study area has a similar composition to the eastern part, consisting of psammite and semi-pelite formations with minor quartzites, limestones and igneous intrusions. Borehole data has shown that there are high groundwater levels at its eastern end. Further west, the water table is only high during winter months. The corridor lies across several WFD designated groundwater bodies which range from 'Good' to 'Poor' condition (SEPA, 2020). Those waterbodies not achieving 'Good' status are generally because of chemical failings. Licenced water abstractions and private water supplies may also be important receptors within the corridor, though are yet to be fully identified.

4.6.4 The Scottish Environmental Protection Agency (SEPA) flood mapping identifies flood risk from river, coastal and surface water flooding at low (1-in-1000 year), medium (1-in-200 year) and high (1-in-10 year) likelihood of flooding (Figure B4). A further set of maps identifies flood risk from rivers and coastal for the medium (1-in-200 year) scenario in 2080 (Figure B5).

4.6.5 Given the significant number of watercourses, the main risk of flooding within the A96 corridor is from river flooding. This includes the current route of the A96 itself. The flood mapping illustrates that the River Don poses significant flood risk to roads and settlements between Old Rayne and Dyce, with Kintore and Inverurie at significant risk. The other main settlements within the corridor of Nairn, Forres, Elgin, Fochabers, Huntly and Blackburn show significant areas of flood risk from various watercourses, including the River Spey and River Deveron. Keith, however, is deemed to be at low risk. Flood protection schemes have been implemented within the corridor, including at Forres, Elgin and Huntly, and a flood study for Inverurie and Port Elphinstone is underway. Coastal flood risk is confined to the coastal settlements within the wider study area of Findhorn, Burghead and Lossiemouth, although the estuary at Findhorn does allow for a greater extent of coastal flood risk inland. There is also some potential coastal flood risk for Nairn.

4.7 Biodiversity

4.7.1 International designations in the study area include four Ramsar wetland sites, eight SPAs and seven SACs, as follows:

- Darnaway and Lethen Forest SPA;
- Inner Moray Firth SPA / Ramsar;
- Loch Flemington SPA;
- Loch of Skene SPA / Ramsar;
- Loch Spynie SPA / Ramsar;
- Moray and Nairn Coast SPA / Ramsar;
- Moray Firth SPA / SAC;
- Tips of Corsemaul and Tom Mor SPA;
- Cawdor Wood SAC;
- Culbin Bar SAC;
- Lower Findhorn Woods SAC;
- Lower River Spey – Spey Bay SAC;
- Mortlach Moss SAC;
- River Spey SAC.

4.7.2 National designations include 43 biological Sites of Special Scientific Interest (SSSIs).

4.7.3 One Local Nature Reserve (LNR), Findhorn Bay, is also located within the study area.

4.7.4 Scottish Ancient Woodland Inventory and Native Woodland Survey of Scotland sites are found throughout the study area, with significant concentrations (primarily of plantation woodland) around Forres and the River Spey.

4.7.5 Undesignated habitats are also important for biodiversity and providing habitat connectivity.

4.8 Geology and Soils

4.8.1 There are seventeen geological and five mixed (biological and geological) SSSIs scattered throughout the study area.

4.8.2 There are many soil types in the study area, ranging from Class 2 and 3 lands capable of producing a wide or moderate range of crops, to poorer quality Class 6 and 7 land of little use for cultivation. The definitions of these agricultural soil Classes are provided in Appendix D.

4.8.3 Some peat deposits are found within the study area, with higher concentrations south-east of the River Spey, from Moray Council area to Aberdeen City.

4.9 Cultural Heritage

4.9.1 The corridor contains four historic battlefield sites; including Culloden to the east of Inverness, the Battle of Auldearn to the east of Nairn, and the Battle of Barra and the Battle of Harlaw close to Oldmeldrum and Inverurie respectively. The Battle of Harlaw site near Inverurie borders the A96 itself. There are a large number of heritage designations throughout the A96 Study Corridor with the A96 itself passing close to a number of Scheduled Monuments, Gardens and Designed Landscapes and passing through Conservation Areas in Elgin, Fochabers and Keith.

4.9.2 Non-designated sites also provide crucial contextual information to help better understand the history and development of the landscape within the study area, as well as the archaeological potential of the area. Aberdeen City, Aberdeenshire, Highland and Moray council areas have approximately 412; 3,092; 2,212 and 5,479 non-designated cultural heritage assets respectively.

4.9.3 There is potential for previously unrecorded cultural heritage assets to be located within the study area, given the area contains known heritage sites and artefacts. Information gathered on both designated and non-designated assets is important for assessing the archaeological potential of the study area.

4.9.4 The designated and non-designated historic landscape and seascape in the study area is also important. The historic landscape has developed as a result of land management, agriculture and settlement patterns.

4.10 Landscape

4.10.1 There are no areas of national landscape protection, such as National Scenic Areas or National Parks, within the A96 Study Corridor although the northern boundary of the Cairngorms National Park is approximately 10km to the south. Within the study area, there are 13 Local Landscape Areas (LLAs) which are regionally valuable landscapes intended to protect and enhance unique and important landscape qualities and encourage the enjoyment of these areas.

4.10.2 There are 30 distinct Landscape Character Types (LCTs) within the study area (NatureScot, 2019).

4.10.3 There are various Tree Preservation Orders (TPOs) scattered through the study area, including several close to the existing A96 for example at Nairn, Keith and Thainstone.

4.10.4 The eastern end of the study area is within the Aberdeen City and Aberdeenshire Greenbelt, the purpose of which is to help avoid coalescence of settlements and sprawling development on the edge of the city, maintain Aberdeen's landscape setting, and provide access to open space.

4.10.5 Whilst the study area does not contain any nationally recognised scenic viewpoints, or nationally designated landscapes, there are visual sensitivities to some types of development within or visible from the Local Landscape Areas. There are also numerous towns, villages and rural properties, along with numerous paths, recreational trails and areas used for outdoor recreation where there is the potential for visual effects to occur.

4.11 SEA Topic Inter-relationships

4.11.1 As set out in the Scottish Government's SEA Guidance (2013), the inter-relationship of environmental effects between the topics will be considered within the SEA. The Guidance states that '*When considering interrelationships and secondary effects, the assessment would only have to consider the effects that can reasonably be attributed to the plan. Interactions arising from external factors, beyond the control of the plan, do not need to be included*.'

4.11.2 Table 4.1 sets out the inter-relationships of environmental effects that could reasonably arise as a result of the A96 Corridor Review interventions/proposals being implemented. These inter-relationships have been tailored to consider only what are considered significant interrelationships for the project. For example, air quality may be expected to have a significant inter-relationship with population and human health, through pollutant emissions in populated areas within the study area.

Table 4.1: Inter-relationships between SEA topics

SEA Topic	Climatic factors	Air quality	Population and human health	Material assets	Water environment	Biodiversity	Soils	Cultural heritage	Landscape and visual amenity
Climatic factors				✓	✓	✓	✓		
Air quality	✓		✓			✓			
Population and human health	✓	✓		✓		✓		✓	✓
Material Assets	✓				✓	✓	✓		
Water environment	✓		✓			✓	✓	✓	✓
Biodiversity	✓	✓			✓		✓		✓
Soils	✓		✓	✓	✓	✓		✓	✓
Cultural heritage	✓		✓				✓		✓
Landscape and visual amenity	✓	✓			✓	✓	✓	✓	

5. Stakeholder Engagement

5.1 Overview

5.1.1 Engaging with Consultation Authorities from the beginning of the SEA process is important as each organisation brings their individual environmental expertise to the assessment process and ensures that the consultation process undertaken by a Responsible Authority is more robust. This in turn means that the public can gain a better understanding of the likely effect of a plan on the environment and meaningfully contribute to the plan's preparation process by offering an informed view (Scottish Government, 2013).

5.1.2 Consultation with the wider public is also undertaken at different stages in the SEA and is crucial for ensuring transparency in the SEA decision-making process.

5.2 Environmental Steering Group

5.2.1 An Environmental Steering Group (ESG) has been established for the A96 Corridor Review. The ESG members and terms of reference broadly follow the approach taken for other Transport Scotland projects, such as the A9 and A96 dualling programmes and their respective SEAs. The first ESG (virtual) meeting took place on 22 April 2022.

5.2.2 The ESG members comprise the following organisations:

- Transport Scotland;
- Jacobs / AECOM;
- The SEA Statutory Consultation Authorities (NatureScot, HES, SEPA);
- Scottish Forestry;
- Local council representatives.

5.2.3 The ESG aims to:

- provide an opportunity for participating organisations to influence the A96 Corridor Review and review emerging design proposals;
- facilitate efficient and effective two-way communication between the A96 Corridor Review project team and the organisations participating in the group;
- provide an opportunity for the organisations participating in the group to discuss any issues relevant to the A96 Corridor Review and SEA.

5.3 Wider Engagement and Public Consultation

5.3.1 Consultation specific to the SEA is required at several stages in line with the Scottish Government's SEA Guidance (2013). As a minimum, the SEA Consultation Authorities listed in Section 1.5.6 are consulted on the need for SEA and the scope of the SEA. The findings of the assessment are outlined in the Environmental Report and a public consultation on the plan (in this case the Corridor Review) and the report must be

carried out before any plan can be adopted. The principal consultation requirements are outlined in Figure 5.1.

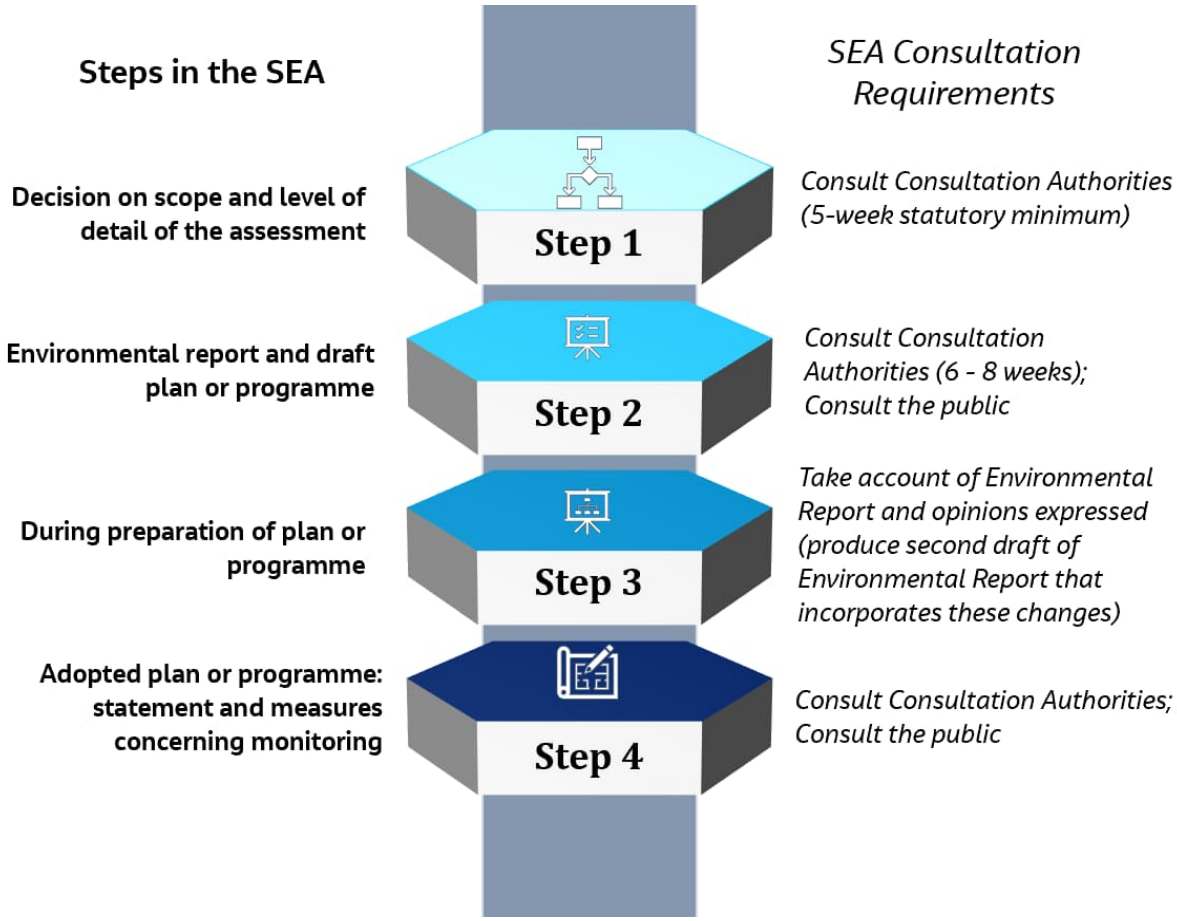


Figure 5.1: SEA Consultation Requirements[1]

5.3.2 The SEA Scoping Report, Environmental Report and Post Adoption Statement will each be placed on Transport Scotland's website for public consultation. They will also be placed on Scotland's SEA Gateway website:

https://www.gov.scot/policies/environmental-assessment/strategic-environmental-assessment-sea/

[1] Adapted from European Commission guidance, paragraph 7.2, and ODPM (2005): A Practical Guide to the SEA Directive (Fig. 3, p.17).

6. Approach to the Assessment

6.1 Assessment Overview

6.1.1 The assessment process will ensure that the SEA influences each stage of the A96 Corridor Review and the selection of preferred transport options. It will facilitate the identification and assessment of reasonable alternatives at an early stage. It will identify any significant environmental effects early enough to effectively avoid or mitigate them.

6.1.2 The assessment of the preferred transport options will take place once any comments from the SEA Scoping Report consultation or from the ESG have been received and any proposed changes to the methodology have been made where necessary.

6.1.3 The SEA process will primarily follow Scottish Government (2013) SEA Guidance and guidance for specific environmental topics, where relevant (refer to Section 6.4). The SEA will broadly align with the SEA being produced for STPR2. The objectives of the NTS2 and STPR2 will be closely considered, as discussed in Chapter 3: Legislative and Policy Context.

6.2 Constraints and Opportunities Mapping

6.2.1 Project Mapper, a Geographic Information Systems (GIS) tool developed by Jacobs, is an interactive mapping tool which shows significant environmental constraints, such as designated sites and cultural heritage assets. The data which feed into the map are gathered from publicly available sources (as outlined in Chapter 4) and through consultation with the Consultation Authorities and other members of the ESG. Project Mapper will be used to determine where environmental constraints are present in relation to the transport options and where there may be opportunities for enhancement. The constraints and opportunities identified fall within a 15km wide corridor (7.5km either side of the existing A96) that was used for the previous SEA, as described in Sections 1.4 and 4.1.

6.3 SEA Objectives

6.3.1 The SEA will utilise a set of SEA objectives that cover each of the environmental topics scoped into the assessment, as outlined below. The SEA objectives were developed on a national basis for the STPR2 SEA. These objectives have been further developed for the A96 Corridor Review SEA, following a comprehensive review of the baseline issues and policy requirements.

The SEA Topics and Objectives include the following:

- Climatic Factors
    - Reduce emissions from Scotland's transport sector by reducing the need to travel and encouraging modal shift and help meet Scotland's wider targets to reduce greenhouse gas emissions;

    - Adapt the transport network to the predicted effects of climate change.
- Air Quality
    - Reduce all forms of transport-related air pollution and improve air quality.

- Population and Human Health
    - Improve quality of life and human health and increase sustainable access to essential services, employment and the natural environment;
    - Reduce noise and vibration associated with the transport network;
    - Promote, invest in, build and maintain infrastructure to support the development of high-quality places;
    - Improve safety on the transport network.

- Material Assets
    - Promote and improve the sustainable use of the transport network;
    - Reduce use of natural resources.

- Water Environment
    - Protect, maintain and improve the quality of water bodies, wetlands and the marine environment from any direct or indirect impacts from the project, and protect against the risk of flooding.

- Biodiversity, Flora and Fauna
    - Protect, maintain and enhance biodiversity and ecosystem services, avoiding damage to or loss of designated and undesignated wildlife or geological sites.

- Soils
    - Safeguard and improve soil quality and geological resources in Scotland, particularly high value agricultural land, protected geological sites and carbon-rich soil.

- Cultural Heritage
    - Protect and enhance (where appropriate) historic and archaeological sites and other culturally and historically important features and their settings.

- Landscape and Visual Amenity
    - Safeguard and enhance the character and diversity of the Scottish landscape and areas of valuable landscape.

6.3.2 SEA Guidance and specific environmental topic guidance identified in Section 6.4 will be used in conjunction with the SEA objectives to assess the transport options. The assessment will be summarised for each SEA topic with a colour-coded scoring of each transport option, as shown in Figure 6.1. This will be accompanied by a narrative that provides the rationale to the scoring. The scoring criteria will be refined as the SEA and A96 Corridor Review process progresses.

Score	Description	Colour coding and symbol
Significant positive effect	The proposed option will have a significant cumulative or isolated positive, or continually improving, environmental effect	++
Minor positive effect	The proposed option will have a minor cumulative or isolated positive effect	+
Insignificant or no effects	The proposed option is related to but does not have any effect on the achievement of the SEA objective	0
Uncertain effect	The proposed option has an uncertain relationship to the SEA topic, or the relationship is dependent on the way in which the aspect is managed. In addition, insufficient information may be available to enable an assessment to be made at this stage.	?
Minor negative effect	The proposed option will have a minor to moderate cumulative or isolated negative effect	-
Significant negative effect	The proposed option will have a significant cumulative or isolated negative effect. Avoidance or mitigation is therefore required.	--

Figure 6.1: Scoring Criteria

6.3.3 Following the assessment, any potentially negative effects identified will be discussed with the project team to consider a reasonable alternative, and effective mitigation or enhancement recommendations. Recommendations will respond not only to direct impacts but also indirect, secondary and additive effects, collectively considered as cumulative effects (Scottish Government, 2013).

6.3.4 Cumulative effects will be considered at both intra-plan (the impact of a combination of options) and the inter-plan (the impact of the plan alongside other plans and

policies). The inter-plan assessment will be undertaken towards the end of the assessment, when the preferred transport options are available to consider alongside relevant national level policy/strategy, including the National Planning Framework (NPF4) and the Scottish Government's updated Climate Change Plan.

6.3.5 For the Environmental Report, SEA topic inter-relationships, as described in Section 4.11, will be explored in more detail in relation to the project's SEA baseline data.

6.4 Topic-Specific Methodology

6.4.1 Detailed baseline information has been collated for each of the SEA topics and is presented in Appendix D of this SEA. The baseline data helps to identify key potential impacts as early in the strategic process as possible.

6.4.2 Details of the assessment approach and methods to be adopted for some of the SEA topics in the SEA are outlined in Figure 6.2. Where topics are not listed in Figure 6.2, the standard SEA guidance (Scottish Government, 2013), which covers all SEA topics, has been used.

Climatic Factors

Applicable guidance

- DMRB LA 114 (National Highways, 2021)
- Publicly Available Specification (PAS) 2080: Carbon Management in Infrastructure (BSI, 2016)

Assessment approach / methodology proposed for SEA

Desk-based qualitative assessment to determine the potential impacts on climate mitigation and climate adaptation. A qualitative narrative will be used to answer the following assessment questions:

Will the option/proposal help to:

- Contribute to achievement of Scotland's CO_2 emissions reduction target of net zero by 2045?
- Promote and facilitate reduction of car kilometres travelled and modal shift to more sustainable transport options?
- Promote the use of alternative fuel and/or electric vehicles?

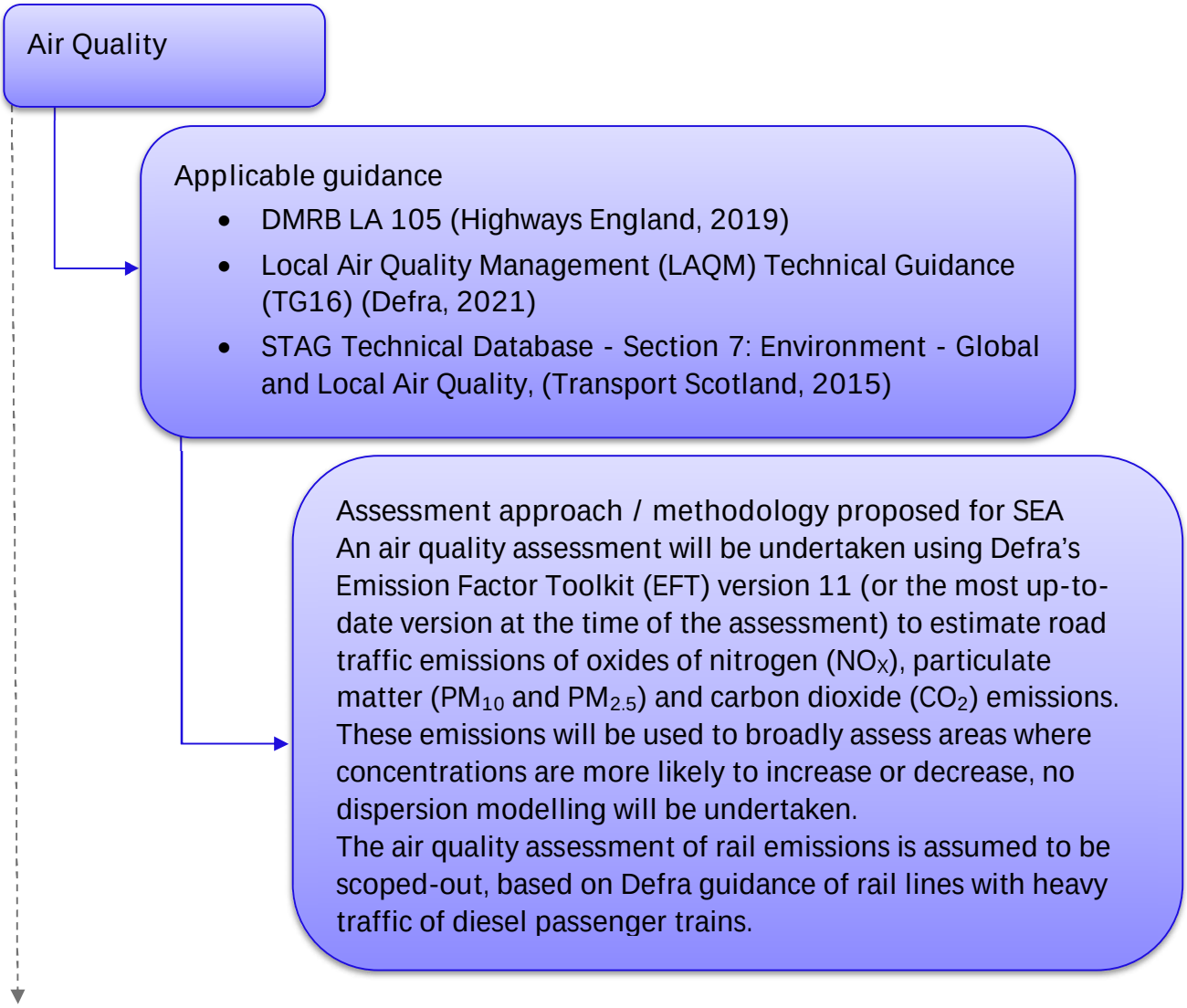
A qualitative assessment of emissions arising during construction and operation from the option will be undertaken. Where traffic modelling allows, and road user GHG emissions data is available, a description of the road user emissions impact as a result of each option will be provided.

A qualitative narrative will be used to answer following assessment questions in relation to climate adaptation:

Will the option/proposal help to:

- Help adapt the transport network to direct and indirect risks associated with climate change projections for Scotland?
- Ensure the potential risks associated with climate change are considered through new transport network programmes?
- Improve and extend green infrastructure networks as part of transport infrastructure provision to support adaptation to the potential effects of climate change?

The climate assessment will identify climate constraints to be considered in the transport option analysis.


Air Quality
Applicable guidance
DMRB LA 105 (Highways England, 2019)
Local Air Quality Management (LAQM) Technical Guidance (TG16) (Defra, 2021)
STAG Technical Database - Section 7: Environment - Global and Local Air Quality, (Transport Scotland, 2015)
Assessment approach / methodology proposed for SEA
An air quality assessment will be undertaken using Defra's Emission Factor Toolkit (EFT) version 11 (or the most up-to-date version at the time of the assessment) to estimate road traffic emissions of oxides of nitrogen (NO_X), particulate matter (PM_{10} and $PM_{2.5}$) and carbon dioxide (CO_2) emissions. These emissions will be used to broadly assess areas where concentrations are more likely to increase or decrease, no dispersion modelling will be undertaken.
The air quality assessment of rail emissions is assumed to be scoped-out, based on Defra guidance of rail lines with heavy traffic of diesel passenger trains.

Water Environment

Applicable guidance

- Guidance on consideration of water in Strategic Environmental Assessment (LUPS-SEA-GU3) (SEPA 2019a)
- Strategic Flood Risk Assessment: SEPA technical guidance to support development planning (SEPA 2015)
- DMRB LA113 (Highways England *et al.* 2020d)

Assessment approach / methodology proposed for SEA
Desk-based assessment to:

- Identify and map fluvial, surface water and coastal flood risk areas.
- Identify and provide a high-level assessment of the potential flood risk constraints likely to affect / be affected by the proposed options.
- Identify WFD classified water bodies which may be affected by the proposed options, providing an indication and pressures which may affect current status.
- Approximate the number of minor watercourses which may be affected by the proposed transport options.
- Details on the status of any designated waters, such as bathing waters, drinking water protected areas, groundwater, nutrient sensitive areas, and water dependent areas.

This will identify any such constraints to be considered in the transport option analysis and provide an understanding of the key issues and potential impacts associated with the options.

The outputs from the flood risk elements will detail design and assessment criteria to assist in future stages of the process (DMRB Stages 2 and 3).

Biodiversity, flora and fauna

Applicable guidance

- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018)
- DMRB LD118 (Highways England *et al*., 2020a)
- DMRB LA104 (Highways England *et al.,* 2020b)
- DMRB LA 108 (Highways England *et al.,* 2020c)
- Communication from the Commission on the
- Precautionary Principle (European Commission, 2000)
- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission, 2001)
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Clarification of the Concepts of: Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion of the Commission (European Commission, 2007)
- Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (European Commission, 2019)

Assessment approach / methodology proposed for SEA

A high-level desk-based assessment will be conducted to identify potential effects of transport options on habitats and protected species.

A separate strategic HRA will be conducted to identify any likely significant effects on European designated sites and Ramsar wetlands.

Both assessments will identify biodiversity constraints and opportunities to be considered in the transport option analysis.

Cultural Heritage

Applicable guidance

- Historic Environment Policy for Scotland (HES, 2019)
- HES Managing Change in the Historic Environment guidance notes

Assessment approach / methodology proposed for SEA

The SEA will consider the content of the Historic Environment Policy report and its six principal policies in the cultural heritage baseline and assessment of transport options.

The HES 'Managing Change…' series of guidance notes will be used to assess impacts on specific heritage assets where applicable.

The approach proposed for cultural heritage in the SEA comprises the following key tasks:

- Constraints-led analysis of a 15km buffer area, using an interactive mapping tool in conjunction with a list of heritage designations already provided by HES.
- Use of a SEA objective for cultural heritage (refer to Section 6.3), supported by underlying 'guide' questions to assess the transport options.
- Identify any dense grouping of non-designated sites and areas to form 'key hotspots' for cultural heritage assessment to be undertaken on a qualitative basis where it clearly informs transport option comparisons.
- Commentary on the potential for significant effects on cultural heritage (both direct and indirect) from development of any transport options.
- Existing Landscape Character Assessments, as described in the Landscape and Visual Amenity baseline, will be used to inform any potential impacts on historic landscape.
- Consideration of any avoidance, mitigation and enhancement opportunities for cultural heritage assets.

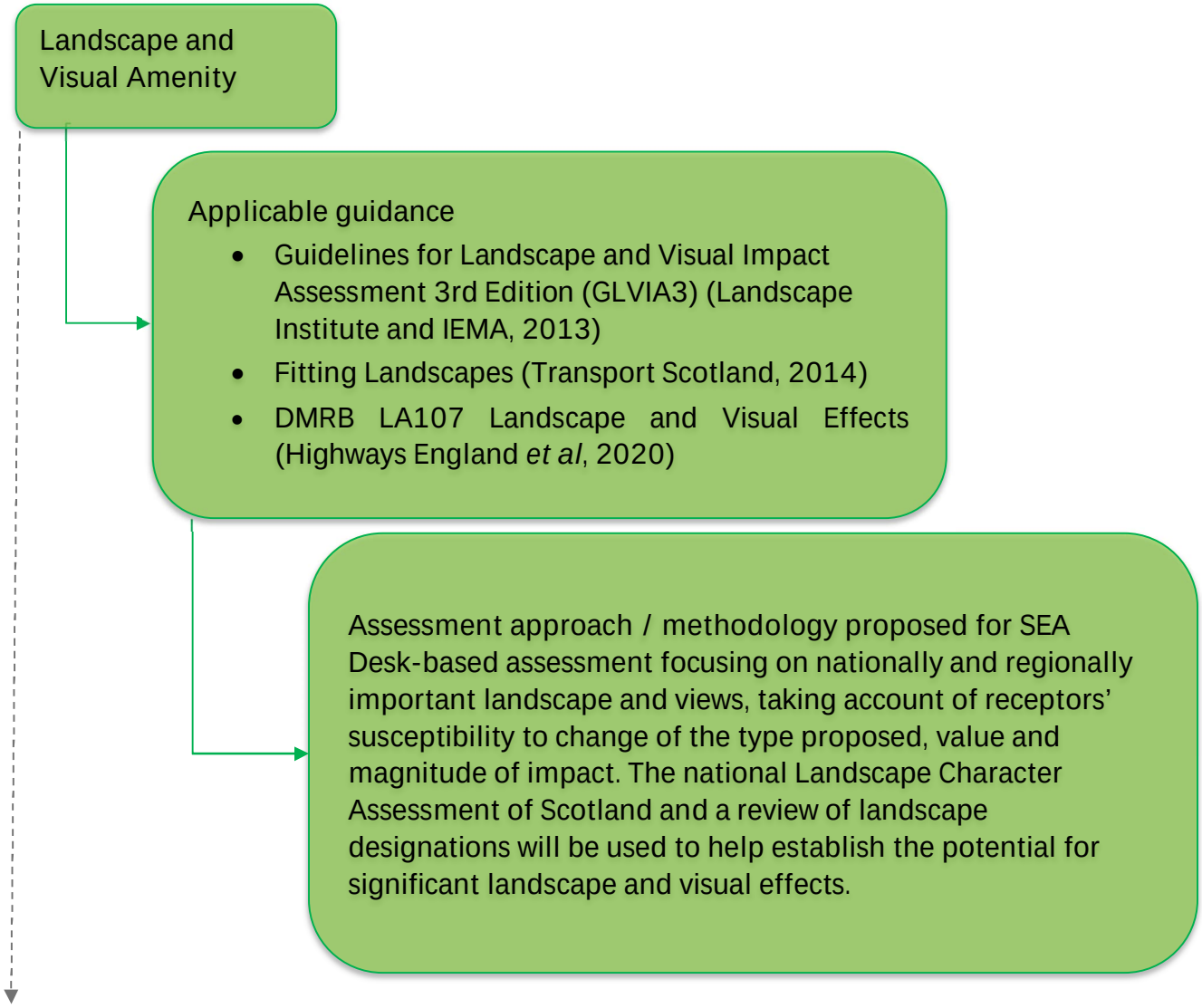


Figure 6.2: Assessment approach / methodology for selected SEA topics

6.5 SEA Environmental Report

6.5.1 Following the SEA assessments, relevant findings and recommendations will be recorded in summary form, for inclusion in the SEA Environmental Report, with assessment matrices provided in appendices to aid transparency.

6.5.2 In line with the requirements set out in the Environmental Assessment Act 2005, the Environmental Report will contain:

1. An outline of the contents and main objectives of the A96 Corridor Review, and its relationship (if any) with other plans and programmes.
2. The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the A96 Corridor Review.
3. The environmental characteristics of areas likely to be significantly affected.
4. Any existing environmental problems which are relevant to the A96 Corridor Review, including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directive 2009/147/EC on the conservation of wild birds and Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna (as last amended by Council Directive 97/62/EC).
5. The environmental protection objectives, established at International, Community or Member State level, which are relevant to the A96 Corridor Review and the way those objectives and any environmental considerations have been taken into account during its preparation.
6. The likely significant effects on the environment, including:
    (a) on issues such as - biodiversity; population; human health; fauna; flora; soil; water; air; climatic factors; material assets; cultural heritage, including architectural and archaeological heritage; landscape; and the inter-relationship between these issues;
    (b) short, medium and long-term effects;
    (c) permanent and temporary effects;
    (d) positive and negative effects;
    (e) secondary, cumulative and synergistic effects.
7. The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the A96 Corridor Review (mitigation measures).
8. An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of expertise) encountered in compiling the required information.
9. A description of monitoring measures envisaged, focusing on any significant environmental effects identified. A draft monitoring framework, including indicators, will be provided in the Environmental Report, but will be finalised in the Post Adoption Statement, as described in Section 1.5.

10. A non-technical summary of the key findings of the SEA.

6.6 Approach to Mitigation and Monitoring

6.6.1 The environmental assessment will aim to prevent, reduce or offset any significant adverse effects as far as possible, before mitigation measures are proposed. Undertaking the SEA process alongside the A96 Corridor Review development process will help ensure that modifications can be made at the strategic level, via alternatives and identifying issues which can be addressed through other relevant PPS policies/strategies. Where location-specific mitigation requirements are identified, these will be described with appropriate recommendations for implementation at a project level.

6.6.2 In addition to mitigation measures, recommendations for enhancement opportunities will be provided wherever possible.

6.6.3 The mitigation measures and enhancement opportunities will consider:

- the environmental baseline data provided in Appendix D;
- the environmental requirements emerging from the PPS review, provided in Figure 3.1;
- the SEA Objectives provided in Section 6.3;
- feedback received from Transport Scotland's online public consultation described in Section 5.3;
- key issues and opportunities identified during the continuing development of the A96 Corridor Review, SEA and HRA;
- ongoing feedback from the SEA Consultation Authorities.

6.6.4 A draft, high-level monitoring framework will be developed as part of the Environmental Report and will be finalised within the Post Adoption Statement. The monitoring framework will also be discussed and agreed with the SEA Consultation Authorities.

7. Next Steps

7.1 Consultation and Milestones

7.1.1 Comments can be provided by email to: A96CorridorReview@jacobs.com; by phone on 07506 879562; or by post to: [Transport Scotland, Buchanan House, 58 Port Dundas Road, Glasgow, G4 0HF].

7.1.2 Transport Scotland seeks comments on the following:

1. Does the review of key relevant Plans, Programmes and Strategies (PPS) (Appendix C) provided in this report adequately address all relevant strategic environmental issues related to the A96 Corridor Review?
2. Do the environmental constraints plans (Appendix B) and the baseline evidence base (Appendix D) identify all relevant environmental issues which should be considered for the A96 Corridor Review, or do additional issues need to be considered?
3. Does the methodological approach (Chapter 6), including the proposed Assessment Framework of SEA objectives (Section 6.3) provide an appropriate basis to undertake the SEA of the A96 Corridor Review as it develops?

7.1.3 The specific dates are yet to be confirmed for the remaining SEA stages. However, the key milestone for the SEA following scoping is the appraisal of options / SEA assessment and completion of the Draft Environmental Report for consultation, which is expected to report by the middle of 2023.

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Appendix A: SEA Screening Report

Appendix B: Environmental Figures

Appendix C: Plans, Programmes and Strategies Review

Appendix D: Environmental Baseline

D1 Climatic Factors

D1.1. GHG Emissions Baseline

In 2019, domestic transport[2] was the largest source of net emissions in Scotland at 12MtCO_2e (Scottish Government, 2021e). According to the Scottish Transport Statistics 2021, transport accounted for 29.2% of Scotland's total greenhouse gas emissions in 2019. The largest source of transport emissions is cars at 38%, followed by HGVs at 25%, and aviation at 16% (Transport Scotland, 2021). In addition, 25% of emissions were generated by a combination of LGVs & HGVs. The proportion of single occupancy car trips also shows an underlying increasing trend, with 66% in 2018 compared with a figure of 65% in 2013 and 60% in 2008 (Transport Scotland 2020).

D1.2. GHG Emissions Evolution of the Baseline and Trends

The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 amended the greenhouse gas emissions targets in the Climate Change (Scotland) Act 2009 and set a 'net zero' target emissions year of 2045 by which time emissions are to be 100% lower than the baseline year of 1990.

To facilitate delivery of the long-term targets, Scotland's climate change legislation also includes annual targets for every year to net zero. The levels of these targets are set out in Table D1.1 (Scottish Government, 2021f).

Table D1.1: Scotland's annual GHG reduction targets

Year	Percentage reductions from the 1990/1995 baseline
2018	54.0%
2019	55.0%
2020 (interim target)	56%
2021	57.9%
2022	59.8%
2023	61.7%
2024	63.6%
2025	65.5%
2026	67.4%
2027	69.3%
2028	71.2%

[2] Transport (excluding International Aviation and Shipping) - Emissions from domestic aviation, road transport, railways, domestic navigation, fishing and aircraft support vehicles.

Year	Percentage reductions from the 1990/1995 baseline
2029	73.1%
2030 (interim target)	75%
2031	76.5%
2032	78.0%
2033	79.5%
2034	81.0%
2035	82.5%
2036	84.0%
2037	85.5%
2038	87.0%
2039	88.5%
2040 (interim target)	90%
2041	92.0%
2042	94.0%
2043	96.0%
2044	98.0%
2045	100% (net-zero emissions)

Various policies, including the Climate Change Plan, have since been implemented to facilitate and encourage the required reduction in emissions by 2045 (Scottish Government, 2020a). Key proposals include vehicle technology improvement (increased uptake of electric and low carbon vehicles), alternative fuels, and demand management and behaviour change with a shift towards sustainable travel modes (walking, cycling and public transport); all of which will reduce emissions from the transport sector over the coming decades.

A key component of Scotland's climate change strategy is to encourage a shift to more sustainable forms of transport, away from private vehicles. The COVID-19 pandemic has caused a dramatic fall in travel generally. This has included a decline in the use of public transport due to the inability to socially distance. It may take several years for public transport demand to return to pre-pandemic levels, which may hamper efforts to reduce private vehicle use. The long-term trends for public transport and vehicular travel remain uncertain, and it is currently unclear whether there would be an increase or reduction in greenhouse gases as a result.

D1.3. Climate Change Baseline

There is consensus in the scientific community that anthropogenic climate-change poses an ongoing threat to the planet. The uninhibited consumption of fossil fuels since

the industrial revolution has steadily increased the atmospheric concentration of greenhouse gases to unprecedented levels. This increasing concentration has amplified the 'greenhouse effect' where the carbon dioxide (CO_2) traps heat from the sun, resulting in higher average global temperatures. A minor increase in global temperature threatens to imbalance delicate tipping points, causing uncontrollable and irreversible changes to ecosystems, such as melting permafrost that would release significant amounts of methane and the melting of polar ice caps, causing sea-level rise.

The Climate Projections report (Adaptation Scotland, 2021) indicates that over the last few decades, Scotland has experienced a warming trend, shifting rainfall patterns, and rising sea levels. Key changes include:

- Scotland's 10 warmest years on record have all occurred since 1997. The average temperature in the last decade (2010-2019) was 0.69°C warmer than the 1961-1990 average, and the warmest year on record was 2014.
- There has been an increase in rainfall over Scotland in the past few decades (with an increasing proportion of rainfall coming from heavy rainfall events). The annual average rainfall in the last decade (2010-2019) was 9% wetter than the 1961-1990 average, with winters 19% wetter.
- Mean sea level around the UK has risen by approximately 1.4 mm/year from the start of the 20th century.

Historic climate data for the study area has been obtained from the Met Office (Met Office, 2022a) recorded by the closest meteorological station to the A96 corridor (Nairn, location: 57.593, -3.821) for the period 1981-2010 and is presented in Table D1.2.

Table D1.2: Historic Climate Data for climate station: Nairn, 1981-2010

Climatic Variable	Month	Value
Average annual maximum daily temperature (o C)	n/a	12.02
Warmest month on average (° C)	July	18.66
Coldest month on average (° C)	December	0.45
Mean annual rainfall levels (mm)	n/a	606.86
Wettest month on average (mm)	October	67.37

The Met Office historic 10-year averages from the stations in Kinloss, Keith and Aberdeen Airport identify gradual warming and increased rainfall between 1961 and 2020 in the study area (Met Office, 2022b). Information on mean maximum annual temperatures and mean annual rainfall recorded by the meteorological stations within the study area which are: Kinloss, Keith and Aberdeen Airport is summarised in Table D1.3.

Table D1.3: Historic 10-year Averages for Temperature and Rainfall

Climate station:	Kinloss		Keith		Aberdeen Airport	
Climate Period	Mean Maximum annual temperatures (°C)	Mean Annual Rainfall (mm)	Mean Maximum annual temperatures (°C)	Mean Annual Rainfall (mm)	Mean Maximum annual temperatures (°C)	Mean Annual Rainfall (mm)
1961-1990	11.91	620.61	11.18	876.42	11.48	790.13
1971-2000	12.15	624.36	11.41	845.34	11.74	799.89
1981-2010	12.39	664.64	11.68	883.63	11.96	814.93
1991-2020	12.67	662.68	12.01	888.75	12.21	832.55

Between 2016 and 2021, the trunk road maintenance company Management of Incidents (MOI) Database shows that adverse weather (flooding and snow) was responsible for a combined six percent of closures on the A96 directly, though could also be responsible for some of the other road closure causes, such as debris (one percent), and landscaping/fallen/overhanging branches (two percent) (Jacobs/ AECOM, 2022c). Such incidents may be exacerbated with climate change in the future.

D1.4. Climate Change Evolution of the Baseline and Trends

The effects of climate change are expected to continue to exacerbate, even as Scotland transitions to a low-carbon economy. Climate change projections indicate that the climate trends observed over the last century will continue and intensify over the coming decades.

Key long-term climate change trends for Scotland are that average temperatures will increase across all seasons. Typical summers will be warmer and drier, winters will be milder and wetter and sea levels will rise. Heavy rainfall events will become more frequent in the coming decades, exacerbating flooding and landslide incidents (Adaptation Scotland, 2021).

Climate change has the potential to increase the occurrence of extreme weather events in the study area, with increases in mean summer and winter temperatures, increases in mean precipitation in winter and decreases in mean precipitation in summer. This is likely to increase the risks associated with climate change, with an increased need for resilience and adaptation.

The weather will remain variable and may become more variable, as the amount of change that occurs will depend on the level of reduction in greenhouse gas emissions globally.

The future baseline data is based on UK Climate Projections 2018 (UKCP18) data from the Met Office (2018). UKCP18 uses a range of possible scenarios, classified as Representative Concentration Pathways (RCPs)3, to inform differing future emission trends. These RCPs "… *specify the concentrations of greenhouse gases that will result in total radiative forcing increasing by a target amount by 2100, relative to preindustrial levels*." RCP8.5 has been used for the purposes of this assessment as a worst-case scenario - this is the UK Government's recommended approach.

Temperatures

The obtained projections for temperatures changes do not materially vary across the 25km grids within the study area. Table D1.4 presents data from the 25km grid in the central part of the study area, as per Figure D1.1 and can therefore be applied to the whole study area.

[3] Representative Concentration Pathways (RCPs) are used in the process of modelling possible future climate evolution. They capture assumptions about the economic, social and physical changes to environment that will influence climate change within a set of scenarios. RCPs Radiative forcing targets for 2100 have been set at 2.6, 4.5, 6.0 and 8.5 watts per square metre and these targets are incorporated into the names of the RCPs; RCP2.6, RCP4.5, RCP6.0 and RCP8.5. Each pathway results in a different range of global mean temperature increases over the 21st century.

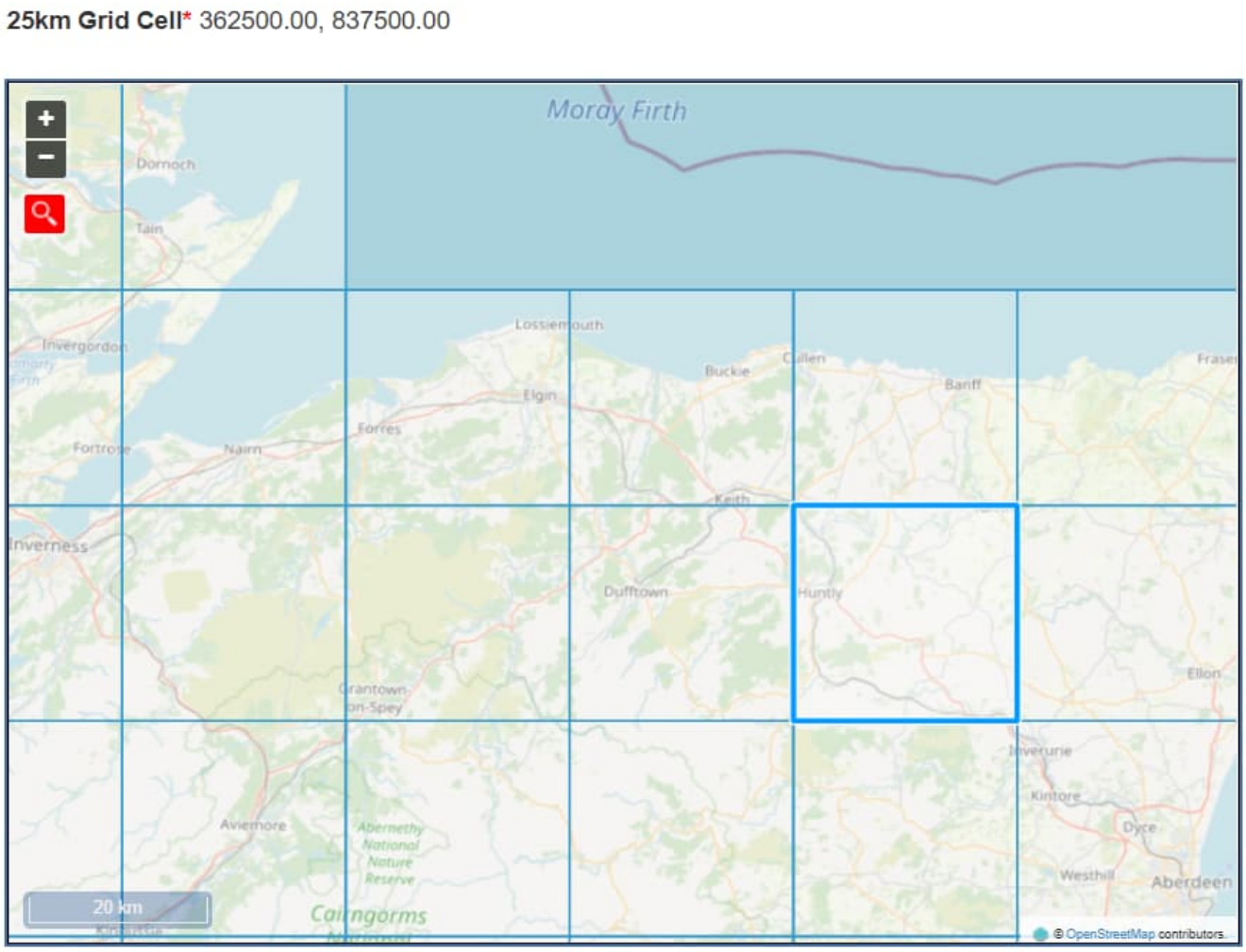

Figure D1.1: 25km grid in the central part of the study area.

These figures are expressed as temperature/precipitation anomalies in relation to the 1981-2010 baseline. The figures in bold are the central estimate (50th percentile). The figures below are the range of change that is considered likely (10th – 90th percentile).

Table D1.4: Temperature Variables (°C), 50% Probability (10% and 90% probability in parenthesis) for 25km grid square within the central part of the study area

Climate Variable	2020-2049	2040-2069	2070-2099
Change in mean annual air temperature anomaly at 1.5 m (°C)	+0.89 (+0.35 to +1.48)	+1.56 (+0.67 to +2.53)	+3.04 (+1.52 to +4.69)
Change in mean summer air temperature anomaly at 1.5 m (°C)	+0.81 (+0.10 to +1.52)	+1.54 (+0.31 to +2.82)	+3.22 (+1.09 to +5.48)

Climate Variable	2020-2049	2040-2069	2070-2099
Change in mean winter air temperature anomaly at 1.5 m (°C)	+0.91 (-0.09 to +1.94)	+1.52 (+0.28 to +2.82)	+2.82 (+0.95 to +4.86)
Change in maximum summer air temperature anomaly at 1.5 m (°C)	+0.77 (-0.11 to +1.69)	+1.59 (+0.03 to +3.19)	+3.40 (+0.76 to +6.18)
Change in minimum winter air temperature anomaly at 1.5 m (°C)	+0.87 (-0.11 to +1.94)	+1.50 (+0.26 to +2.95)	+2.83 (+0.80 to +5.20)

Precipitation

Table D1.5 presents precipitation data from the 25km grid in the eastern part of the study area (see Figure D1.2) which had the highest precipitation values. The figures in bold are the central estimate (50th percentile). The figures below are the range of change that is considered likely (10th – 90th percentile).

25km Grid Cell* 387500.00, 812500.00

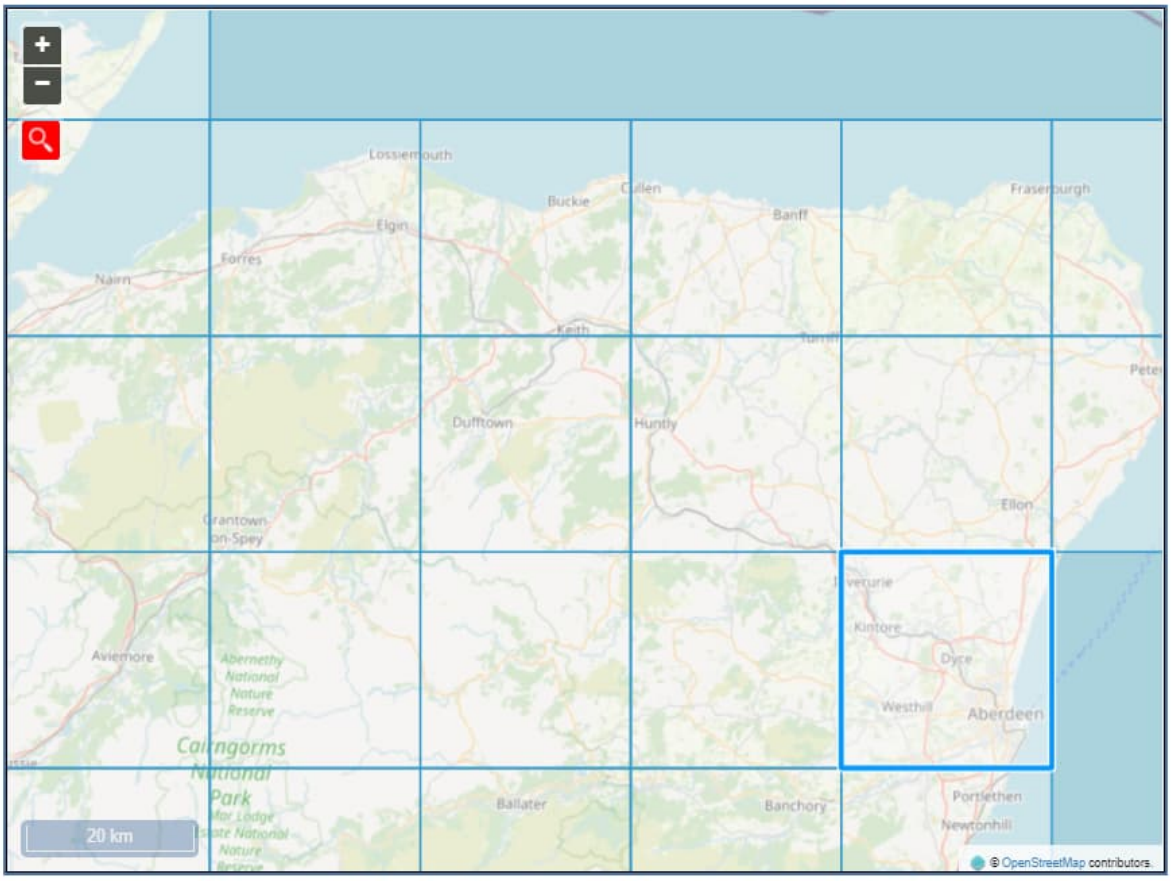

Figure D1.2: 25km grid in the eastern part of the study area.

Table D1.5: Precipitation Variables (%), 50% Probability (10% and 90% probability in parenthesis) for 25km grid square in which eastern part of the study area is located.

	2020-2049	2040-2069	2070-2099
Change in annual precipitation rate anomaly (%)	+5.26 (-0.59 to +11.12)	+4.43 (-3.28 to +12.26)	+6.21 (-3.12 to +15.72)
Change in summer precipitation rate anomaly (%)	-1.07 (-9.89 to +7.70)	-8.47 (-22.31 to +5.26)	-16.53 (-36.14 to +1.94)
Change in winter precipitation rate anomaly (%)	+16.88 (+1.50 to +33.75)	+20.92 (-0.17 to +44.14)	+33.13 (+0.75 to +70.04)

Sea level

Climate change will exacerbate flood events, with rising sea levels increasing the risk of coastal flooding. More frequent, high-intensity rainfall will increase the risk of flash flooding from surface water or sewers for inland communities. Increased frequency and intensity of rainfall may also result in greater risk of river flooding due to higher river flow volumes and flashier flow regimes.

A changing climate is also expected to have ecological impacts, such as warmer sea temperatures and an increasing rise of non-native species spreading and becoming established in aquatic environments.

UKCP18 probabilistic projections have been analysed for the 25 km grid square for the coastline locations within the study area. Projected sea level doesn't vary significantly within the 25km grids in the coastline locations in the study area. Table D1.6 presents data from the selected 25km grid, as per Figure D1.3, which can be applied to the areas of coastline throughout the whole study area.

Coastal Location (latitude(N), longitude(E)):* 57.17, -2.08

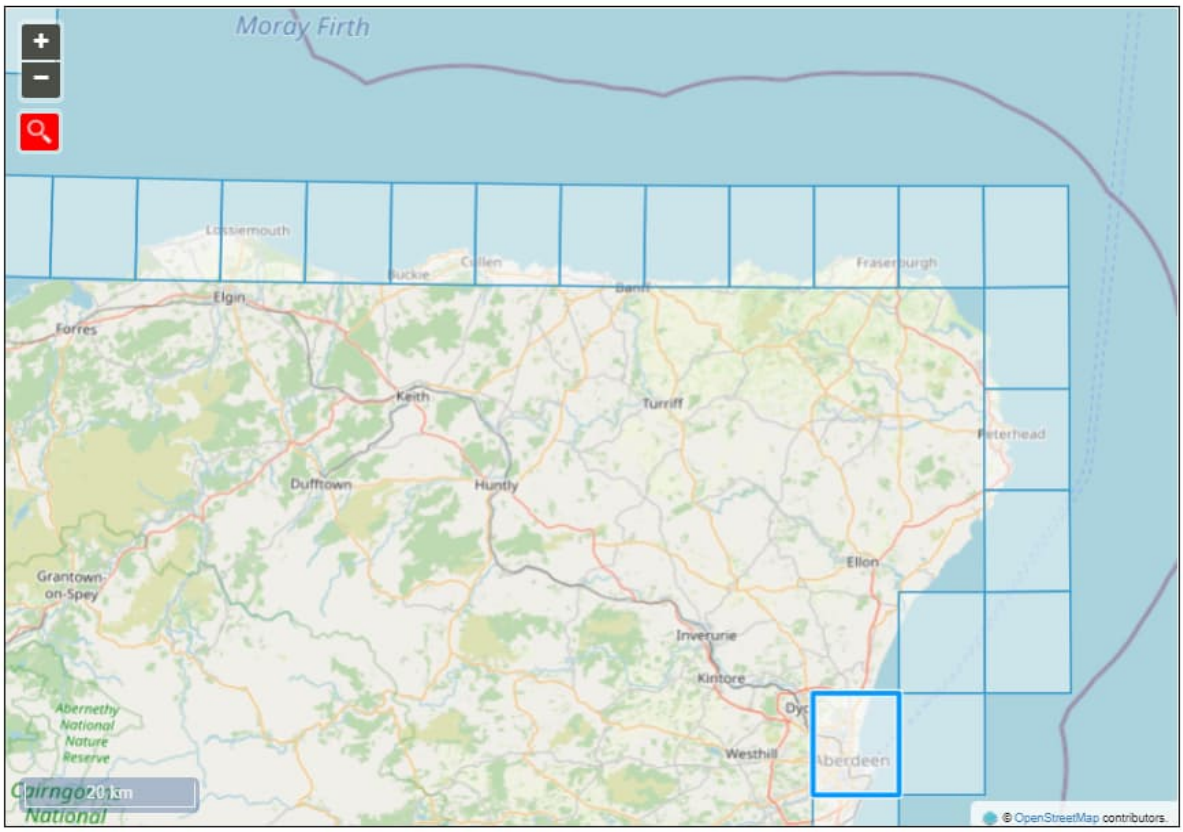

Figure D1.3: 25km grid for the coastal location.

Table D1.6: Projected Changes in Sea Level Rise for coastline location (m) (5% and 95% probability)

	2020-2049[4]	2040-2069	2070-2099
Changes in Sea level (m)	+0.13 to +0.36	+0.13 to +0.36	+0.26 to +0.72

D1.5. Inter-relationships with other SEA topics

There can be considerable benefits in considering Climatic Factors alongside other topics within the SEA. It provides the opportunity for win-wins when applying ecosystem-based approaches when developing climate mitigation and adaptation, avoiding actions that have no adaptive capacity or reduce the resilience of other measures (EU Commission, 2013).

Table D1.7 presents the inter-relationships identified between Climatic Factors and the other SEA topics.

[4] For other 25km grids for coastline locations within the study area: the change for period 2020-2049 was +0.07 to +0.19, which is lower to presented D1.7.

Table D1.7: Inter-related SEA topics

SEA Topic	Relationship with other SEA topics
Biodiversity	Grassland habitats, forestry and peatland within the corridor have significant carbon sequestration value but are also important for biodiversity. Any positive or negative effects of the A96 Corridor Review on these natural assets would therefore affect both SEA topics.
Soils	Soils may be altered by changes to rainfall patterns, erosion and increased temperatures due to climate change, while the release of CO_2 sequestered in peat soils from development contributes to climate change. Peatland conservation is therefore essential for climate change mitigation.
Material Assets	The materials required to construct any transport options have embodied carbon emissions that will be released in the manufacture of components of the infrastructure. The natural material assets within the route corridor including forestry and peat soils, which hold a high carbon sequestration and sink value.
Water environment	Climate Change projections indicate that this region will experience wetter winters and more regular high intensity rainfall events which could affect the resilience of the corridor.

D2 Air Quality

D2.1. Baseline

Poor air quality can have detrimental impacts on human health and quality of life. Air pollution stems from the release of substances into the atmosphere from a variety of sources, including organic and man-made sources. Despite this, air quality is still a concern for many in the country, particularly those living in urban and industrial areas. Poor air quality can result in human health conditions such as asthma, respiratory problems and cardiovascular disease (Royal College of Physicians, 2016), discussed further below in Section D.3 (Population and Human Health). The UK government estimates that air pollution reduces the life expectancy of every person in the UK by 7-8 months, with related costs of up to £20 billion to the economy annually (Air Quality in Scotland, 2019).

Transport is a significant contributor to nitrogen oxide (NO_x) and particulate matter (PM_{10} and $PM_{2.5}$) emissions and the transport sector is the most significant source of air pollution in the UK (Department for Transport, 2021). Transport generates just over one-sixth of Scotland's total particulate matter and over one-third of the total emissions of NO_x. The majority of these emissions are caused by road transport. Emissions of NO_x from road transport are reducing but not at the expected rate (Scottish Government 2016; 2021c).

A set of Air Quality Standards and Objectives have been developed in Scotland for several pollutants of concern for human health (Scottish Air Quality, 2020a). Air Quality Management Areas (AQMAs) are designated by local authorities to cover areas where Air Quality Strategy Objectives (AQOs) in relation to harmful objectives are not (or are unlikely to be) met. Where an AQMA is declared, local authorities are required to develop and implement a plan to improve air quality in the AQMA (Scottish Air Quality, 2020b).

A review of air quality monitoring data collected within the corridor between 2015 and 2019 for the administrative areas of Moray (Moray Council, 2020) and Aberdeenshire (Aberdeenshire Council, 2021), show that the annual mean concentrations of nitrogen dioxide (NO_2) remained stable and well below the AQO across the years reviewed. The highest monitored concentrations in 2019 within Moray and Aberdeenshire were 22.7µg/m^3 and 25.9µg/m^3 respectively, which were substantially below the annual mean NO_2 AQO of 40µg/m^3. Air quality within the Highland Council area also is generally good with the exception of the existing AQMA declared for the potential exceedance of NO_2 within Inverness City Centre. Inverness City Centre is beyond the corridor area. The highest 2019 NO_2 concentration within the Highland Council A96 corridor was 33µg/m^3; again, below the annual mean NO_2 AQO (Highland Council, 2020). There is one AQMA declared at the far eastern end of the corridor within the Aberdeen City Council administrative area. This is the Anderson Drive AQMA, declared for the potential exceedance of the annual mean NO_2 and PM_{10} AQOs. The AQMA encompasses Haudagain Roundabout and Auchmill Road on the northern fringes of Aberdeen and includes the junction between the A96 and A92. The highest concentration relevant to public exposure in 2019 within the corridor is 38µg/m^3, which does not exceed the NO_2 AQO (Aberdeen Council, 2021). Whilst there is no PM_{10} monitoring data within the A96 corridor area, PM_{10} monitoring is undertaken within the wider Aberdeen City area. The highest PM_{10} concentration in 2019 was 14µg/m^3, which is the highest within all the local authorities considered and is below the annual mean AQO of 18µg/m^3. The highest $PM_{2.5}$ concentration in 2019 within all of the local authorities considered is 8µg/m^3 (data capture <75%) and is below the annual mean AQO of 10µg/m^3.

Mapped background annual mean concentrations of NO_x, NO_2, PM_{10} and $PM_{2.5}$, based on a 2018 reference year, projected to 2022, were obtained from the LAQM support tools provided by Defra (Defra, 2020) for use in air quality assessments. The backgrounds are provided for the UK as a 1km x1km grid network. A summary of the minimum and maximum background concentrations across the study area for the current year (2022) is provided in Table D2.1.

Table D2.1: Background concentrations throughout the study area for 2022

Pollutant	AQO (µg/m^3)	2022 Mapped Annual Mean Background (µg/m^3)	
		Minimum	Maximum
NO_X	30	1.9	43.5
NO_2	40	1.6	26.9

Pollutant	AQO ($\mu g/m^3$)	2022 Mapped Annual Mean Background ($\mu g/m^3$)	
		Minimum	Maximum
PM_{10}	18	5.2	11.6
$PM_{2.5}$	10	3.2	6.7

Bold indicates exceedance of the relevant AQO

Current year (2022) background concentrations are below the relevant annual mean AQO, with the exception of the maximum NO_x concentration, which is set for the protection of vegetation and ecosystems.

Pollution Climate Mapping

The Pollution Climate Mapping (PCM) model was developed to report on compliance with European Air Quality Directive (EU Directive 2008/50/EC)) Limit Values by the Department for Environment, Food & Rural Affairs (Defra) (Defra, 2022). These Limit Values are still relevant for assessing compliance post-Brexit (UK Government, 2020) as they have been transposed into UK law (UK Government, 2010).

The PCM model has been reviewed to assess whether the sections of the A96 and study area are likely to comply with the EU Limit Values. There are a number of PCM links that correspond to the study area where current (2022) roadside annual mean NO_2 concentrations are predicted to be between $3.5\mu g/m^3$ and $35.2\mu g/m^3$. Based on these Defra PCM forecasts, concentrations are predicted to be compliant with Limit Values.

D2.2. Evolution of the Baseline and Trends

As air quality concentrations are below the AQOs and limit values, air quality is not considered a key constraint, with the possible exception of the ecological sites discussed above, due to the largely rural nature of the area. Principal sources of air pollution within the corridor are likely to comprise traffic-related emissions from the A96 itself.

In terms of trends, road traffic emissions are likely to reduce in future years due to increasing numbers of low emission vehicles on the roads, such as the greater prevalence of electric vehicles.

The sustainable public transport initiatives proposed should assist in the decarbonisation of transport and reducing vehicle emissions. These should support wider Scottish Government objectives, particularly those seeking to improve health, through improving air quality and encouraging a modal shift away from private vehicle usage towards public transport and active travel.

D2.3. Inter-relationships with other SEA topics

Table D2.2 presents the inter-relationships identified between air quality and the other SEA topics.

Table D2.2: Inter-related SEA topics

SEA Topic	Relationship with other SEA topics
Climatic Factors	Air quality and climate change are inherently linked. Extreme weather events as a result of climate change can negatively impact air quality. For example, during heat waves, areas of high pressure create stagnant air that concentrates air pollutants in one area, and dry, dusty air during hot weather periods increases the level of particulate pollution. It is not expected that the A96 Corridor Review would result in an inter-relationship between air quality and climate change that would result in significant effects.
Population and Human Health	The link between air pollution and poor health has been set out in this assessment and is also discussed in Appendix D (Section D.3: Population and Human Health). There is potential for inter-relationships to arise with air quality and other population effects; for example, noise and vibration, visual impacts, or impacts on accessibility. A combination of impacts arising as a result of the A96 Corridor Review has the potential for cumulative effects on population receptors; such effects will be considered throughout design development and reduced where practicable through appropriate mitigation measures.
Biodiversity	In relation to ecological receptors, air pollution can impact on the functioning of ecosystems; for example, the growth of trees and other fauna can be affected by acid and nitrogen deposition and sulphur dioxide. Air quality effects in relation to biodiversity are discussed in Appendix D (Section D.6: Biodiversity, Flora & Fauna).

D3 Population and Human Health

D3.1. Baseline

Population

As shown in Table D3.1, Scotland's overall population increased between 2019 and 2020. While Aberdeen City Council area's population also increased between 2019 and 2020, Aberdeenshire, Highland and Moray Council areas all experienced a population decline during this same period.

As with Scotland as a whole, Aberdeen City, Aberdeenshire, Highland and Moray Council areas have ageing populations. Between mid-2010 and mid-2020, the percentage of those aged 65 and over increased by 14%, 30%, 27% and 24% in Aberdeen City, Aberdeenshire, Highland and Moray respectively, compared to 20% nationally (National Records of Scotland, 2021a). Amongst Scotland's 32 council areas, Aberdeenshire's population experienced the fourth largest increase in the proportion of those aged 65 and over between mid-2010 and mid-2020.

Table D3.1: Population Statistics for Scotland and the Councils within the Study Area (National Records of Scotland 2021a-e)

Location	Population	Average Population Density (persons per km^2)	Population Change 2019 to 2020	% Population Aged 0 to 15 Years	% Population Aged 16 to 64 Years	% Population Aged 65 and over
Scotland	5,466,000	70	+2,700 (+0.05%)	17	64	19
Aberdeen City Council	229,060	1,234	+390 (+0.2%)	16	68	16
Aberdeenshire Council	260,780	41	-430 (-0.2%)	19	61	20
The Highland Council	235,430	9	-400 (-0.2%)	16	61	23
Moray Council	95,710	43	-110 (-0.1%)	17	61	22

Aberdeen is Scotland's third largest city by population and its fourth most densely populated area (National Records of Scotland, 2021a). The largest settlement in Aberdeenshire is Peterhead, which has a population of 19,270 (National Records of Scotland (NRS), 2016). Approximately 48.4% of Aberdeenshire's population lives in areas classified by the Scottish Government as rural, with 35% living in areas classified as 'accessible rural' and 13.4% living in areas classified at 'remote rural' (Scottish Government, 2016). The largest settlement in The Highland Council area is Inverness, which has a population of 63,220 and is the fifth largest of Scotland's seven cities by population (National Records of Scotland, 2016). The Highland Council is also Scotland's largest local authority by area, with a total land area (including all islands at low water) of 26,484km^2 (The Highland Council, undated.). Approximately 47.4% of Highland's population lives in areas classified as rural, of which 37.9% is classified as 'remote rural' (Scottish Government, 2016). The largest settlement in Moray is Elgin, with a population of 24,760 (National Records of Scotland, 2016). Approximately 41.6% of Moray's population lives in areas classified as rural, with 29.8% living in 'accessible rural' areas and 11.8% living in 'remote rural' areas (Scottish Government, 2016).

Figure D3.1 indicates the population statistics for the study area, including the most populous cities and towns.

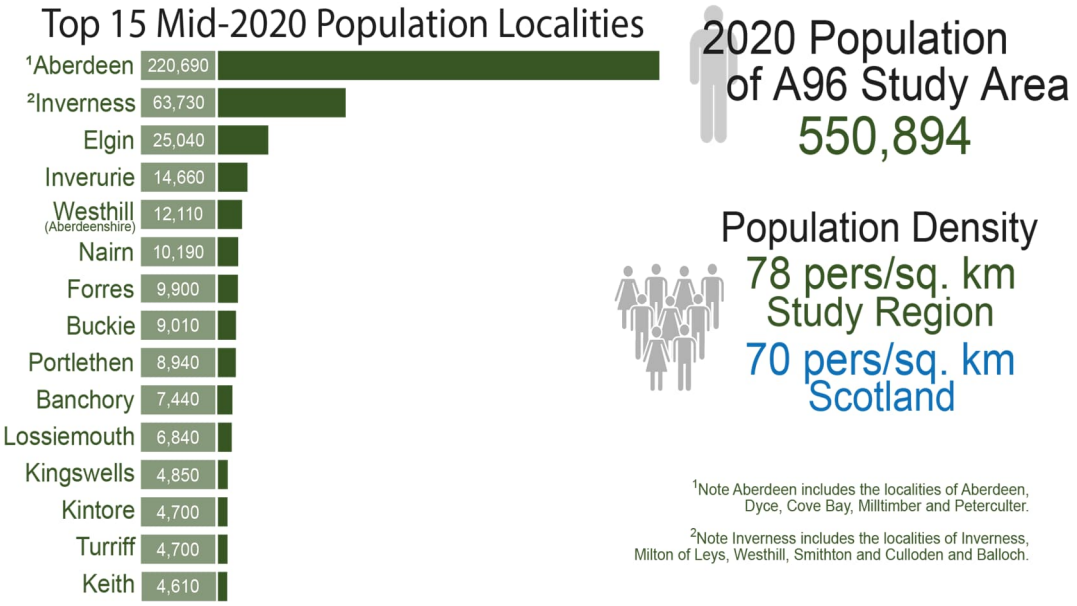

Figure D3.1 Study Area Largest Settlements by Population 2020, 2020 Population and Population Density

Change in population, as indicated by the 2020 NRS, has seen increases within the SEA study area for each of the LAs. Within the study area, Aberdeenshire population has increased by almost 6% between 2011 and 2020 (National Records of Scotland, 2021f). The areas of Highland within the study area have grown in population by 3.5%, whilst Aberdeen City has grown by 3%, and Moray by 2.4%.

On a more local level, evidence from the 2020 NRS mid-year population estimates suggest some individual settlements are growing at a greater rate than the wider LA area. Figure D3.2 shows NRS population projections for the period between 2012 (National Records of Scotland, 2014) and 2020 (National Records of Scotland, 2021g) for the top 15 most populous settlements in the study area.

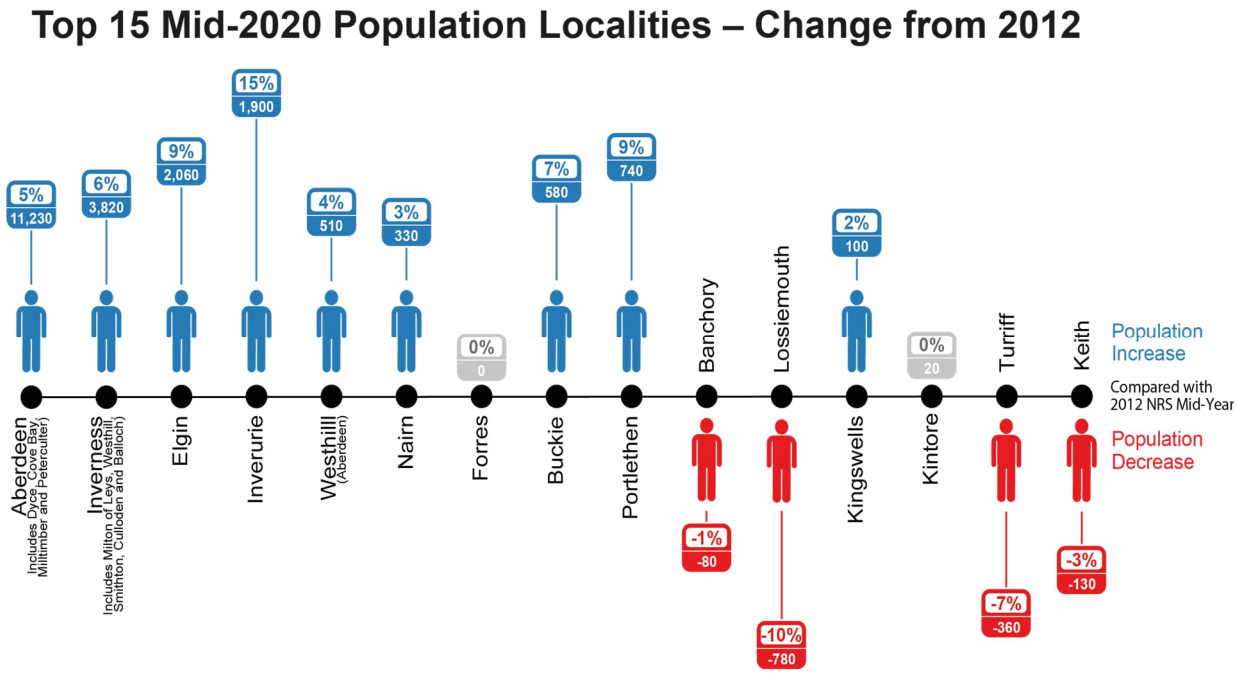

Figure D3.2 Top 15 Settlements Population Change

Inverurie has shown the greatest proportional growth (15%), followed by Portlethen (9%) and Elgin (9%), whilst Aberdeen and Inverness (including Culloden) have seen population increases of 5% and 6% respectively. However, the population of Lossiemouth has reduced by 10%, Turriff by 7% and Keith by 3%. Other more rural settlements (not included in Figure D3.1) have also shown a population decrease from 2012 to 2020, Huntly (4%) and Oldmeldrum (3%). In general, the data above indicates that population reductions are most likely to occur in the smaller, more rural areas with subsequent increases in the larger urbanised areas of the study area.

Future growth, as predicted by NRS Population Projections (National Records of Scotland, 2020), is anticipated to be varied by LA area. By 2043, population in Aberdeen City and Aberdeenshire is anticipated to grow by approximately 2.5% from a 2018 baseline. However, Highland is predicted to decrease by approximately 1%, and Moray by over 2.5%. These percentages are for the whole LA area, therefore may not be representative of the growth in the study area for Aberdeenshire and Highland.

Considering the study area as a whole, there is a clear trend of an aging population, with far greater growth in over 65s from 2011 to 2020 than for under 16s. The trends show that the younger population is growing more in urban areas, particularly in Aberdeen. However, the number of children in more rural areas, including in Moray and Highland, is decreasing. Over 65s are growing across the entire study area, though Accessible Rural Areas (42%) and Small Towns (30%) show the greatest proportional increase. The substantial rise of 65 and over population in accessible areas suggests

that older people are balancing a rural lifestyle whilst still retaining a reasonable access to the services offered in the urban areas, such as Aberdeen.

Human Health

The Scottish Household Survey (Scottish Government, 2019) has suggested that for LAs in 2019, the change in the proportion of the population with a long term physical or mental health condition has varied greatly in recent years and so no long-term trends are clearly apparent. This can be seen in Figure D3.3.

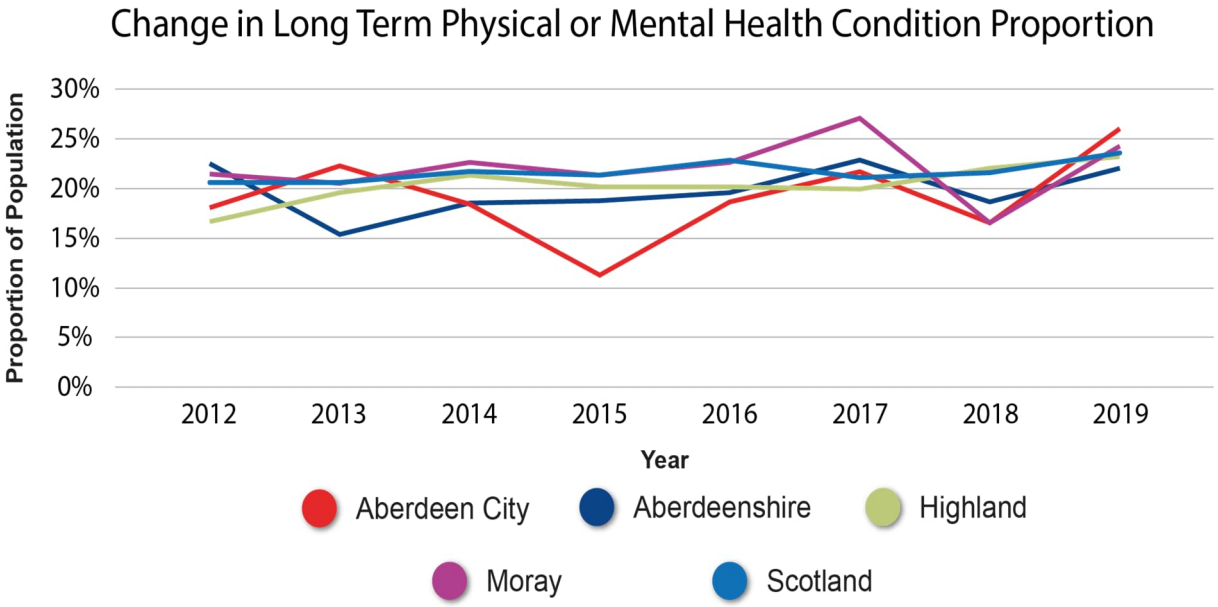

Figure D3.3 Change in Long-Term Physical or Mental Health Condition Proportion

Exposure to air pollution can exacerbate health inequalities between different demographics. Air quality is explored as a standalone topic in Section D.2 (Air Quality). However, there are significant impacts from air quality on human health. For example, short-term increases in PM levels are associated with acute health effects:

- increased use of medication (for example, asthma inhalers);
- days off work and days with restricted activity;
- hospital admission for lung and heart diseases;
- risk of death from asthma, COPD, heart disease (Ramsay, 2019).

The long-term risks of exposure to $PM_{2.5}$ comprise:

- increased deaths from all causes, heart attack, chronic lung disease, stroke and lung cancer;
- estimated reduction in average life expectancy of 3-4 months in Scotland (Committee on the Medical Effects of Air Pollutants, 2010).

Reducing traffic-related air pollution can improve people's sense of well-being, as well as physical health and the quality of the environment (European Environment Agency, 2020). Transport is a significant contributor to poor air quality in urban areas and although emissions from transport have declined over the years, the rate of the decline

has started to level-off (Scotland's Environment, undated). Due to several common sources, most notably road traffic in urban areas, there is also a close relationship between air quality and environmental noise (Scottish Government, 2015).

Noise

The Environmental Noise (Scotland) Regulations 2006 were introduced in Scotland to implement / transpose European Union, Assessment and Management of Noise Directive 2002/49/EC (known as the Environmental Noise Directive - END). The aims of the END are to define a common approach in order to avoid, prevent or reduce the harmful effects of environmental noise. Under the Environmental Noise (Scotland) Regulations, three rounds of strategic noise mapping of major roads, railways, airports and agglomerations has been completed across Scotland.

Environmental noise is defined as '*unwanted or harmful outdoor noise creased by human activities, including noise emitted by means of transport, road traffic, rail traffic, and from sites of industrial activity*' (Environmental Noise Directive, 2002). Noise from transportation is the biggest source of environmental noise in Scotland, and population exposure to environmental noise have been linked to adverse health effects. Annoyance and sleep disturbance are the key direct impacts on the population.

Scotland's noise map (Scottish Government, 2022b) illustrates noise exposure from rail, road, air traffic and industrial sources in accordance with the European Parliament and of the Council Directive for Assessment and Management of Environmental Noise 2002/49/EC and shows the majority of parts of the A96 ranges between 55 and 60 dB L_{den},. However, nearer to the cities / towns of Inverness, Nairn, Forres, Elgin, Keith, Huntly, Inverurie, and Aberdeen, the traffic noise rises to higher levels of 70dB L_{den}. In some areas, the noise level exceeds 80dB L_{den}, particularly near Inverness and Aberdeen International Airports.

The greatest consolidated noise sources are at the eastern end of the A96 due to proximity to Aberdeen and its associated various industrial land uses and main transport routes entering and exiting the city. This is beyond the study area. Within the study area itself, the main sources of noise are from the A96 and the railway line which both follow a similar east-west alignment. There are some peripheral roads which are also noise sources, however these are more scattered in the western extent or form direct connections with the A96. Noise emissions from airports and industry outside of Aberdeen have not been modelled as they do not meet the criteria set out in the END.

The Regulations also require the production of Noise Action Plans (NAPs) to manage noise. These NAPs identify locations where people are most likely to be annoyed by noise (Candidate Noise Management Areas [CNMAs]) and areas to be preserved (Candidate Quiet Areas [CQAs]) from the strategic noise mapping. These areas then go through a filtering process to determine which will progress to actual Noise Management Area (NMA) and Quiet Area (QA) status.

Responsibility for assessing the potential for implementing cost effective noise mitigation measures within NMAs rests with either Transport Scotland, Network Rail, or the local roads authority, depending on who is responsible for the road/rail. There is one Round 3 CQA which falls within the study area, which is 'West Woods' located south

of A96 and west of A90. There are 12 road CMNAs and two rail CMNAs proposed within Aberdeen and five road CMNAs in Inverness, however these are outside the study area.

Deprivation

People living in deprived areas in Scotland are more likely to die early from disease and have more years of ill health (Public Health Scotland, 2021a). The Scottish Burden of Disease Study (2016) Deprivation Report noted that more deprived areas have double the rate of illness or early death than less deprived areas, and that people living in Scotland's wealthiest areas are more likely to live in ill health than die prematurely due to ill health, and that the number of years of life affected by ill health are much fewer (Public Health Scotland, 2021a). Those living in deprived areas are also more vulnerable to the effects of environmental change, due to the prevalence of pre-existing health problems and inequities amongst these communities.

The Scottish Index of Multiple Deprivation (SIMD) 2020, is a tool used to identify areas where poverty and inequality exist within Scotland to allow targeted investment in these areas. Scotland's 6,976 data zones are ranked from most to least deprived using 38 different indicators of deprivation across seven 'domains' comprising of income; employment; health; education, skills and training; geographic access to services; housing; and crime.

Of Aberdeen City's 283 data zones, 29 were identified as being amongst the 20% most overall deprived data zones in Scotland, including one which was identified as being within the 5% most overall deprived data zones across the country (Scottish Government, 2020b). Of Aberdeenshire's 340 data zones, nine were identified as being amongst the 20% most overall deprived data zones in Scotland. Of Highland's 312 data zones, 30 were identified as being amongst the 20% overall most deprived data zones in Scotland. Five of Highland's data zones were also identified as being within the 5% most deprived data zones in Scotland, three of which are located within Inverness. Of Moray's 126 data zones, four were identified as being amongst the 20% overall most deprived data zones in Scotland.

There is a link between areas of lower socio-economic status and higher levels of obesity, which has harmful effects on health such as diabetes, heart disease and some cancers. Scotland's obesity rates continue to be amongst the highest in the developed world and are a significant public health issue (Scottish Government, 2017). In particular, women and children in the most deprived areas area affected by more extreme obesity (Public Health Scotland, 2021b). In 2018, 65% of individuals in Scotland were overweight, 28% of whom were obese (Scottish Government, 2020c).

Access to active travel

Access to active travel is an important factor in combating obesity, as well as having beneficial impacts on mental health and wellbeing. In 2018, the proportion of Scottish adults meeting physical activity guidelines for moderate or vigorous physical activity

(MVPA)[5] was 66% (Scottish Government, 2020c). There are a range of factors that can impact on levels of exercise, and these include the built environment and transport systems that encourage active living and regular physical activity. Adherence to the MVPA guidelines is also more common amongst adults in less deprived areas, declining from 74% in the least deprived areas to 54% in the most deprived areas (Scottish Government, 2020c).

Access to services

The study area includes predominantly rural areas, interspersed with settlements. The key settlements in the study area are Inverness, Nairn, Forres, Elgin, Fochabers, Keith, Huntly, Inverurie and Aberdeen. Access to integrated transport infrastructure is a key concern within rural communities. Increasing connectivity between modes of transport can also provide various benefits, such as reducing congestion and supporting more sustainable modes of transport. Barriers to accessing healthcare is an influencing factor for causing health inequalities. Affordability and adequate provision of public transport, as well as integrated public transport, act as barriers to those on lower incomes or in certain areas accessing healthcare facilities. In the rural regions, there is greater reliance on private vehicles due to a lack of regular public services and road travel being the only method of transport.

Recreation and Tourism

The North-East of Scotland is renowned for its whisky industry, with the region being home to the world-famous Malt Whisky Trail. The heritage trail consists of eight single malt distilleries and a cooperage in the Speyside region of Moray, attracting over 800,000 visitors in 2017 alone (Woodard, 2018). The North-East is also home to a wealth of castles and stately homes. With over 260 castles, Aberdeenshire is known as ‘Scotland’s Castle Country’, boasting more castles per acre than any other region of the UK (VisitScotland, 2022).

The North-East landscape also provides opportunities for recreation and tourism. Aberdeen and Aberdeenshire are home to over 50 golf courses and golf links, owing to the sand dunes that stretch along Aberdeenshire’s 165-mile coastline. The River Spey, Scotland’s third longest river, begins at the outlet of Loch Spey in the Scottish Highlands and flows 160km east and north-east into Moray where it discharges into the Moray Firth at Spey Bay. Also, Scotland’s fastest flowing river, the Spey is internationally renowned for its Atlantic salmon and trout fishing opportunities, which are worth around £15 million to the local economy (Spey Catchment Initiative, 2022). In addition, the River Spey offers several opportunities for recreation including canoeing, kayaking and rafting on the river, and walking and cycling on the adjacent Speyside Way, one of Scotland’s Great Trails.

[5] At least 150 minutes of moderate physical activity, 75 minutes of vigorous physical activity, or an equivalent combination of the two, per week (Scottish Government, 2020b).

Woodland and forests also provide opportunities for recreation and tourism throughout the North-East region. Several woodlands located close to settlements are regularly used for recreational purposes, including Hill of Mulundy (Forres), Roseisle Coastal Forest (Burghead and Findhorn), Monaughty Wood (Elgin), Lossie Forest (Lossiemouth), Back o' Bennachie (Insch) and Tyrebagger Woods (Aberdeen and Kintore). Nationally renowned gardens and arboreta also attract significant numbers of visitors to the North-East of Scotland each year, many of which are located within the grounds of the region's castles and stately homes. Access to woodlands and outdoor green space provide opportunities for people to experience and enjoy nature regularly, which is important for human health and quality of life.

Safety

Currently, accidents or incidents (for example, roadworks, landslips, flooding) occurring on any part of the A96, can significantly impact residents, businesses and visitors due to the significant length of alternative routes and the travel times involved.

It is expected that the A96 Corridor Review would improve safety on the road network.

D3.2. Evolution of the Baseline and Trends

Between 2018 and 2028, the populations of Aberdeen City, Aberdeenshire, Highland and Scotland as a whole are projected to increase, while the population of Moray is projected to decrease. By 2028, Scotland's population is expected to increase from 5.4 million to 5.5 million (+1.8%). By mid-2028, Aberdeen City's population is projected to increase by 1.1%; Aberdeenshire's population is projected to increase by 2.5%, and Highland's population is projected to increase by 0.5%, while Moray's population is projected to decrease by 0.1% (National Records of Scotland, 2021a-e).

Barriers to health equality will persist unless action to remove them is taken – for example, relating to accessing health care services or affordable public transport. Improvements to local and strategic roads, such as those being considered as part of the A96 Corridor Review, will be key for ensuring the future reliability of the transport network.

Climate change and associated extreme weather, such as flooding of the water environment, disrupts the lives of individuals and communities, limiting access to vital services and impacting on the population's physical and mental health; these events are expected to become more commonplace in the future. Coastal erosion caused by climate change could render existing settlements uninhabitable in the future, resulting in population displacement and potentially a lack of adequate housing. Such impacts could potentially lead to social tensions and affect human health. Existing social and health inequalities could be exacerbated as a result of climate change unless action to prevent this is taken.

At the time of writing, the impact of the ongoing COVID-19 pandemic on the health baseline and trends for the study area is uncertain but will be considered in future assessments if more information becomes available.

D3.3. Inter-relationships with other SEA topics

Table D3.2 presents the inter-relationships identified between Population and Human Health and the other SEA topics.

Table D3.2: Inter-related SEA topics

SEA Topic	Relationship with other SEA topics
Air Quality	The A96 Corridor Review has the potential to affect air quality. Exposure to air pollution can exacerbate health inequalities between different demographic groups, and there are significant effects from air quality on human health both in the short-term and the long-term.
Climatic Factors	The A96 Corridor Review has the potential to affect climatic factors through carbon emissions and flood risk in the area. Climate change affects many of the social and environmental determinants of health such as clean air, safe drinking water, sufficient food supplies and secure shelter (WHO, 2018). In addition, people living in flood prone areas, or remote or island communities, can be particularly susceptible to extreme weather events, the severity of which is exacerbated by climate change. More frequent flood events, storms and strong winds can cause damage and disruption to such communities, limiting access to vital services and impacting on people's physical and mental health (Scottish Government, 2019a). The A96 Corridor Review will also consider the resilience of the corridor to the effects of climate change.
Material Assets	The population relies upon material assets for everyday functions. Built transport assets are used to facilitate travel and natural assets, such as forestry and peat, provide a range of benefits for people including as energy sources, and as carbon sequestration for mitigating the effects of climate change. Forests also provide important health and wellbeing benefits, as described below. Disruption to the transport network or loss of material assets, as a result of the options could result in effects on the population such as journey delays and removal of the benefits of carbon sequestration of forestry and peat, and of the positive effects of forests on health and wellbeing.
Biodiversity, Cultural Heritage,	Connections exist between the Population and Human Health topic and the Biodiversity, Cultural Heritage, Landscape and Visual Amenity SEA topics, due to the numerous health and wellbeing benefits provided by access to nature, cultural heritage and

SEA Topic	Relationship with other SEA topics
Landscape and Visual Amenity	greenspaces, providing people with opportunities to participate in recreational activities and experience the local landscape qualities of the region. This is of particular importance during or after pandemics, especially for those without or with limited access to such spaces. Proposed options will have the potential to affect all of these topics and therefore result in effects on population and human health.

D4 Material Assets

D4.1. Baseline

Material assets is a wide-ranging topic, considering the natural and built environment, including housing and critical infrastructure. Material assets in the environmental sense includes finite mineral, aggregate and fossil fuel resources. In relation to Material Assets, the wider STPR2 SEA for Scotland aims to promote and improve the sustainable use of the transport network via the following means:

- support improvements to transport technology, interchanges and timetabling;
- plan for future capacity of public transport, taking demographic and societal changes into account;
- promote sustainable use and management of existing infrastructure;
- ensure transport infrastructure contributes to the circular economy.

The mode of travel people choose influences the number of vehicles on the road and therefore the performance and reliability of the transport infrastructure. Car usage remains the principal mode of transport in Scotland, with 63% of adults recording a journey by car at least once a week and 70% of the adult population holding a driving licence. Transport improvements associated with the A96 corridor, in conjunction with other A-class roads would improve mobility between Aberdeen and Inverness, and also enhance accessibility to the wider trunk road network. Furthermore, this route would facilitate greater access to the 11 rail stations that comprise the rail network within the A96 corridor.

An extensive network of active travel paths is located throughout the A96 Corridor study area, including four National Cycle Network (NCN) routes, namely:

- NCN1 – a route that links Dover in the south-east of England to Tain in the Highlands of Scotland, via Inverness;
- NCN7 – a cycle route running from Sunderland to Inverness;
- NCN78 – a cycle route up the west coast of Argyll and Bute, through the Great Glen and finishing in Inverness; and
- NCN195 – a route which follows the old Deeside Railway Line from Aberdeen to Ballater.

Within the study area, there are six of Scotland's Great Trails, including the Formartine and Buchan Way, Speyside Way, Moray Coast Trail, Great Glen Canoe Trail, Great Glen Way, and Dava Way.

Within the A96 Corridor study area, there are 25 public recycling centres and five commercial waste disposal facilities. The primary mineral resources extracted include hard rock, peat, sand and gravels.

The physical factors of soil, topography, and climate determine the land's capability for tree growth and future forestry development (Gauld *et al*., 1989). The section of the study area located in Aberdeenshire consists of soils primarily classified as podzols, peaty gleys, and peat, which, under the Land Capability for Forestry classification system (Scottish Government, 2022), designates forestry as F5 (limited flexibility for trees) and F4 (moderate flexibility for trees). To the north-east of the A96, in the Moray and Inverness areas, the soil range extends to include mineral gleys with sand or loamy textures. These conditions provide land with F2 (very good) and F3 (good) flexibility for the growth and management of tree crops. Areas of natural woodland are scattered across the A96, which are predominantly composed of mixed coniferous forest with a significant presence of native Scots Pine. They are home to a rich diversity of ecosystems, providing a high-quality landscape and substantial economic and social benefits. More than one-third of Moray's land area is covered by forest (Forestry Commission Scotland, 2013). Furthermore, because forests and climate are intrinsically linked due to the carbon, water, and energy cycles, woodlands and forests play a significant role in climate change (Forestry Commission Scotland, 2012).

The A96 Corridor study area has eight operational renewable energy developments with a total energy capacity of 96MW, and two additional renewable developments have been approved and will increase energy generation by 30MW. There are currently five onshore wind farms, with ten more in the planning stages.

Flooding poses the greatest long-term climate-related risk to infrastructure performance, but the growing risks posed from heat, water scarcity and slope instability caused by severe weather could also prove significant (Committee on Climate Change, 2017). Road and rail transport are generally more vulnerable to a changing climate than air and water transport, and flooding is anticipated to be the greatest threat.

There may be a need to upgrade existing roads to the required standard. This infrastructure would have considerable requirements for materials, aggregates and energy for manufacture and construction. This is linked with the ‘climatic factors’ topic due to the energy and carbon intensive nature of infrastructure construction.

D4.2. Evolution of the Baseline and Trends

The changing climate is expected to affect material assets in future years. An increase in annual rainfall for Scotland and more frequent, higher intensity rainfall events poses a risk to the transport network from slope instability and resulting landslides. This was

tragically demonstrated by the Stonehaven train derailment in August 2020 caused by a landslide, resulting in three fatalities and several injuries.

A key component of Scotland's climate change strategy is to encourage a shift to more sustainable forms of transport, away from private vehicles. The COVID-19 pandemic has caused a dramatic fall in the use of public transport due to the inability to socially distance. It may take several years for public transport demand to return to pre-pandemic levels, which may hamper efforts to reduce private vehicle use, putting greater pressure on the road network from congestion.

D4.3. Inter-relationships with other SEA topics

SEA Guidance sets out that the inter-relationship of environmental effects between topics should be considered within the SEA. The topics considered to have an inter-relationship with Material Assets are set out in Table D4.1.

Table D4.1: Inter-related SEA topics

SEA Topic	Relationship with other SEA topics
Climatic Factors	Carbon emissions originate from the materials used to construct a project, emissions from construction activities and operational emissions from end-users. Changes to land-use within the route corridor would affect the carbon mitigation potential from natural sequestration from the soils and forestry. These carbon emissions add to the cumulative atmospheric carbon concentration that amplifies the greenhouse effect, causing climate change.
Soils	Natural material assets encompass agricultural land and soils. The natural capital value of the soil types within the route corridor underpins the ecosystem functions that the soils provide to several other environmental topics.
Water Environment	Natural material assets encompass watercourses and natural flood management. Should the A96 Corridor Review conclude with recommendations for roads-based options, construction of such options would create additional impermeable road surface within the route corridor and remove natural material assets that regulate the water cycle.
Biodiversity, flora and fauna	Natural material assets such as watercourses, woodland and soils have high biodiversity value and they therefore need to be protected for their nature conservation value as well as their amenity, carbon sequestration and economic value.

D5 Water Environment

D5.1. Baseline

Scotland's Water Environment is essential for all life and activity, ranging from drinking water to maintaining habitats and supporting a significant part of the economy. Scotland has approximately 19,000km of coastline, incorporating 470km^2 of fishing zones that underpin coastal fishing communities. Water is also used for industrial processes, such as whisky production, hydroelectricity generation and recreational activities. Scotland's rivers and lochs contain 90% of the entire UK's freshwater and cover 2% of the land area.

Legislation and policies relating to the Water Environment are implemented through European Union legislation, transposed into Scottish Law. The Water Framework Directive (WFD) (Directive 2000/60/EC) was transposed into Scottish law under the Water Environment Water Services (WEWS) Act 2003. Under the WFD, new activities within or near to the water environment must not cause deterioration or prevent the achievement of 'Good' Status or 'Good' Ecological Potential (for artificial or heavily modified waterbodies). The WEWS Act is delivered through the production of River Basin Management Plans (RBMP), which detail the current condition of waterbodies in the Plan area and set objectives for improvement to 'Good' overall status or 'Good' Ecological Potential.

There are 294 surface waterbodies within the study area, including the River Ness, River Nairn, River Findhorn, River Lossie, River Spey, River Don and River Dee. The northern edge of Loch Ness is also located within the study area, in addition to the Moray Firth and the Beauly Firth. Table D5.1 provides a summary of the baseline classifications of each WFD attribute of these surface waterbodies, as reported in the latest available datasets (2020).

Table D5.1: WFD Waterbody Classification Summary (SEPA 2020)

Waterbody	Waterbody ID	Overall Status	Overall Ecology	Overall Hydrology
Loch Ness	100156	Good	Good	High
Moray Firth	200440	Good	Good	-
	200171 (Offshore)	Good	Good	-
Beauly Firth	220441	Good	Good	-
River Ness	23394	Moderate	Moderate	High
River Nairn	20305 (Moray Firth to River Farnack)	Moderate	Moderate	Moderate
	20306 (River Farnack confluence to source)	Good ecological potential	Poor	Good

Waterbody	Waterbody ID	Overall Status	Overall Ecology	Overall Hydrology
River Findhorn	23000 (Dorback Burn to sea)	Good	Good	High
	23004 (Tomatin to Dorback Burn)	Good	Good	High
River Lossie	23032 (Waukmill to Arthurs Bridge)	Poor ecological potential	Bad	Good
	23033 (Mosstowie Canal to Waukmill)	Good	Good	Good
	23039 (Leanoch Burn to Mosstowie Canal)	Bad ecological potential	Bad	Good
	23043 (upper catchment)	Good	Good	High
River Spey	23065 (River Fiddich to tidal limit)	Good	Good	Good
River Don	23265 (Dyce to tidal limit)	Bad	Bad	High
	23269 (Inverurie to Dyce)	Good ecological potential	Moderate	High
	23293 (Alford to Inverurie)	Moderate	Moderate	High
River Dee	23316 (Banchory to Peterculter)	Moderate	Moderate	Good
	23315 (Peterculter to tidal limit)	Moderate ecological potential	Bad	Moderate

Within the study area, there are six designated bathing waters at Rosemarkie, Nairn (East), Nairn (Central), Findhorn, Lossiemouth (East) and Aberdeen. As of the 2021 season, Findhorn bathing water is of excellent quality, Rosemarkie, Nairn (East), Nairn (Central) and Aberdeen bathing waters are of good quality, and Lossiemouth (East) bathing water is of sufficient quality (SEPA, 2021).

The study area also contains:

- Eight Drinking Water Safeguard Zones ;
- 14 Water Framework Directive (WFD) Designated Ground Water Bodies;
- 34 Water Framework Directive Designated Surface Watercourses (based on crossing locations.

There are also two active freshwater aquaculture sites located within the study area at Corgrain Point and Forgue, and two CAR licenced fish farms located at Forgue (freshwater) and Cadboll at Cromarty (seawater) (Scotland's Aquaculture, 2016).

The transport options which interact with coastal waters will need to consider the potential effects on the water quality of bathing waters, aquaculture and fisheries.

The bedrock [solid] geology of the A96 corridor varies from east to west. The eastern end is underlain by Palaeozoic Sandstone, with the western extents underlain by Pre-Cambrian Metamorphic rocks and Igneous Batholith Intrusions; the central section consists of all these bedrock types. There are superficial [drift] deposits consisting of sand and gravel across the entire corridor. Borehole data has shown that there are high groundwater levels at its eastern end. Further west, the water table is only high during winter months. The corridor lies across several WFD designated groundwater bodies (SEPA, 2022).

D1.2. Evolution of the Baseline and Trends

Ongoing key pressures on the surface water environment include urbanisation and intensive agriculture/ aquaculture. Rural and urban diffuse pollution also remains a concern for water quality, particularly in relation to agriculture, forestry, and urban development.

Climate change will exacerbate flood events, with rising sea levels increasing the risk of coastal flooding. More frequent, high-intensity rainfall will increase the risk of flash flooding from surface water or sewers for inland communities.

The predicted effects of climate change, such as increased temperatures and changes to rainfall patterns, could affect flows in rivers and impact on water resource availability (Scotland's Environment, 2014). Increased frequency and intensity of rainfall may result in greater risk of river flooding due to higher river flow volumes and flashier flow regimes. A changing climate is also expected to have ecological impacts, such as warmer sea temperatures and an increasing risk of non-native species spreading and becoming established in aquatic environments (SEPA, 2015).

The impact of climate change is likely to vary regionally; as such, SEPA has recently published updated guidance recommending regional climate change allowances (SEPA, 2019a). The study area is located within 10 catchments of the Scotland River Basin District, and the corresponding regional flow allowances for rivers and sea level rise allowances are provided in Table D5.2.

Table D5.2: Regional flow and sea-level rise allowances relevant to the Study Area (SEPA, 2022a)

Region	Regional flow allowance (Total change to the year 2100 (%))	Sea level rise allowance (Cumulative rise (in metres) from 2017-2100)
North Highland	40	0.89
North-East Scotland	34	0.87

Allowances for peak rainfall intensity are also provided, these are 42% for North Highland and 37% for North-East Scotland (SEPA, 2022a). The above allowances must be considered in the development of transport options.

The main risk of flooding within the A96 corridor is from river flooding. This includes the current route of the A96 itself. The flood mapping illustrates that the River Don poses significant flood risk to roads and settlements between Old Rayne and Dyce, with Kintore and Inverurie at significant risk. The other main settlements within the corridor of Nairn, Forres, Elgin, Fochabers, Huntly and Blackburn show significant areas of flood risk from various watercourses, including the River Spey and River Deveron. Keith, however, is deemed to be at low risk. Flood protection schemes have been implemented within the corridor, including at Forres (Moray Council) Elgin and Huntly, and a flood study for Inverurie and Port Elphinstone is underway (Aberdeenshire Council). Coastal flood risk is confined to the coastal settlements within the wider study area of Findhorn, Burghead and Lossiemouth, although the estuary at Findhorn does allow for a greater extent of coastal flood risk inland. There is also some potential coastal flood risk for Nairn.

D5.3. Inter-relationships with other SEA topics

Table D5.3 presents the inter-relationships identified between the water environment and the other SEA topics.

Table D5.3: Inter-related SEA topics

SEA Topic	Relationship with other SEA topics
Climatic Factors	There is potential for changes to flood risk and hydrology within the corridor as a result of climate change. These changes may exacerbate any effects reported in the SEA.
Population and human health	Changes to flood risk may impact receptors within the corridor including population, residential and non-residential buildings and critical and non-critical infrastructure and facilities. Effects are dependent on the extent of the change and could result in positive or negative impacts.

SEA Topic	Relationship with other SEA topics
Biodiversity, flora & fauna	Changes to water quality and hydromorphology may impact upon aquatic ecology within the corridor.
Soils	Soil run-off or transportation of contaminated soils may impact upon water quality within the corridor.
Cultural heritage	Increases to flood risk may impact cultural heritage assets within the corridor. Effects are dependent on the extent of the change and could result in positive or negative impacts.
Landscape and visual amenity	Changes to channel morphology, additional structures, channel realignment or changes to hydrology may also result in impacts to their amenity value and have the potential to affect the integrity of a landscape area within the corridor.

D6 Biodiversity, Flora and Fauna

D6.1. Baseline

Biodiversity is a common measure of the variety of living organisms and ecosystems and is often used to assess ecosystem health. Biodiversity provides the ecosystem services that are the basis of life, including the regulation of air and water, soil formation, nutrient cycling, flood regulation and pollination. This distribution of biodiversity has key interrelations with the abiotic environment, such as soil and the water environment.

Legislation and policies relating to biodiversity, flora and fauna are implemented from international to local level to protect the natural environment. At EU level, the Natura 2000 network of sites, now generally referred to as European sites, aims to protect key assets under the Habitats and Birds Directives. As identified in Section 1.6.5, European sites include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) which will be assessed as part of the Habitats Regulations Appraisal (HRA) for the A96 Corridor Review. Further ecological sites protected by UK legislation and policy include Ramsar wetlands, Marine Protected Areas (MPAs), Sites of Special Scientific Interest (SSSI) and woodland identified on the Ancient Woodland Inventory (AWI).

Aberdeen City Council, Aberdeenshire Council and Moray Council are partners of the North-East Scotland Biodiversity Partnership which aims to produce, implement and monitor action plans, such as the North-East Scotland Local Biodiversity Action Plan (NELBAP), for a range of important habitats and species throughout the North-East of Scotland (North-East Scotland Biodiversity Partnership, 2022). Similarly, the Highland Council, together with NatureScot and Scottish Forestry, co-funds the Highland Environment Form (HEF) which was established to provide an arena for discussion, networking and action on environmental subjects, including the production of the Highland Nature Biodiversity Action Plan 2021-2026 (HEF, 2021). Both the NELBAP and Highland Nature Biodiversity Action Plan 2021-2026 identify specific actions for the protection of biodiversity within the study area.

Each planning authority within the study area has also developed a woodland and forestry strategy which highlights the key issues and opportunities in relation to forestry and woodland, and sets out strategic actions and objectives for the future stewardship and expansion of forestry and woodland within each council area. The most recent iterations of the woodland and forestry strategies are listed below:

- Highland Forest and Woodland Strategy (The Highland Council, 2018);
- Moray Woodland & Forestry Strategy Supplementary Guidance (Moray Council, 2018a);
- Aberdeenshire Local Development Plan 2017 Supplementary Guidance 8: Aberdeenshire Forestry and Woodland Strategy (Aberdeenshire Council, 2017); and

- The Granite City Forest: Tree and Woodland Strategic Implementation Plan 2022-2025 (Draft) (Aberdeen City Council, 2021).

The terrestrial environment in the study area includes a variety of forestry, farmland, mountains and moorland, saltmarsh and peatlands, interspersed with numerous rivers.

No National Nature Reserves have been identified in the study area but designated ecological sites and one Local Nature Reserve (LNR), Findhorn Bay, have potential to be affected by the A96 Corridor Review. The study area, shown on Figures B2A – 2K, includes the following nationally designated biodiversity sites:

- 43 Sites of Special Scientific Interest (SSSIs) (biological, geological, and mixed).

Additionally, there are several internationally designated sites in the wider area which could feasibly be affected by the transport options. These include, but are not limited to:

- Four Ramsar sites (Inner Moray Firth, Loch of Skene, Loch Spynie, and Moray and Nairn Coast);
- Eight Special Protection Areas (SPAs);
- Seven Special Areas of Conservation (SACs).

As evidenced by the prevalence of designated sites, the area in the vicinity of the transport options is important for nature conservation. The protected sites support the following principal habitat types:

- The coastline in the study area is designated for important intertidal habitats, including intertidal mudflats and sandflats supporting areas of saltmarsh and eelgrass beds. There are also sand dunes, vegetated shingle and estuarine alder woodland; and
- Eutrophic lochs, open water transition fen, reedbeds, birch-willow carr, willow-alder carr and alkaline fens, lowland acid grassland, calaminarian grassland and serpentine heath, mesotrophic loch, saltmarsh, hydromorphological mire range, valley fen, upland birch woodland, open water transition fen, juniper scrub, fen meadow, fen-meadow.

Terrestrial species, including birds of conservation interest within the study area include, but are not limited to, small blue butterfly *Cupido minimus*, dingy skipper butterfly *Erynnis tages,*, pipistrelle bat *Pipistrellus*, roe deer *Capreolus*, majestic red deer *Cervus elaphus*, black grouse *Tetrao tetrix*, golden eagle *Aquila* and osprey *Pandion haliaetus*.

Freshwater species of conservation interest in the study area include, but are not limited to, nationally scarce plants, slender-leaved pondweed *Potamogeton filiformis,* coralroot orchid *Corallorhiza trifida* and baltic rush *Juncus balticus* and the near threatened lesser tussock sedge *Carex diandra.* The River Spey SAC is also designated for otter, freshwater pearl mussel and Atlantic salmon.

Sites of national or international significance provide feeding and roosting habitats for a diversity and abundance of designated bird species, including but not limited to migratory and over-wintering birds, wildfowl and waders.

In Scotland, Ancient Woodland is defined as land that is currently wooded and has been continually wooded, at least since 1750 (NatureScot, 2020). Ancient Woodlands are usually significantly more biodiverse than more recent woods and are identified in Scottish Planning Policy as an '*important and irreplaceable national resource that should be protected and enhanced*' (Scottish Planning Policy, 2014). Approximately 297km^2 parcels of woodland listed on the Ancient Woodland Inventory (AWI) are located within the study area, and tree felling would be required, but the exact volumes are unknown at this stage. There are also approximately 394km^2 parcels of native woodland listed on the Native Woodland Survey of Scotland (NWSS) located within the study area.

Valuable areas of biodiversity are not confined to designated areas. Green spaces within urban and rural areas support a range of species that have important functions and roles such as urban greenspace, green corridors, parks, gardens woodlands and allotments. Improving green infrastructure and cycling and walking networks can promote active travel, helping to reduce transport emissions and build networks of priority habitats with positive impacts on biodiversity.

Key pressures to biodiversity, flora and fauna include the loss, fragmentation and degradation of habitats as a result of development. An Ecological Impact Assessment (EcIA) will identify, quantify, and evaluate potential effects of development-related actions on habitats, species and ecosystems (CIEEM, 2018) and enable appropriate mitigation or compensation to be determined for any significant effects. Where licences are required for specific activities to avoid potential breaches of conservation legislation, these will be sought from NatureScot. In addition to designated areas, green spaces within urban and rural areas such as green corridors, parks, and gardens can have important functions and play a valuable role in enhancing biodiversity. Improving green infrastructure and cycling and walking networks can promote active travel, helping to reduce transport emissions and build networks of priority habitats with positive impacts on biodiversity.

D6.2. Evolution of the Baseline and Trends

Biodiversity loss has been well documented over the last 50 years, and today there are a range of pressures with the potential to impact on Scotland's wildlife and biodiversity. Key ongoing issues include climate change, land use pressures (for example, loss or damage of natural habitats from development or agricultural intensification and land use change), and the pollution of air, water, and land. Climate change and future development are the biggest drivers for the possible changes in the future baseline. Whilst a future baseline is difficult to predict for every ecological feature, trends and targets can provide a useful indication of future biodiversity.

Within Scotland's designated sites (SSSI, SAC, SPA and Ramsar sites), 77.9% of natural features were either in or recovering towards a favourable condition as of 31st March 2021 (NatureScot, 2022). This is an increase of 0.7% since 2011, when 77.2% of natural features were in favourable condition (NatureScot, 2011b). Over the same period, the percentage of qualifying habitats features in favourable condition has increased by 3.8% (from 73.8% in 2011 to 77.6% in 2022), but the percentage of qualifying species features in favourable condition has declined by 3.1% (from 75.4% in 2011, to 72.3% in 2021) (NatureScot, 2011b; NatureScot, 2022). Whilst these figures hide fluctuation between years (such as 80.4% of natural features in favourable condition in 2016, the highest since monitoring began in 2005), they indicate that the percentage of natural features in favourable condition within Scotland's designated sites will not be significantly different by 2029.

The most recent report on population trends of common breeding birds in the UK, by the British Trust for Ornithology (BTO) (Harris *et al*., 2019), highlighted that long-term trends (measured over the longest period of available data, which is usually 50 years) vary between species groups:

- Birds of prey populations have generally increased as a result of a ban on the use of certain pesticides, increased legal protection leading to a reduction in persecution and positive conservation efforts. Persecution of hen harrier on grouse moors and changes in land use have been attributed to population declines in some areas.
- Populations of most waterbird species have increased, likely due to increased water quality and warmer winter temperatures. Conversely, the breeding populations of most wader species (including redshank) in the UK show long-term declines, mostly as a result of habitat loss, intensification of land use and predation of their ground nests.
- The populations of species which are typically found within woodland habitats have generally increased, by being able to make use of green areas within suburban environments and due to warmer winters. Numbers of species which have specialist habitat requirements have declined and this is attributed to fundamental changes in woodland habitat quality in recent decades.

The drive towards Biodiversity Net Gain (BNG), meeting United Nations (UN) sustainability targets in relation to biodiversity and consideration of Natural Capital in policy will be key to the future protection and enhancement of Scottish biodiversity and the wider natural environment.

D6.3. Inter-relationships with other SEA topics

Table D6.1 presents the inter-relationships identified between Biodiversity and the other SEA topics.

Table D6.1: Inter-related SEA topics

SEA Topic	Relationship with other SEA topics
Climatic Factors	Changes to climate and the increasing occurrence of extreme weather events could alter available resources, environmental conditions and species life cycles within the corridor. Trees, woodlands and peatlands act as 'carbon sinks' by sequestering more carbon from the atmosphere than they release. These flora and habitats provide a useful contribution to mitigating climate change. Deforestation and degradation of peatlands results in the release of carbon into the atmosphere, which fuels further climate change.
Air quality	Changes to air quality within the corridor could impact the resilience of biodiversity. Nitrogen deposition due to vehicle emissions can impact on the functioning of ecosystems and growth of trees.
Soils	Soils and peat provide habitats and support biodiversity within the corridor. Soil biodiversity is essential to most soil functions and affects the sustainability of species and habitats which rely on soils. Soil sealing would reduce the capacity of the corridor to support habitats and biodiversity and potentially affect the sustainability of species and habitats that rely on soils and soil biodiversity.
Water Environment	Changes to water quality and hydromorphology, including groundwater, could impact biodiversity within the corridor.
Landscape and visual amenity	Landscape changes could alter habitats and their connectivity, which could result in negative or positive interactions with biodiversity within the corridor. Any mitigation and enhancement measures implemented for landscape and visual amenity could have biodiversity benefits, and vice versa. Therefore, any mitigation planting proposals should be developed with input from both disciplines.

D7 Geology and Soils

D7.1. Baseline

Soil is a valuable and finite natural resource with a profound effect on health and wellbeing, while also supporting every aspect of the natural and built environment. Its contribution to ecosystem services and environmental goods is now widely acknowledged. Soil has interrelationships with several SEA topics (as shown in Section 4.11) and is heavily influenced by a changing climate (IEMA, 2022).

Scotland's soils are highly variable due to the diverse geology and climate in Scotland. They play an important role in the carbon cycle during the carbon exchange process. Healthy soils serve as carbon storage; in Scotland, soils are rich in organic matter and account for over 50% of the UK's soil carbon (Dobbie *et al.,* 2011). Organic soils store vast quantities of carbon dioxide (CO_2), and it is estimated that Scotland's soils store 3 billion (bn) tonnes of CO_2 (Scottish Government, 2019e). A significant amount of Scotland's soil is comprised of peatland, which is the largest natural terrestrial carbon sink. Moreover, they are a key part of the landscape and cultural heritage. Peatlands cover more than 20% of the country's land area, storing 1.6 bn tonnes of CO_2 through carbon sequestration.

However, certain pressures on Scottish soils, such as climate change, changes in land use and land management, including the built environment, could have significant potential effects on soil degradation (SEPA, 2019d). It is estimated that over 80% of Scotland's peatlands are degraded, which means they emit more CO_2 than they sequester (Dobbie *et al*., 2011). Because soil is part of a complex and interconnected system, its degradation has a wider impact on the environment, society, and the economy (SEPA, 2019d).

Therefore, sustainable management and protection of soils is key to ensuring that soils can deliver essential functions vital for the sustainability of Scotland's environment and economy (SEPA, 2019d), including:

- storing carbon and maintaining the balance of gases in the air;
- biomass production (including agriculture and forestry);
- filtering and buffering pollutants;
- regulating the flow of and providing storage for water;
- providing a physical environment for human activity (including built development);
- providing habitats and supporting biodiversity;
- a source of raw materials;
- preserving cultural and archaeological heritage.

The study area is located in the north-east of Scotland from Inverness to Aberdeen, where soils in the lower altitudes are dominated by alluvial soils, particularly in lower river valleys. The majority of peat and peat podzols found at higher altitudes belong to Classes 3, 4 and 5 (Scottish Natural Heritage, 2016). Additionally, mineral podzols predominate over much of the study area in combination with brown soils and mineral gleys. A detailed description of soils, including their location and characteristics, is summarised in Table D7.1.

Table D7.1: Soil types in the study area

Type of soil	Location	Characteristic
Mineral podzols	They are present in most of the study area, including Inverness-shire, Morayshire, Aberdeen City, and the central and eastern parts of Aberdeenshire.	Mineral podzols play a significant role in facilitating groundwater recharge (Scottish Government, 2019c).
Alluvial soils	They are present in most of the study area, including Inverness-shire, Morayshire, Aberdeen City, and the central and eastern parts of Aberdeenshire.	Alluvial soils serve as the 'kidney of the earth' by filtering water, reducing flood risk and influencing climate (Scottish Government, 2019c).
Peat, peaty podzols and peaty gleys	Peat and peat podzols occur frequently at higher altitudes throughout the study area. The highest density can be observed south-east of the River Spey, from Moray Council area to Aberdeen City. Peaty gleys are scattered in small amounts across the study area, with the highest concentration in the southern part of Invernes-shire.	Classes 1- 5 are present in the study area. The study area contains a small amount of peat with nationally important carbon-rich soils, deep peat and priority peatland under Class 1 (areas likely to be of high conservation value) and Class 2 (areas of potentially high conservation value and restoration potential) Class 3 (not priority peatland habitat), Class 4 (area unlikely to be associated with peatland or high carbon soils) and Class 5 (no peatland habitat recorded, soils are carbon-rich and deep peat) – these categories include most of the identified peat (Scottish Natural Heritage, 2016).

Type of soil	Location	Characteristic
Brown soils	A high frequency occurs from the eastern edge of the Moray Council area to the Aberdeen coastline.	Brown soils are well-drained and have a high level of fertility and are therefore often cultivated. In Scotland, their occurrence is restricted (The James Hutton Institute, 2016a).
Mineral gleys	They are present throughout the study area but in higher density in the middle section, between the Moray Council area and Aberdeenshire.	This type of soil supports a variety of wet plant species used for grazing or forestry (The James Hutton Institute, 2016b).

Agriculture is crucial for growing crops, raising livestock, providing ecosystem services and sustaining human needs. It has both beneficial and harmful effects on soil and the environment. In particular, industrial agriculture negatively affects the quality of water resources and air pollution, reducing organic matter and releasing carbon. Furthermore, the climate crisis, the use of pesticides, fertilizers, and erosion can have an adverse impact on soil health (Scottish Government, 2018). Agriculture dominates Scotland, accounting for over 80% of the country's geological area (Scottish Government, 2021d). Sustainable land management and land restoration need to be prioritised in order to have productive and healthy soils. Using the classification of the Land Capability for Agriculture classification (The James Hutton Institute, 2022), the study area comprises a variety of soil types with varying productivity and cropping adaptability, ranging from Class 2 and 3 lands capable of producing a wide or moderate range of crops, to poorer quality Class 6 and 7 land of little use for cultivation. Most of the land equates to Classes 3.1 (land capable of producing consistently high yields of a narrow range of crops and/ or moderate yields of a wider range) and 3.2 (land capable of average production, though high yields of barley, oats, and grass can be obtained). Other present Classes are 2 (land capable of producing a wide range of crops), 4.1 (land capable of producing a narrow range of crops, primarily grassland with short arable breaks of forage crops and cereals), 4.2 (land capable of producing a narrow range of crops, primarily on grassland with short arable breaks of forage crops), 5.1 and 5.2 (land capable of use as improved grassland).

The British Geological Survey mapping covers artificial ground, superficial deposits and bedrock geology. Areas of artificial ground are indicated within the study area as made ground, infilled ground and worked ground. The superficial deposits are variable, consisting of sands, gravels, silts and clays. In the western section of the study area, around Nairn and Forres, the deposits are typically a mixture of River Terrace, Alluvium, Glaciofluvial and Glacial Till with localised peat. Towards the coastal areas, Intertidal and Raised Tidal Flat deposits are present with areas of Blown Sand and Alluvium.

Moving east towards Fochabers, the superficials are shown as predominantly comprising Glaciofluvial deposits and Glacial Till, with localised Alluvium and peat. Further east, Glacial Till becomes more widespread across the study area.

The bedrock geology to the west comprises sandstones and conglomerates. The central section of the study area is shown as psammite and semi-pelite formations with minor quartzites, limestones and igneous intrusions. Towards the east, the bedrock includes psammite and semi-pelite formations with a greater number of igneous intrusions. A number of faults are inferred across the study area (based on 1:50,000 mapping) with a higher density of faulting indicated in the area around Keith.

The management and mitigation of contaminated land needs to be considered too, as some contaminated sites have been identified within the study area in the towns of Elgin and Huntly. However, additional land may fall into this category as there is no definitive list of all potential contaminated sites in the study area. There are no Special Sites with respect to Part IIA of the Environmental Protection Act 1990 within the study area currently registered with SEPA (SEPA, 2022b). A Special Site is contaminated land which meets one of the descriptions in the regulations and has been designated by the local authority.

Within the study area, several areas have been classified as environmentally sensitive. There are seventeen geological and five mixed (biological and geological) SSSIs scattered throughout the area. The larger SSSIs, that occupy an area greater than 0.5 km^2 (50 Ha), and Geological Conservation Review (GCR) sites are listed below. Similar to geological or mixed SSSIs, GCR sites contain geological and geomorphological features of national and international importance.

- Kildrummie Kames – mixed SSSI/GCR site;
- Ardersier Glacial Deposits – geological SSSI;
- Ardersier - GCR site;
- Culbin Sands, Culbin Forests and Findhorn Bay – mixed SSSI;
- Culbin – GCR site;
- Dalroy and Clava Landforms – geological SSSI;
- Clava – GCR site;
- Spey Bay - mixed SSSI/GCR site;
- Lower River Spey - mixed SSSI/GCR site; and
- Whiteness Head - mixed SSSI/GCR site.

D7.2. Evolution of the Baseline and Trends

Soil formation is very slow. Due to a range of climatic processes, Scottish soils are comparatively younger than other soils. This lengthy process takes hundreds of years for a few centimetres of soil to form (Scottish Government, 2019d). In contrast, soil degradation occurs very quickly, particularly due to climate change and human activities. The impacts of climate change include temperature change and run-off

erosion from high-intensity rainfall, which leads to soil erosion and soil loss through other sources of flooding (SEPA, 2019b). Furthermore, certain human activities can also impair the functionality and capability of the soil, for example, the future of 'Soils and agriculture' in Scotland are of high concern. With a projected 7% increase in the Scottish population over the next 25 years, as well as further economic growth (National Records of Scotland, 2022), sustainable management of this asset will be of the utmost importance, especially in terms of land use and land management. Through land use and land management, soils can be protected from sealing, compaction, loss of organic matter, contamination, changes in soil biodiversity, or even erosion and landslides, with secondary impacts on other environmental receptors and SEA topics. Therefore, if future development in certain sections of the study area is not appropriately managed, soil could be lost to erosion or degraded and greenhouse gas emissions that are currently sequestered in peat and other carbon-rich soils could be released into the atmosphere and contribute to climate change, as described in Section D.1.

D7.3. Inter-relationships with other SEA topics

Table D7.2 presents the inter-relationships identified between geology and soils and the other SEA topics.

Table D7.2: Inter-related SEA topics

SEA Topic	Relationship with other SEA topics
Climatic Factors	Soils and peat store carbon within the corridor and help maintain the balance of gases in the air. There is potential for carbon loss to the atmosphere through exposure of and disturbance to organic soils. Sealing of soils would reduce the capacity to assimilate carbon within the corridor. Compaction/structural degradation and erosion can result in loss of carbon storage function and flux of greenhouse gases, thus affecting climactic factors.
Population and human health	Soils and peat support industries such as agriculture within the corridor and provide resources and means of employment for the population, thus also supporting human health and well-being.
Material assets	Soils and peat are important natural assets that underpin other ecosystem services within the corridor. Loss of organic matter and soil sealing would have the potential to result in loss of nutrients which in turn would lead to loss of fertility/productivity.
Biodiversity	Soils and peat provide habitats and support biodiversity within the corridor. Soil quality is defined as the ability of soils to carry out essential environmental, social and economic functions. Soil biodiversity is essential to most soil functions and affects

SEA Topic	Relationship with other SEA topics
	the sustainability of species and habitats which rely on soils, whilst soil organisms play a vital role in maintaining soil carbon and soil nitrogen and exchange of greenhouse gases. Soil sealing would reduce the capacity of the corridor to support habitats and biodiversity and potentially affect the sustainability of species and habitats that rely on soils and soil biodiversity.
Water Environment	Soils and peat regulate the flow of water and also provide water storage within the corridor. They also filter and buffer pollutants. Soil erosion and runoff from compacted/degraded soils can lead to transportation of contaminated soils which can adversely affect water quality within the corridor, as well as changing hydrological regimes which also has the potential to affect flood risk.
Landscape and visual amenity	Soils and peat support the growth of plants and trees which provide landscape and visual value within the corridor. Loss of organic matter or soil sealing may result in changes in habitats and land use that may affect visual amenity and landscape character.
Cultural heritage	Soils and peats preserve cultural and archaeological heritage within the corridor. Soil sealing or loss/disturbance of peat may result in loss of historical artefacts or archaeological features within the corridor.

D8 Cultural Heritage

D8.1. Baseline

Scotland has a unique and varied selection of irreplaceable cultural heritage sites that contribute to quality of life, the character of the country, cultural identity, education and economy. Scotland's historic assets attracted 18 million visitors in 2016 and over 5 million paying visitors, providing an educational role and a significant contribution to the tourist economy (HES, 2018). Cultural heritage assets are distributed around the country but can be found in clusters around historic settlements and on the coast.

An estimated £1.2bn was spent on repairing and maintaining the historic environment in 2017, with private investment accounting for 75% of total funding (HES, 2018). To protect valuable historic assets, there is also a process of designation which aims to identify the significance of the historic environment and protect it for future generations to enjoy. According to Historic Environment Scotland (2020), Scotland's historic environment generated £4.2bn for the economy in 2017 and supports 66,000 full-time jobs. Globally, Scotland is ranked 12th out of 50 countries ranked for its reputation of having a rich cultural heritage.

The study area has a rich cultural heritage, with large numbers of Listed Buildings, Conservation Areas, Scheduled Monuments and Gardens and Designed Landscapes, and Historic Battlefields. Category A Listed Buildings, Conservation Areas, Scheduled Monuments, Gardens and Designed Landscapes, and Historic Battlefields are illustrated on Figures B2A – 2K in Appendix B. In particular, there are very large numbers of Listed Buildings and Scheduled Monuments within the study area. There are no World Heritage Sites or Historic Marine Protected Areas within the study area. A comprehensive list of designated heritage assets within the study area will be provided in the Environmental Report.

In total, the study area contains:

- 1,987 Listed Buildings;
- 236 Scheduled Monuments;
- 20 Conservation Areas;
- 17 Gardens and Designed Landscapes;
- Four Historic Battlefield Inventory Sites.

Non-designated sites account for 90-95% of the historic environment (HES, 2016) and provide crucial contextual information to help better understand the history and development of the landscape within the study area, as well as the archaeological potential of the area. Aberdeen City, Aberdeenshire, Highland and Moray council areas have approximately 412; 3,092; 2,212 and 5,479 non-designated cultural heritage assets respectively.

There is also potential for previously unrecorded cultural heritage assets to be located within the study area, given the area contains known heritage sites and artefacts dating from the early prehistoric period through to the modern period. Information gathered on both designated and non-designated assets is important for assessing the archaeological potential of the study area.

The designated and non-designated historic landscape and seascape in the study area is also important. The historic landscape has developed as a result of land management, agriculture and settlement patterns.

Inappropriate development is a key pressure on the historic environment, from direct physical impacts to designated, non-designated and unrecorded assets. It can also result in indirect impacts on the setting of heritage assets. Pressure also comes from visitors, land-use changes and climate change.

Measures to reduce the need to travel, manage demand and encourage modal shift have the potential to enhance the integrity of the cultural environment in the urban and rural areas through an associated reduction in traffic levels, visitor numbers and air pollution from vehicles.

D8.2. Evolution of the Baseline and Trends

Inappropriate development will continue to be a key pressure on the historic environment and cultural heritage, unless mitigation is implemented. For example, the development of new transport infrastructure can affect historic landscape and may cause direct damage to heritage assets, their curtilage or setting. Increasing levels of congestion will also continue to affect historic towns, cities and the countryside. Air pollution from transport and other sources can also cause physical damage to heritage assets such as historic buildings.

It is projected that Scotland will become warmer and wetter as a result of climate change, resulting in the increased weathering of stone, rotting timbers and corrosion of metals. Rising sea levels and increased storm events may increase coastal erosion, endangering our historic landscape, structures, buildings and archaeology in the coastal zone. Some of Scotland's unique and special sites are at most risk. This threat will grow in the future given the future predictions of the likely effects of climate change for the remainder of this century.

D8.3. Inter-relationships with other SEA topics

The SEA topics shown in Table D8.1 have inter-relationships with cultural heritage and therefore any effects from the Corridor Review on soil, climate change, landscape and population and human health may have consequential effects on these inter-related topics and vice-versa. Only the most significant interrelationships with other SEA topics are shown, rather than every possible interaction.

Table D8.1: Inter-related SEA topics

SEA Topic	Relationship with other SEA topics
Climatic Factors	Climate Change can threaten the cultural heritage resource through erosion, flooding and wetter, warmer conditions. Through waterlogging, climate change could also influence soil creep and erosion levels (for example, gully erosion) and hence any cultural heritage resources within the soil.
Population and human health	The long-term viability of Listed Buildings and other cultural heritage resources is very important to local communities and visitors. Cultural heritage resources are also related to the Population and Human Health SEA topic, as Listed Buildings contribute to the understanding of the history of the area, as well as the sense of place and visitor experience.
Soils	The Geology and Soils SEA topic is relevant to cultural heritage, as the protection of peat soils, which are known to exist in the corridor, could potentially contain undiscovered archaeological remains and organic remains. These remains could provide information on the past environment.

SEA Topic	Relationship with other SEA topics
Landscape	The Landscape and Visual Amenity SEA topic is relevant, as historic activities have sometimes created a landscape (for example, historic field systems) or cultural heritage resources could form an integral part of the landscape. Cultural heritage resources are also an important visual amenity and help to create a sense of place.

D9 Landscape and Visual Amenity

D9.1. Baseline

Rich in diversity, Scotland's landscapes are internationally renowned. Landscapes are a significant part of the country's cultural and national heritage, contributing to the economy and the wellbeing of the population. They play a key role in attracting tourism and providing opportunity for outdoor recreation. Key landscape designations in the study area are shown on Figures B2A – 2K in Appendix B.

Landscape Character

The Landscape Character Assessment of Scotland (NatureScot, 2019) classifies the study area into 30 distinct Landscape Character Types (LCTs) between Inverness and Aberdeen.

Farms and Forested Slopes – Ross & Cromarty

Small sections of this LCT overlap with the western edge of the study area. The *Farmed and Forested Slopes – Ross & Cromarty* of the northern Inner Moray Firth are located in large tracts on the south side of the Black Isle and the north side of the Cromarty Firth around to the Dornoch Firth, and in smaller areas on the slopes to the south and west of the Farmed River Plains. They also occur on the slopes of Knockfarrel.

Cliffs and Rocky Coasts – Ross and Cromarty

Two small areas of this LCT overlap with the western edge of the study area. This LCT along the Inner Moray Firth occupies the majority of the southeast edge of the Black Isle and the headland from Nigg to just west of Portmahomack. A series of sea cliffs, of both rock and softer material, forms a dramatic rocky coastline.

Coastal Shelf

This LCT occupies a triangle of land between Fortrose and Rosemarkie, extending into the Moray Firth at Chanonry Point at the western edge of the study area. It is located around the eastern perimeter of the area on the coastal edge, at Rosemarkie, Morrich More and the Dornoch Firth. Similar LCTs continue northwards into Sutherland and Caithness, and eastwards to Inverness and Whiteness Head.

Coastal Farmlands - Moray and Nairn

This LCT occupies a large proportion of the western half of the study area. It runs east-west between Inverness and Cullen, in a broad, continuous band some 90km long. This LCT lies on the coastal plain between the coastal shore and forests to the north and farmed and wooded foothills to the south. The central part is locally known as the Laich of Moray.

Rolling Farmland and Woodland

This LCT forms a belt along the south side of Inverness, extending north-eastwards into the Study Area to form a low ridge between the A96 corridor and the River Nairn valley within the *Farmed Strath* LCT. It occurs in one broad band which forms a rural backdrop to the west, south and east of Inverness. The distinctiveness and extent of this type is gradually reducing as Inverness and surrounding commuter towns expand.

Farmed Strath – Inverness

This LCT follows the River Nairn valley extending north-eastwards into the study area in a band separated from the A96 corridor by the neighbouring *Rolling Farmland and Woodland* LCT. It occurs in two locations – at Strathnairn/Stratherrick and Strathglass – where it forms a linear to sinuous channel through the surrounding upland landscape. The straths run south-west to north-east and open to the farmed and wooded slopes and plains around Inverness. The straths are characterised by mainly open farmed valley floors and a central meandering river contained within steep, mainly forested and wooded slopes. Strathglass is narrower, more enclosed and less settled than Strathnairn.

Rolling Uplands – Inverness

This LCT occupies a small area at the south-western edge of the study area. It consists of rolling hills which lie to the south-east of the Great Glen and form an upland backdrop to much of the eastern part of Inverness district, extending far beyond the district boundary and into the Cairngorms National Park. The uplands act as a sheltering edge to the Farmed Strath landscape type, from which they rise. They also form a backdrop to more distant areas to the south, east and west where they seem to merge into an undulating skyline without any clearly identifiable features.

Open Rolling Upland

This LCT occupies an area of high ground at the western end of the study area, which separates the valleys of the River Nairn (*Farmed Strath* LCT) from the upland valley of the River Findhorn. It is represented in one extensive tract of open uplands in the south-west of Moray cut through by the River Findhorn to form two areas, located on the northern part of Dava Moor and the foothills of the Strathdearn Hills to the south. It forms a relatively narrow band of broad rounded hills, interspersed with shallow valleys and low-lying moss adjacent to the generally lower *Upland Moorland and Forestry*. The

landscape forms part of a more extensive area of similar upland extending south and west into the Highland Council area.

Rolling Farmland and Forests – Moray and Nairn

This LCT occupies much of the western half of the study area to the south of the A96 corridor. Two areas of this LCT are found to the south of the *Coastal Farmlands – Moray & Nairn*, on the foothills of the higher ground, between the rivers Spey and Nairn. The transition into the Upland Moorland and Forestry LCT to the south is often wide and indefinite, reflecting the gradual rise in elevation and merging patterns of land cover.

Beaches, Dunes and Links – Moray and Nairn

This LCT occupies much of the narrow coastal fringe between Fort George and Buckie in the northern part of the study area. The majority of the Moray and Nairn coastline is *Beaches, Dunes & Links – Moray & Nairn*, originally formed from the erosion of soft Devonian bedrock which dominate the coastal plain west of the River Spey. It consists of two long narrow sections from Fort George to Burghead and from Lossiemouth to Buckie, between which is a short section of *Cliffs and Rocky Coast – Moray & Nairn*.

Coastal Forest

This LCT occupies two areas of coniferous forest between Nairn and Burghead. Three extensive areas of this LCT exist south of the Beaches, Dunes & Links – Moray & Nairn of the Moray Firth. These are located west of Burghead, east of Lossiemouth, and east of Nairn where the fourteen-kilometre long Culbin forest is located.

Narrow Wooded Valley – Moray & Nairn

This LCT crosses the southern half of the study area to the south of Nairn and contains the middle reaches of the River Findhorn, which flows north-east through a channel dissecting the *Open Upland, Upland Moorland and Forestry*, and *Rolling Farmlands and Forests – Moray & Nairn* character types, before emerging on the coastal plain near Forres.

Upland Moorland and Forestry

This LCT overlaps the southern edge of the study area in two locations; west of the River Findhorn valley and east of the River Spey valley. The two areas of this LCT, which are separated by the *Narrow Wooded Valley - Moray & Nairn* of the River Findhorn, form a transition zone between the higher *Open Upland* to the south, and *Rolling Farmland and Forests* to the north. The transition to these rolling hills is often indefinite, reflecting the gradually falling elevation and merging patterns of land cover.

Broad Farmed Valley

This LCT crosses the southern part of the study area, south of Fochabers, and contains the lower reaches of the River Spey, as it flows north-east from the Cairngorms National

Park boundary to dissect the uplands and moorlands of southern Moray. The valley opens out to the north, to merge with *Coastal Farmlands – Moray and Nairn* at Inchberry.

Low Forested Hills

This LCT extends across the study area west of Fochabers and occurs in eastern Moray as a ridge of tree-covered higher ground running east-west, located to the south of the *Coastal Farmlands – Moray and Nairn.*

Upland Farmland

This LCT extends across the study area to the south of the *Low Forested Hills* LCT. The town of Keith sits at the centre of this LCT at the crossroads of the A95 and A96 and is on the Inverness to Aberdeen railway line. This LCT in Moray is represented by one area of mid-elevation, coastal uplands, to the north-east of the Spey. The character type is positioned between the *Low Forested Hills* to the north and *Upland Farmed Valleys* to the south-west. To the east, it transitions into the *Low Hills and Basins* and *Farmed and Wooded River Valley*. To the south, it merges into the *Farmed Moorland Edge*.

Upland Farmed Valleys

This LCT overlaps the southern part of the study area to the south-west of the neighbouring *Upland Farmland* LCT. The *Upland Farmed Valleys* LCT is represented by one area in Moray to the east of the Spey and forms a transition between the lower-lying *Upland Farmland* to the north and the Open Upland to the south.

Farmed Moorland Edge

This LCT, which is bisected by the A96 extends across the study area north-west of Huntly. It lies on the edge of higher moorland *Summits and Plateaux - Aberdeenshire*, forming a transition between these upland areas and the lowland agricultural heartlands of Aberdeenshire, sharing many characteristics with both.

Open Upland

Two small areas of Open Upland overlap with the southern edge of the study area; east of the River Spey valley and south of Drummuir. This LCT represents extensive tracts of open uplands in the far south-east of the Moray, forming the transition to the *Upland Farmed Valleys* to the north, and extending south-west beyond the Moray Council boundary, to incorporate the Hills of Cromdale and join the Ladder Hills at the north-eastern edge of the Cairngorm mountains. It also includes the Ben Aigan area. The LCT is severed by and overlooks the *Upland Valleys – Moray & Nairn* of Glenlivet, Glen Rinnes and Strathavon, as well as the *Broad Farmed Valley* of the River Spey.

Farmed and Wooded River Valleys

Two bands of this LCT cross the southern part of the study area, following the valleys of the rivers Deveron and the Bogie joining at Huntly, and then continuing north-eastwards across the study area. It comprises the well-settled, wooded and diverse valleys of the rivers Deveron Bogie and Ythan. They form a significant feature within the extensive agricultural heartlands of Aberdeenshire, flowing out to the sea at Macduff. The landscape is attractive with a high degree of integrity.

Outlying Hills and Ridges

Three areas of this LCT are located in the study area either side of the River Bogie Valley to the south of Huntly. This LCT lies at the transition between the high mountains of the Cairngorms and the low farmland of the north-east coastlands in Aberdeenshire. It comprises a series of moorland spurs that extend from the central massif of the Cairngorms into the farmed landscape of Garioch and Formartine, forming prominent areas of high ground.

Farmed Rolling Ridges and Hills

Two areas of this LCT cross the study area either side of the River Bogie Valley to the south of Huntly. This LCT forms a broad swathe of gently rolling farmland lying between the *Farmed and Wooded River Valleys* to the west and the *Farmed Basins* LCTs to the south. It is generally more elevated and hillier than the more open plains of the *Undulating Agricultural Heartlands* which lie to the east of the Deveron. In places, this landscape is punctuated by narrow undulating higher ridges of the outcropping *Outlying Hills and Ridges*.

Farmed Basin Aberdeenshire

This LCT crosses the study area in a broad belt running between Rhynie and Old Meldrum and is bisected by the A96. It comprises three areas - the “Howe of Cromar”, Insch Basin and the “Howe of Alford” in the centre of the county. These areas form flat to gently undulating broad basins surrounded by the higher *Outlying Hills and Ridges* LCT.

Wooded Estates – Aberdeenshire

A large area at the southern end of the study area, west of Aberdeen, is occupied by this LCT. This LCT occupies a substantial area east of Bennachie between the Don and the Dee valleys and extending to the edge of Aberdeen. It is a landscape of low hills and wide valleys, with dense woodland as a consistent feature.

Coastal Agricultural Plain – Aberdeenshire

This LCT overlaps the study area east of the River Urie Valley and Inverurie. It is an extensive LCT comprising a low-lying and often very open sweep of exposed farmland in eastern Aberdeenshire where the influence of the sea is particularly strong. It is

characterised by its gently undulating landform, relatively large scale, extensive mosses and the influence of development including transmission masts, electricity transmission lines, the A90 and A953, and the gas terminal at St Fergus on its eastern edge. The transition between the *Beaches, Dunes and Links* LCT in the east and the hinterland formed by this landscape is very gradual.

Narrow Winding Farmed Valley

This LCT follows the northern side of the River Don Valley between Hatton of Fintray and Dyce in the south-east of the study area. It occurs for a small stretch of the River Don, close to Aberdeen, where the river forms the boundary between Aberdeenshire and the city. It forms the northern side of the *River Valley - Aberdeen* LCT of Aberdeen City. To the west, the landform becomes broader with a less distinct valley shape and is thus included in the *Wooded Estates - Aberdeenshire*.

River Valley – Aberdeen

This LCT follows the southern side of the River Don Valley between Hatton of Fintray and Dyce in the south-east of the study area.

The rivers Dee and Don both lie in well-defined granite valleys within Aberdeen and are key features of the city. These rivers form the boundaries of the city with the southern valley side of the Dee and the northern side of the upper Don valley lying in Aberdeenshire. Both the Dee and Don are classified as the *River Valley* LCT within the Aberdeen Landscape Character Assessment.

The Dee valley continues as a pronounced feature upstream, and is accordingly defined as a separate LCT, the *Broad Wooded and Farmed Valley*, in Aberdeenshire. The southern valley side of the Dee which lies in Aberdeenshire is also classified as this LCT.

The northern side of the Don valley, which lies in Aberdeenshire, is included in this LCT. The Don valley is less defined as it flows across a broad farmed plain to the west of the city boundary and is thus incorporated into the *Wooded Estates* LCT in Aberdeenshire.

Low Hills – Aberdeen

This LCT occupies high ground at the east end of the study area, north and south of the A96 corridor near to Dyce and Kingswells. Within Aberdeen City, it comprises well-defined rounded hills with steep slopes which lie on the western and southern edges of Aberdeen, occurring in three locations. Immediately to the west of the city boundary in Aberdeenshire, hills of a similar height (but generally less well-defined in form) are incorporated into the *Wooded Estates* LCT.

Undulating Open Farmland

Four areas of this LCT are located within the study area north-west of Aberdeen. The largest of these extends from the A96 just east of Blackburn to Kingswells. The *Undulating Open Farmland* LCT largely forms part of the broader *Wooded Estates* LCT

which extends to the west and, in a narrower sliver, to the north-west of the city in neighbouring Aberdeenshire. It occurs in five locations within Aberdeen City. These comprise both more open, gently undulating farmland as well as well-wooded areas where estates have a greater influence. The finer grain of the Aberdeen City landscape character assessment has resulted in the predominantly open and the more wooded areas within the city area being separately defined at a local level into *Undulating Open Farmland* and *Undulating Wooded Farmland* LCTs. There are eight areas where this *Undulating Open Farmland* LCT occurs.

Wooded Estates Aberdeen

This LCT lies at the eastern end of the study area, extending southwards from the A96 corridor. Within Aberdeen City it occurs in two patches, comprising three locations; Craibstone, Hazelhead Park and Countesswells. These do not abut Aberdeenshire.

Local Landscape Areas

Within the study area, there are a number of Local Landscape Areas (LLAs), the intention of which is to:

- help protect a landscape from inappropriate development;
- encourage positive landscape management;
- play an important role in developing an awareness of the landscape qualities that make particular areas distinctive; and
- promote a community's sense of pride in its surroundings.

Sutors of Cromarty, Rosemarkie and Fort George LLA (Highland)

This LLA spans the Moray Firth to the north-east of Inverness, taking in the coastline between Fortrose and the Carse of Delnies within the study area. This SLA encompasses some of the key landscape features of the Inner Moray Firth. It is an area of contrasts which forms the gateway between the open coast and expansive waters of the Moray Firth and the intimate landscapes of the Cromarty and Inverness Firths. The twin headlands at North and South Sutor which stand guard over the entrance to the Cromarty Firth are another key feature, visible from a considerable distance. Another important juxtaposition is formed by the opposing low-lying promontories at Chanonry and Fort George which reach out to each other and mark the entrance to the Inner Moray Firth. Both promontories have landmark buildings at their seaward extremities and are vantage points in their own right. However, as landforms and as examples of human geography, they are perhaps best appreciated from the higher ground adjacent and to the north.

This elevated perspective also reveals the extensive sandbanks between Fort George and Whiteness Head.

The steep coast between the South Sutor and Rosemarkie provides further contrasts and has some qualities of wildness in an area which is otherwise man-modified or inhabited to some degree.

Culbin to Burghead Coast LLA (Moray)

This LLA includes Culbin and Roseisle Forests and Findhorn Bay in the north-western part of the study area. It comprises part of the renowned Moray coast and the more diverse coastal forest which adjoins it. While all this coast is a popular destination for recreation, it is particularly well-frequented close to Findhorn. The Culbin area includes nationally important coastal features and wildlife habitats. The intriguing history of this stretch of the Moray coast also adds a further dimension to the richness of this landscape with nationally important WWII structures forming an important part of its character.

Findhorn Valley and the Wooded Estates LLA (Moray)

This LLA occupies a broad swathe of land including the Findhorn valley and land either side extending south across the study area from the A96. This designation recognises the richly wooded character of the western part of Moray which is influenced by the long-established estates which border the dramatically incised River Findhorn. While the river, which is covered by national designations for its geological and wildlife value, forms the key feature of this candidate Special Landscape Area (SLA), the woodlands and designed landscapes which lie either side of it, contribute to the richness of this landscape with built features associated with the estates further complementing the whole. The landscape is additionally very well-used for recreation, forming a major attraction within Moray.

Pluscarden Valley LLA (Moray)

This LLA lies in the southern part of the study area between Forres and Elgin. This designation recognises the strongly contained and diversely wooded setting this landscape provides to the Category A-Listed 13th century Pluscarden Abbey which lies at its heart.

Burghead to Lossiemouth Coast LLA (Moray)

This area of coastal landscape overlaps the northern edge of the study area. This section of the coast is particularly scenic as it features the highest cliffs in Moray and comprises a richly complex array of other rocky landform features with some of these designated for their geological interest. This coast is also important in terms of early history with reptile fossils and evidence of early people's use of caves adding to its interest. Like all the Moray coast, this LLA is well-used for recreation.

Quarrelwood LLA (Moray)

This relatively small LLA is located west of Elgin to the north side of the A96. The close association of this well-used community-run woodland to Elgin and its diverse mix of

oak, beech and pine, together with the fascinating prehistoric and cultural heritage of this area, form the key reasons for designation.

Spynie LLA (Moray)

This relatively small LLA lies in the northern half of the study area between Lossiemouth and Elgin. The reasons for designation relate to the variety of the landscape which is significantly enhanced by its distinctive cultural heritage and the nationally important nature conservation interests associated with Spynie Loch. In addition, the close location of the landscape to Elgin, and the presence of Spynie Palace and the loch makes this area attractive for bird watchers, walkers and visitors.

The Spey Valley LLA (Moray)

This LLA crosses the study area to the south of Fochabers where it adjoins the Lower Spey and Gordon Castle Policies LLA. The diverse and handsome landscape of broad gently weaving river, floodplain farmland, wooded valley sides and distinctive settlements together with the romance associated with the Spey due to its connection with whisky distilling are key reasons for designation of this LLA.

Lower Spey and Gordon Castle Policies LLA (Moray)

This LLA extends from the A96 north of Fochabers to meet the Lossiemouth to Portgordon Coast LLA (described below). The two contrasting components of this LLA, the lower Spey Valley and Gordon Castle policies, complement each other. The richness of the Spey for wildlife but also recreational pursuits is recognised in the designation, as is the relationship of the nationally important Gordon Castle policies to Fochabers and its value in providing an attractive setting to the town and to the lower Spey.

Lossiemouth to Portgordon Coast LLA (Moray)

The braided mouth of the Spey and ridged cobble beaches of this LLA are rare features within Moray and include areas designated for their geomorphological and nature conservation importance. Like all the Moray coastline, this LLA is also well-used for recreation although a sense of seclusion is a key characteristic in the more remote middle sections of the coast where scheduled WWII defences have a particularly evocative quality.

Portgordon to Cullen Coast LLA (Moray)

This LLA extends eastwards from the Lossiemouth to Portgordon Coast within the northern part of the study area. The coastal edge is low and rocky in the west and is largely modified to form harbours and quays. East of Findochty however, the coast becomes more diverse with rocky headlands, cliffs, stacks and arches. Sandy beaches are also present, with the largest of these occurring at Cullen Bay. The Bow Fiddle Rock at Portknockie is a celebrated natural arch of tilted banded quartzite lying off the coast. The coast around Cullen (and extending into neighbouring Aberdeenshire) is designated in part for its geological interest.

Deveron Valley LLA (Moray and Aberdeenshire)

This LLA crosses the A96 to the west of Huntly. Aspects and features contributing to its designation include:

- Meandering river, framed by rolling wooded hills and ridges, providing views into the valley.
- Strong network of woodland throughout the valley provides landscape structure and wildlife habitat. A variety of woodland types include coniferous plantations, deciduous hilltop copses, shelter belts and a wealth of roadside trees including beech and ash.
- The presence of historic estates has a strong influence along the river, including parkland around Duff House, Forglen and others, but more generally in the wooded landscape.
- The valley landscape forms an important part of the setting of various settlements, including the planned town of Huntly and the market town of Turriff.
- Distinctive local granite architecture displayed in villages and towns, farms and most notably in castles such as Huntly.
- The attractive landscape makes the Deveron a popular setting for a range of outdoor recreation including fishing, canoeing, walking and cycling, with the NCN Route 1 between Banff and Turriff.
- A continuous valley landscape, from the hills to the sea.

Bennachie LLA (Aberdeenshire)

The following aspects and features of this landscape are considered worthy of recognition through LLA designation:

- Bennachie is the iconic hill of central Aberdeenshire, instantly recognisable from across the wider landscape, in both long- and short-range views.
- Intact landcover of heather moorland on the main Bennachie ridge.
- Extensive woodland across lowland and upland, including native woods, estate policies and forestry plantations, with a substantial amount recognised as ancient woodland.
- Hill forts are found on summits such as Mither Tap and Tillymuick, with cairns and other features emphasising the long history of settlement.
- The River Don is a key feature of Aberdeenshire, meandering through the upland glen south of Bennachie, and across the farmland around Kemnay.
- The farmland to the east provides the setting to Bennachie, but also typifies lowland Aberdeenshire with its mosaic of wooded estates and open farmland.
- A hugely popular area, with walkers enjoying the spectacular views from the Bennachie summits, and Pitfichie being a centre for mountain biking.

- Panoramic views from the upland areas, particularly from the Bennachie summits, over the Don Valley and beyond to the patchwork of Aberdeenshire farmland.

Tree Preservation Orders (TPO)

There are various TPOs scattered through the study area, including several close to the existing A96 for example at Nairn, Keith and Thainstone.

Greenbelt

The eastern end of the study area is within the Aberdeen City and Aberdeenshire Greenbelt, the purpose of which is to help avoid coalescence of settlements and sprawling development on the edge of the city, maintain Aberdeen's landscape setting, and provide access to open space.

Key Visual Receptor Locations

Whilst the study area does not contain any nationally recognised scenic viewpoints, or nationally designated landscapes, there are visual sensitivities to some types of development within or visible from the Local Landscape Areas. There are also numerous towns, villages and rural properties, along with numerous paths, recreational trails and areas used for outdoor recreation where there is the potential for visual effects to occur.

D9.2. Evolution of the Baseline and Trends

The expansion of many towns and cities and their associated infrastructure, such as roads and railways, is seen as a pressure and the distinctive landscape setting of many towns and cities is being lost due to this settlement growth. Measures that seek to reduce the need to travel, manage demand and encourage modal shift, could in turn reduce the need for new infrastructure and the likelihood of disturbance to the landscape posed by new construction. Other gradual changes to the landscape are likely to result from changes in forestry and farming practices, for example through the intensification to maximise yields.

Rising sea levels and increased storm events resulting from climate change are likely to increase coastal erosion, endangering the landscape in the coastal zone. Climate change also poses a threat to Scotland’s landscape through the loss of habitats, alteration to the intricate ecological balances and increasing prevalence of pests and diseases in the natural environment.

The rapid spread of *Chalara fraxinea* (ash dieback) is resulting in losses of one of Scotland’s most important climax tree species, which is having a significant impact on the landscape. Evidence from Europe suggests it will lead to the decline and death of 50%-75% of ash trees in Scotland over the next two decades and has the potential to

infect more than 75 million ash trees (over 64 million saplings and seedlings and some 10.7 million mature trees) across the country.[6]

D9.3. Inter-relationships with other SEA topics

Table D9.1 presents the inter-relationships identified between Landscape and Visual Amenity and the other SEA topics

Table D9.1: Inter-related SEA topics

SEA Topic	Relationship with other SEA topics
Climatic Factors	Climate change affects landscape directly and indirectly through coastal erosion, flooding, wetter, warmer conditions, as well as droughts and more frequent storm events. In the long-term, it can alter landform, landscape pattern and character of the area, influence the plant species composition and distribution within land cover or damage existing landscape elements and features. Climate change can contribute to the spread of pests and diseases, which in turn affects the landscape resource as well as visual amenity (for example, when a large number of trees die off as a result of pest or disease and need to be felled). Furthermore, climate change adaptation measures affect the landscape and visual receptors through the increasing introduction of renewable energy infrastructure into previously remote landscapes with few signs of human activity. Landscape elements, such as trees and woodlands, act as 'carbon sinks' (absorb and lock away more carbon from the atmosphere than they release) making a useful contribution to mitigating climate change. Conversely, any deforestation (overall loss in the total area of woodland) equates to the carbon being released back into the atmosphere which fuels further climate change.
Air Quality	Landscape elements, such as trees and other vegetation, absorb pollutants and particulate matter through their leaves and needles and thereby help to improve air quality. Less plant cover means less filtering capacity to clean the air.
Biodiversity	The Biodiversity SEA topic is relevant to landscape, as landscape provides creating habitat for wildlife. Changes to the landscape resource can alter habitats and their connectivity, which can result in both positive and negative effects on biodiversity, flora and fauna. Conversely, any mitigation and enhancement measures relevant to biodiversity can have an impact on the landscape and visual amenity. For these reasons, any landscape or planting proposals put forward as part of mitigation are normally prepared

[6]Ash Dieback: An Action Plan Toolkit for Scotland, The Tree Council, Spring 2021

SEA Topic	Relationship with other SEA topics
	in consultation with biodiversity specialists. Natural capital considerations and ensuring positive effects for biodiversity can be factored into landscape design considerations to deliver more environmentally sustainable designs.
Water Environment	The Water Environment SEA topic is relevant to landscape as landscape elements and features rely on the water environment and can be damaged by flooding or being subjected to prolonged waterlogging. Conversely, landscape elements such as woodland intercept rainfall, increase transpiration, increase the filtration of surface water and slow the flow of water.
Cultural Heritage	Landscape incorporates cultural heritage resources (assets), which help to shape the historic landscape character. Cultural heritage and landscape both contribute to a sense of place. Cultural heritage assets include inventory gardens and designed landscapes. Some cultural heritage resources also act as landmarks or key viewpoints in the landscape, influence cultural associations of a place and affect the sensitivity of landscape receptors. Cultural heritage assets can also contribute to the visual amenity of the area. Landscape and visual mitigation and enhancement measures can affect cultural heritage assets so should be prepared in consultation with cultural heritage specialists.
Population and Human Health	The Population and Human Health SEA topic is relevant as green and open spaces in the landscape provide opportunities for people to exercise as well as enjoy and experience nature, enhancing their quality of life and improving their physical and mental health and wellbeing. Although anecdotal evidence of the latter has long been known, there is a growing body of scientific research related to this interrelationship and its importance has become highlighted during the COVID-19 pandemic. In addition, tourism and consequently the economic welfare of local communities, often rely on the rich, scenic landscapes of the area. Residential properties, core paths, hill walking trails, long distance walking and cycling routes and roads all serve as locations from which people (visual receptors) experience views and any changes to them.
Soils	Soil supports the growth of plants and trees which constitute part of the landscape resource.
Material Assets	Landscape elements (for example, trees and woodland) provide numerous ecosystem services (processes by which the environment produces natural resources utilised by us all, such as clean air, water, food and raw materials). These are increasingly

SEA Topic	Relationship with other SEA topics
	recognised and accounted for as Scottish natural capital (natural assets that humans derive a wide range of services from) and as such, comprise Material Assets.

Appendix E: Legislation Review