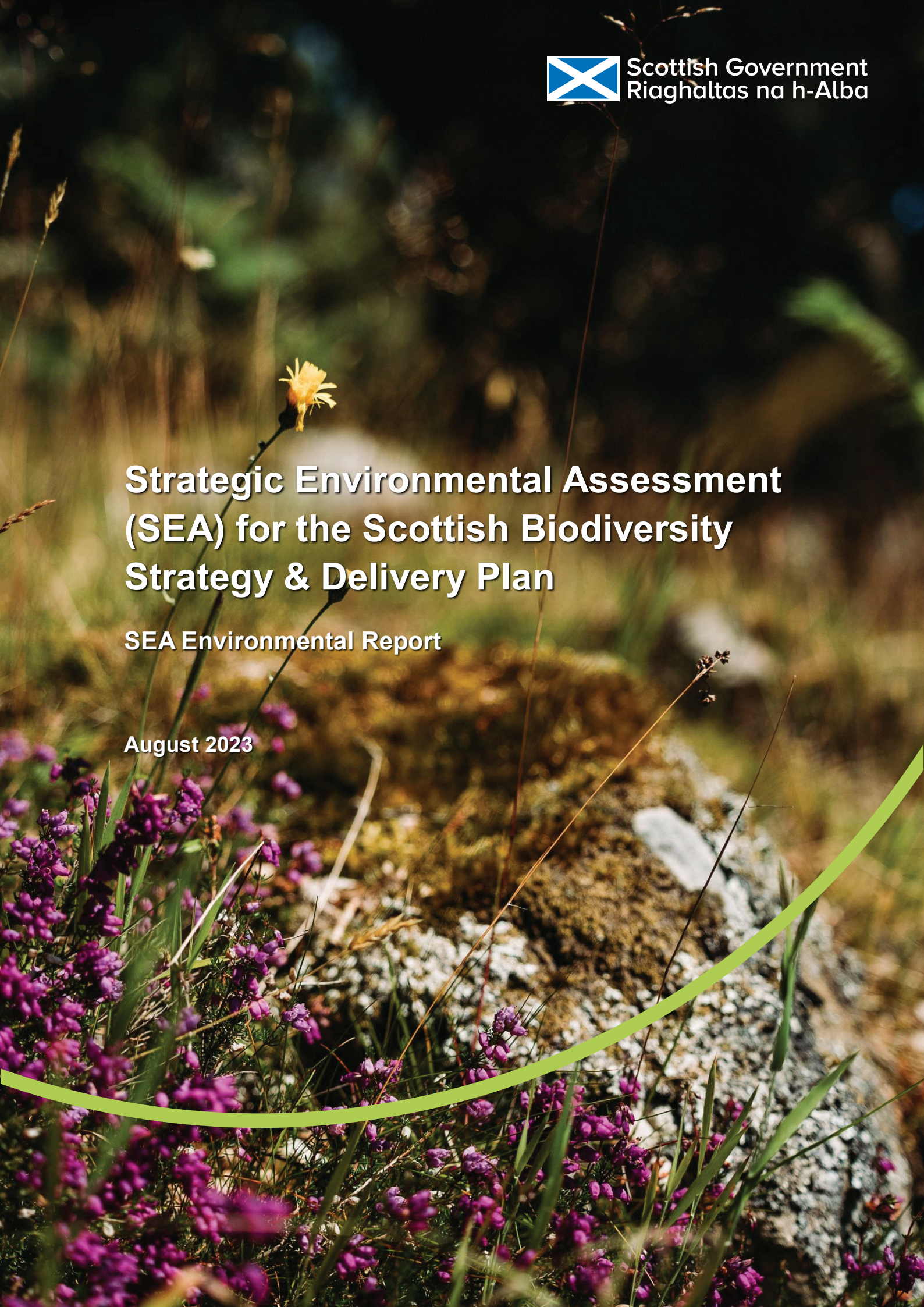

Scottish Government
Riaghaltas na h-Alba

Strategic Environmental Assessment (SEA) for the Scottish Biodiversity Strategy & Delivery Plan

SEA Environmental Report

August 2023

Quality information

Prepared by	Checked by	Verified by	Approved by
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Revision History

Revision	Date	Details	Name	Position
V1.0	May 2023	Initial draft for client comment	Nick Chisholm-Batten	Technical Director
V2.0	July 2023	Updated version	Nick Chisholm-Batten	Technical Director
V3.0	August 2023	Final version following finalisation of Delivery Plan	Nick Chisholm-Batten	Technical Director

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Table of Contents

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Non-Technical Summary

The SBS & Delivery Plan

The Scottish Government has recently prepared a draft Delivery Plan for the recently published Scottish Biodiversity Strategy (SBS).

The original biodiversity strategy was made up of two parts. Scotland's Biodiversity: It's in Your Hands was published in 2004 and set out a strategy for conserving Scotland's biodiversity to 2030. Secondly, the 2020 Challenge for Scotland's Biodiversity was published in June 2013. This document showed how the Scottish Government, its public agencies, Scottish business and others could contribute to the Strategy's aims and to reflect Convention on Biological Diversity International Aichi targets set for 2020.

In the period since its adoption, the Scottish Government has endorsed a number of international and national commitments, including associated with the following:

- The **Paris Agreement**, a legally binding international treaty on climate change.
- The **Scottish Biodiversity Strategy Post-2020: Statement of Intent** (2020)[1] which sets the direction for a new biodiversity strategy which will respond to the increased urgency for action to tackle the twin challenges of biodiversity loss and climate change. This includes a commitment to extend the area protected for nature in Scotland to at least 30% of Scotland's land area by 2030.
- The First Minister's endorsement of the **Leaders' Pledge for Nature** in November 2021, where world leaders have committed to reversing nature loss by 2030 and delivering a nature positive world.
- The adoption of the **Kunming-Montreal Global Biodiversity Framework** (GBF) negotiated at COP15 in 2022. The GBF aims to address biodiversity loss, restore ecosystems and protect indigenous rights.

In light of these commitments and ambitions and given the urgent nature of the ongoing twin crises of biodiversity loss and climate change, it was recognised that Scotland must develop a new biodiversity strategy which safeguards and enhances ecological functions.

As such, the new SBS seeks to out a nature positive vision for Scotland – one where biodiversity is regenerating and underpinning a healthy and thriving economy and society and playing a key role in addressing climate change. The SBS will be implemented through a series of Delivery Plans, covering a five-year period.

[1] Scottish Government (2020): 'Scottish Biodiversity Strategy Post-2020: Statement of Intent', [online] available to access via this link

This Strategic Environmental Assessment Environmental Report accompanies consultation on the first Delivery Plan, which covers the period 2023 to 2028. The Delivery Plan sets out a series of 33 priority actions, accompanied by in the region of 145 detailed actions.

Strategic Environmental Assessment for the Scottish Biodiversity Strategy

To support the development of the SBS & Delivery Plan, an independent Strategic Environmental Assessment (SEA) is being undertaken.

SEA is a systematic process for evaluating the environmental consequences of proposed plans, programmes and strategies to ensure environmental issues are fully integrated and addressed at appropriate stages of decision making, with a view to promoting sustainable development. The SEA is a means of supporting the evidence base for the SBS & Delivery Plan, and for providing an opportunity for proposals and alternative approaches to be effectively evaluated in terms of their likely significant effects on the environment. It is being undertaken in line with the procedures prescribed by the Environmental Assessment (Scotland) Act 2005.

The key stages of the SEA process for the SBS & Delivery Plan are set out overleaf:


Stage 1
Establish the context and baseline for the SEA
Identify key sustainability issues for the SBS & Delivery Plan
Develop the SEA Framework
SEA Scoping Report
Stage 2
Develop and refine alternatives for elements of the SBS & Delivery Plan
Appraise the significant effects of these alternatives
Stage 3
Appraise the draft SBS & Delivery Plan
Prepare the SEA Environmental Report for stakeholder engagement
Environmental Report
Stage 4
Stakeholder engagement on the SEA Environmental Report
Stage 5
Update the Environmental Report to reflect stakeholder comments
Monitor the significant effects of the SBS & Delivery Plan
Prepare the SEA Statement
SEA Statement
Preparing The SBS & Delivery Plan

Purpose and content of this Environmental Report

This Environmental Report, which is the main output of the SEA process, accompanies the Delivery Plan for consultation between September and November 2023.

Its purpose is to:

- Identify, describe, and evaluate the likely significant environmental effects of the SBS & Delivery Plan and alternative approaches.
- Provide a perspective on the likely environmental performance of the SBS & Delivery Plan and key areas for monitoring during its implementation; and
- Provide an opportunity for statutory consultees, interested parties and the public to offer views on the SEA process carried out to date.

The Environmental Report is the third document to be produced as part of the SEA process for the SBS. The first document was the joint SEA Screening and Scoping Report (February 2022), which included information about the baseline against which the SBS would be assessed and the 'framework' against which the SBS has been assessed. The second document was an updated version of the Scoping Report for stakeholder comment (February 2023).

In line with the provisions of the Environmental Assessment (Scotland) Act 2005, this Environmental Report presents:

- An overview of the scoping process for the SEA
- An assessment of alternative approaches that can be taken to key elements of the SBS & Delivery Plan
- An assessment of the current version of the SBS & Delivery Plan, in terms of the likely significant environmental effects of the proposals
- Proposals for monitoring the significant environmental effects of the SBS & Delivery Plan.
- The next steps for the SBS & Delivery Plan and accompanying SEA process.

The information presented in this Environmental Report has been presented through the following nine SEA topics:

Biodiversity, flora, and fauna	Climatic factors	Air	Water	Soil	Cultural Heritage	Landscape and geodiversity	Material Assets	Population and human health
								

Assessment of reasonable alternatives for the SBS & Delivery Plan

The assessment of 'reasonable alternatives' is a key element of the SEA process to meet the requirements of the Environmental Assessment (Scotland) Act 2005.

A central facet of the SEA process to date has been the appraisal of 'reasonable alternatives' for the SBS & Delivery Plan. The Environmental Assessment (Scotland) Act 2005 is not prescriptive as to what constitutes a reasonable alternative, stating only that the Environmental Report should "*identify, describe and evaluate the likely significant effects on the environment of implementing the plan…and reasonable alternatives to the plan… taking into account the objectives and geographical scope of the plan…*"

In developing reasonable alternatives for the SEA, a central consideration has been with respect to the key policy choices being made for the SBS. In this regard this Environmental Report has assessed a range of options as reasonable alternatives, with a view to exploring the options with particular potential for significant environmental effects. These assessments are designed to inform plan makers and stakeholders on the relative sustainability merits of alternative approaches the SBS could take on various strategy and delivery plan issues.

Development of options to assess as reasonable alternatives

In developing options to assess through the SEA process, the SEA team engaged plan-makers and stakeholders to understand where the focus of alternatives assessment should be. To aid in these discussions, two workshops were undertaken with key stakeholders to discuss reasonable alternatives in the context of the SBS. The purpose of these workshops was to discuss what options can be assessed as reasonable alternatives for the SBS, in conjunction with the objectives, key issues, challenges and opportunities associated with the strategy and delivery plan elements of the SBS.

The options formulated through these workshops relate to the following:

- Options exploring whether an ecosystem or a ‘flagship species’ approach to the SBS should be taken to the SBS.
- Options to explore whether the restoration of specific ecosystems should be focussed on through the SBS.
- Options relating to the implementation of SBS, including the appropriateness of sector specific strategies or plans.
- Options to explore whether SBS Delivery Plan actions should have a shorter term or longer-term timeframe, including relating to the 2030 and 2045 targets for biodiversity.

Chapter 5 of this Report presents details of the options assessed and the reasoning behind their choice as reasonable alternatives. This is accompanied by an assessment of the options against the SEA Framework developed during scoping. Infographics presenting summary appraisal findings for each set of options are also set out in Chapter 5 and reproduced overleaf.

Presented in relation to the nine SEA topics, the infographics show the relative performance of each option against each other. The green ‘outer ring’ is used to highlight where options are best performing (ranking 1st), while the red ‘inner ring’ represents the option which performs less well (ranking 2nd). Where options are ranked equally, or it is not possible to differentiate between the options, an equals sign is used within both diagrams.

Flagship species vs an ecosystem approach

Biodiversity, flora and fauna | Climatic factors | Air | Water | Soil | Cultural Heritage | Landscape and geodiversity | Material assets | Population and human health

Option FS1:

Utilise an approach which places an additional impetus on particular flagship species or well-known habitats.

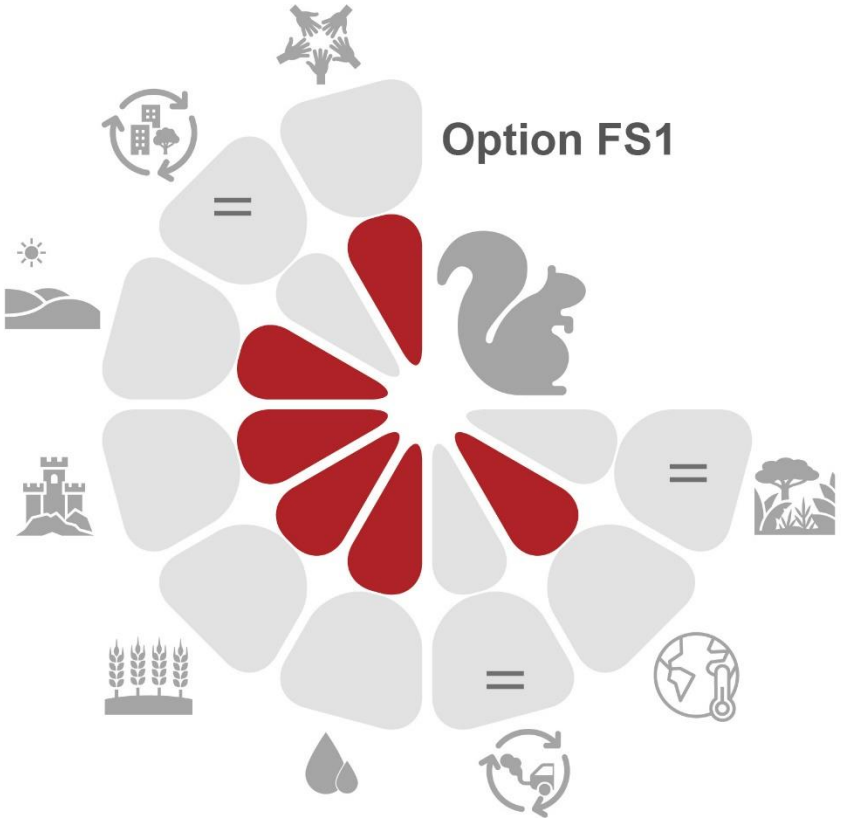
Option FS2:

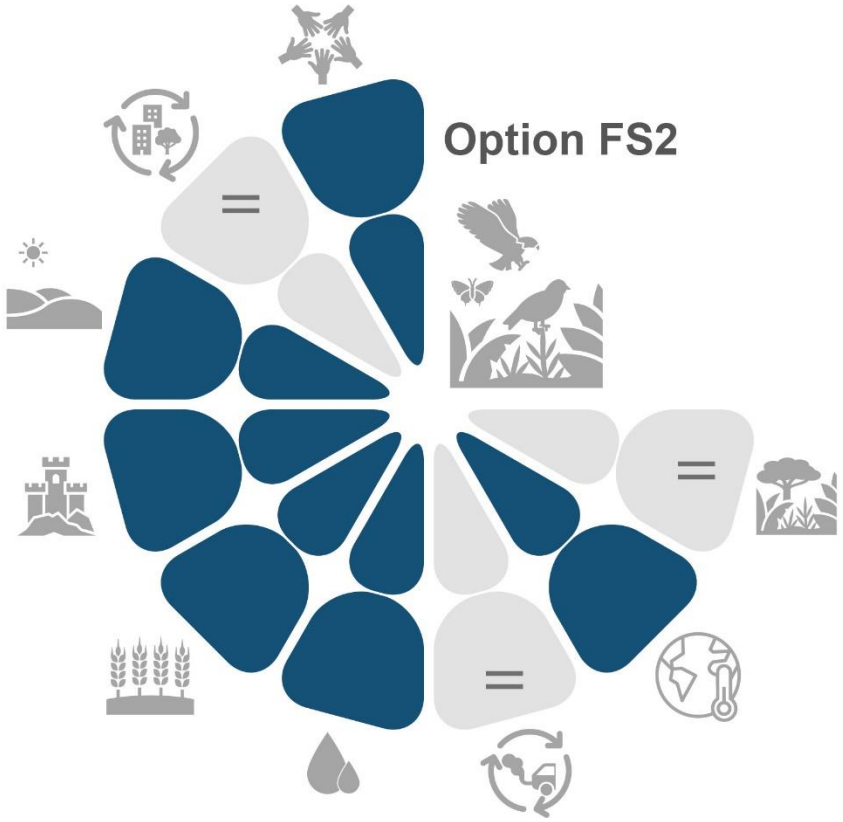
Utilise an approach which focuses on ecosystems at a landscape scale.

Ranking

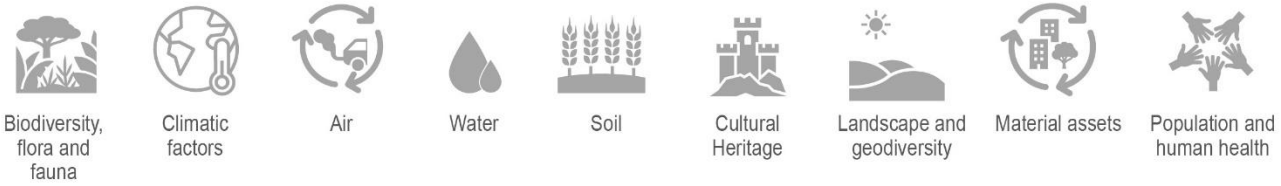
1st

2nd





Restorative vs regenerative approach

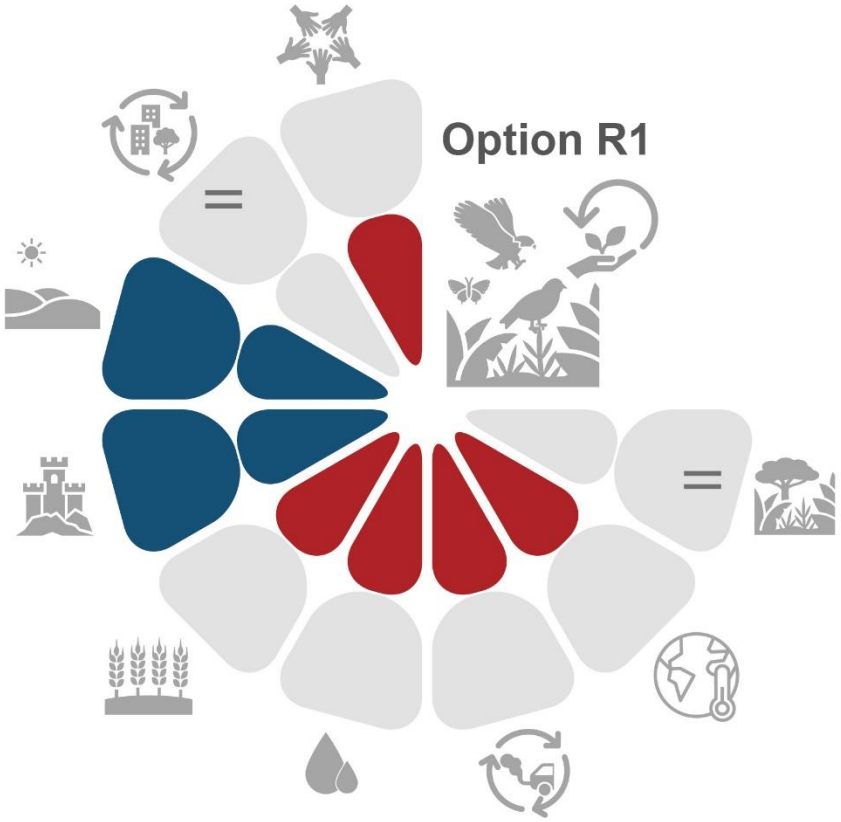


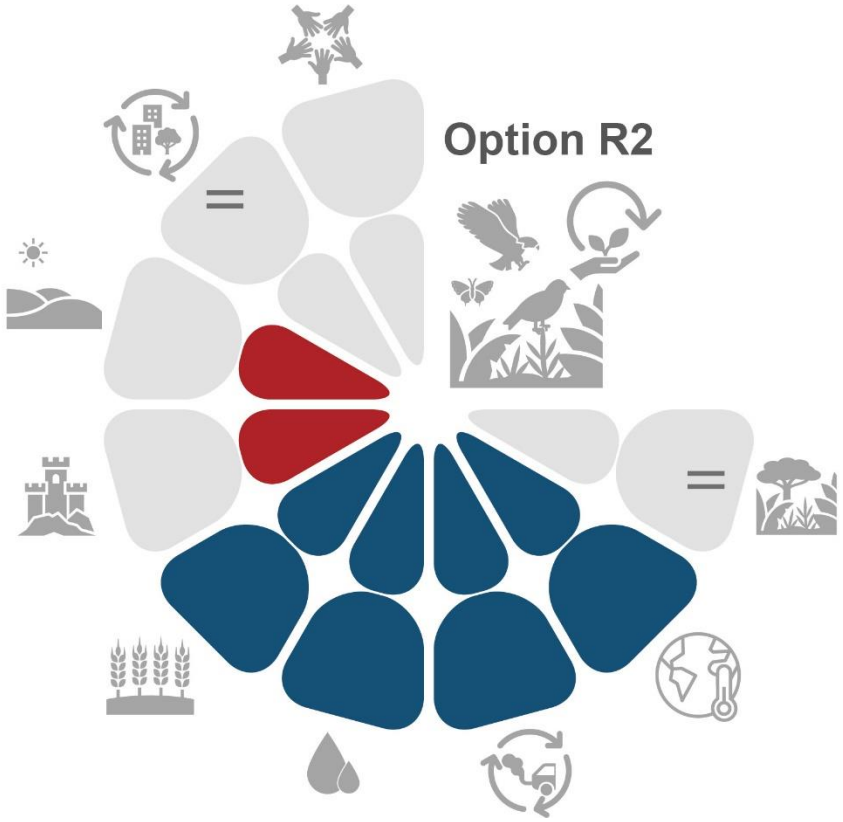
Option R1:

Take an approach through the SBS which focusses on the restoration of specific ecosystems.

Option R2:

Take a regenerative-led approach through the SBS which does not focus on the restoration of specific ecosystems.





Options relating to the implementation of the SBS

Biodiversity, flora and fauna | Climatic factors | Air | Water | Soil | Cultural Heritage | Landscape and geodiversity | Material assets | Population and human health

Option DP1:

Develop an overarching SBS which would then be implemented through sector specific strategies, plans and programmes.

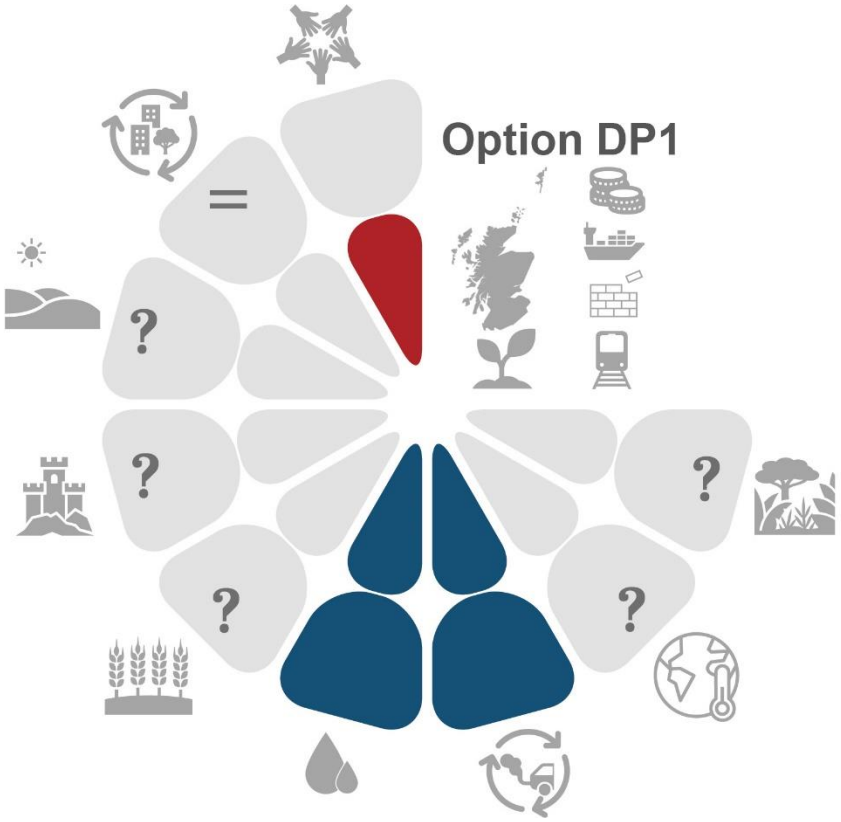
Option DP2:

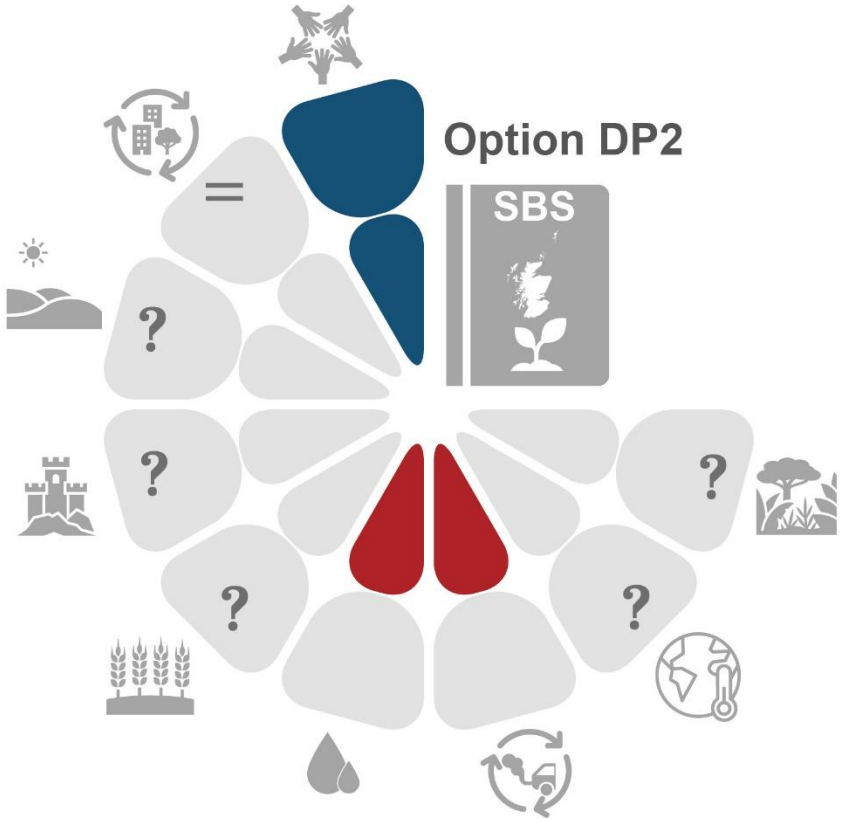
Develop a standalone strategy, which would be accompanied by subsequent SBS-focussed delivery plans covering all sectors.

Ranking

1st

2nd





Options relating to the timeframes of Delivery Plans

Biodiversity, flora and fauna | Climatic factors | Air | Water | Soil | Cultural Heritage | Landscape and geodiversity | Material assets | Population and human health

Option BT1:

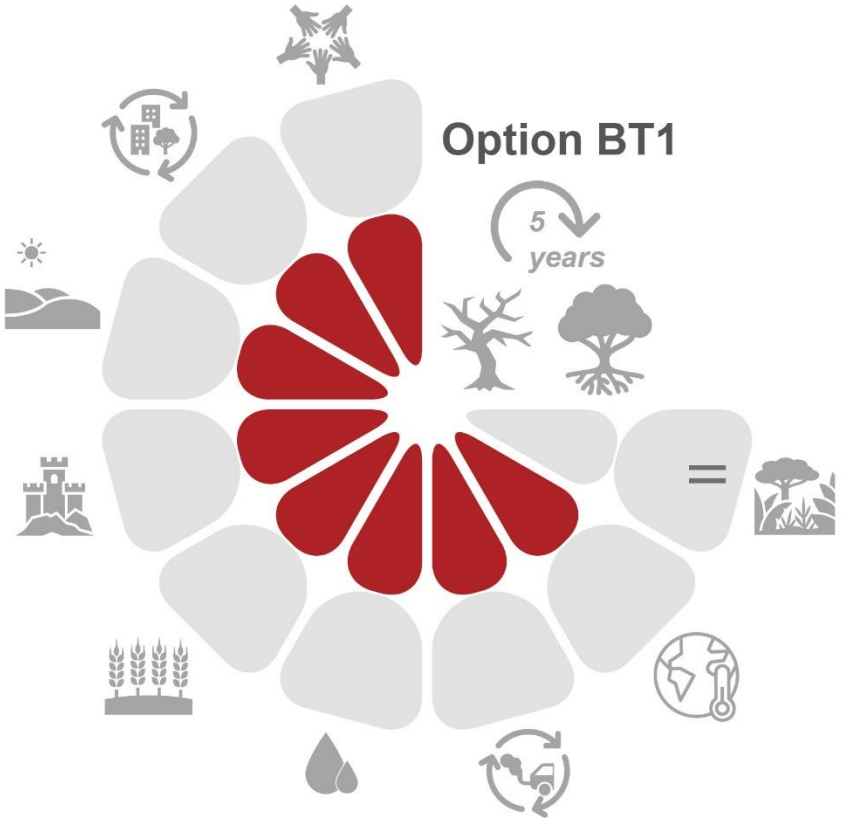
Focus the first five-year Delivery Plan actions specifically on the current drivers behind biodiversity loss, targeting those actions which will help deliver the required enhancements in the period to 2030.

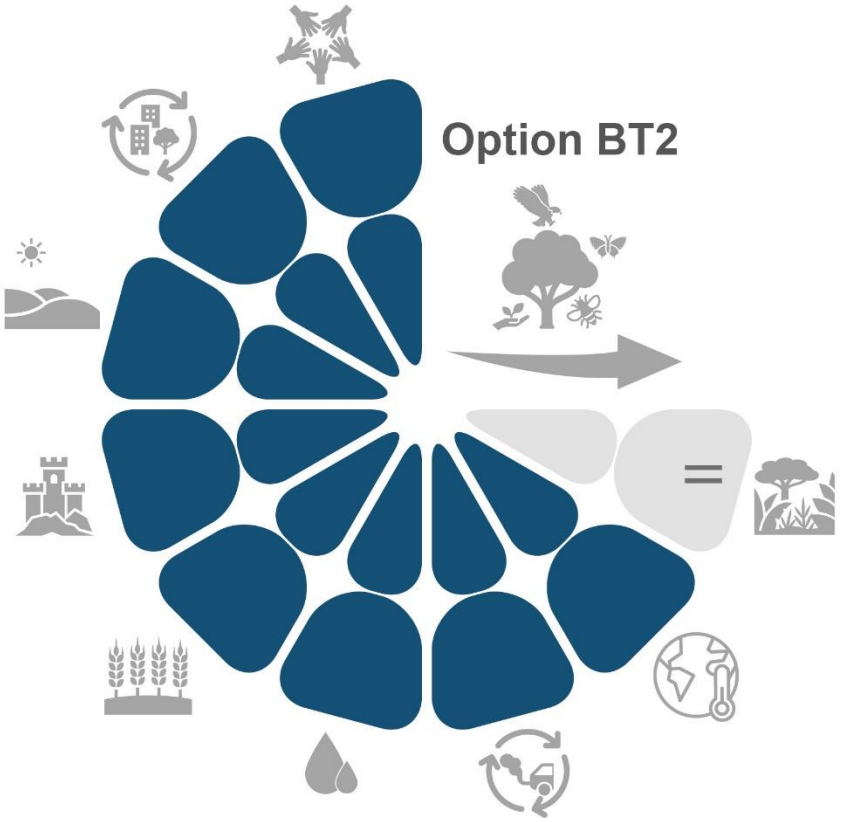
Option BT2: Take a longer-term approach to Delivery Plan actions which seeks to deliver broader benefits for biodiversity.

Ranking

1st

2nd





Assessment of SBS & Delivery Plan

Chapter 6 of the Environmental Report presents an assessment of the current version of the SBS & Delivery Plan.

The SBS has been introduced by Scottish Government to halt biodiversity loss and accelerate nature recovery. The Strategy aims for Scotland to be Nature Positive by 2030 (having halted biodiversity loss by this point in time) and to have restored and regenerated biodiversity across the country by 2045. The SBS will sit alongside Scotland's Climate Change Plan and contribute to Scotland's commitment to Net Zero.

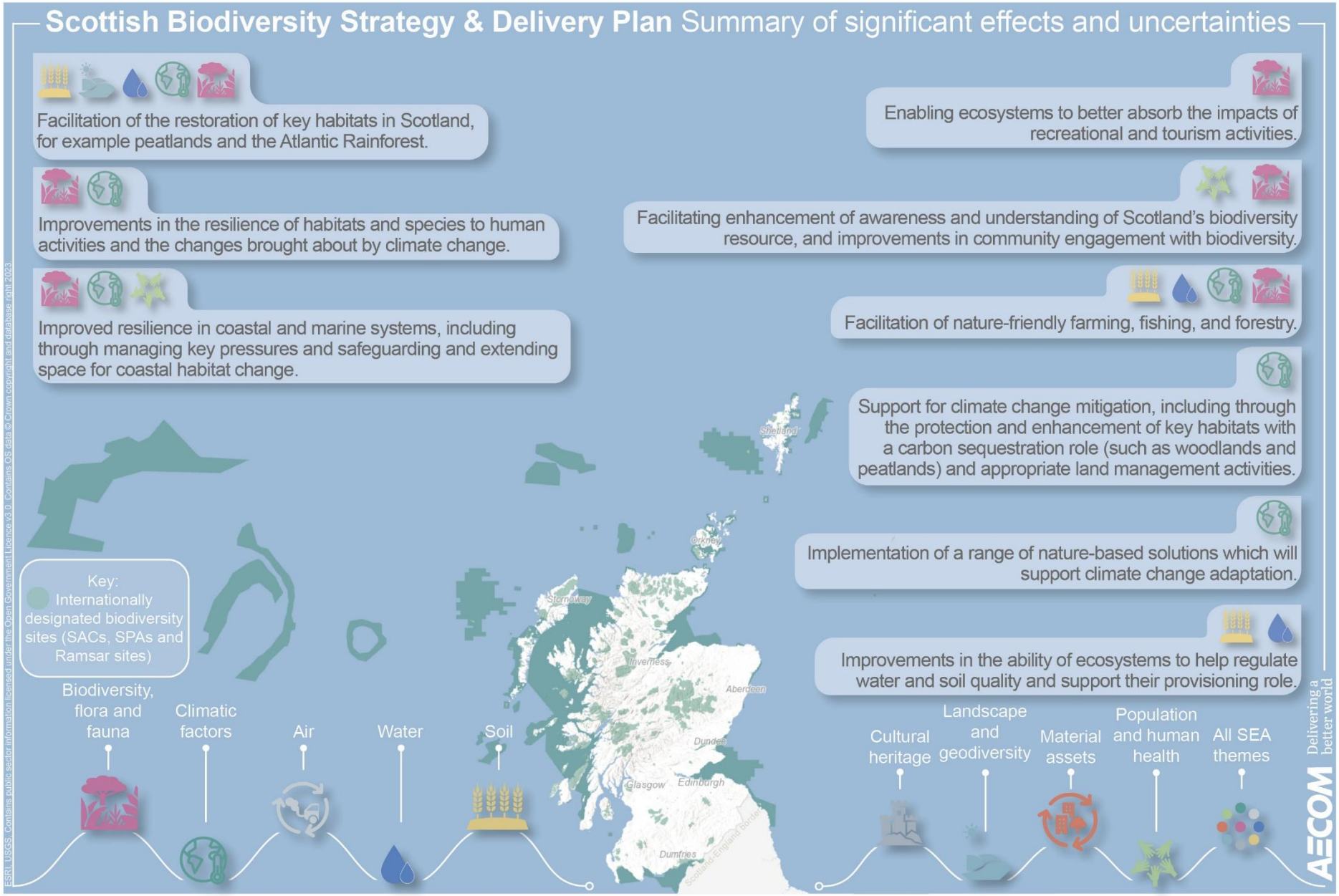
The Strategy is supported by the first Delivery Plan, which covers the period 2023 to 2028 and builds upon the vision and outcomes articulated by the Strategy. The Strategy and Delivery Plan form part of a Strategic Delivery Framework aimed at providing the enabling conditions for success. In addition to the SBS and Delivery Plan, as part of this framework, Scottish Government will also introduce a Natural Environment Bill to put in place statutory targets for nature conservation, an Investment Plan setting out the cost of identified actions and investment drivers, and a monitoring and reporting framework to measure the effectiveness of actions.

The Strategy has identified priority actions for the period up to 2030 which will assist Scotland in becoming Nature Positive. These actions are explored in more detail and built upon through the Delivery Plan. Together the documents present 33 priority actions across six broad objectives. The first five objectives are identified in the Strategy and broadly tackle direct drivers; they are:

- Accelerate restoration and regeneration.
- Safeguard land and sea.
- Support nature-friendly farming, fishing, and forestry.
- Recover and protect vulnerable and important species and habitats.
- Invest in nature.

The Delivery Plan adds an additional sixth objective to 'act on the indirect drivers of change for biodiversity' and breaks down the 33 priority actions into some 145 detailed actions.

The SBS & Delivery Plan proposals have been assessed against the SEA Framework developed during scoping, with the detailed findings of the assessment presented in Chapter 6 of the Environmental Report. The infographic below identifies the key significant effects identified through this assessment.


Scottish Biodiversity Strategy & Delivery Plan Summary of significant effects and uncertainties
Facilitation of the restoration of key habitats in Scotland, for example peatlands and the Atlantic Rainforest.
Improvements in the resilience of habitats and species to human activities and the changes brought about by climate change.
Improved resilience in coastal and marine systems, including through managing key pressures and safeguarding and extending space for coastal habitat change.
Enabling ecosystems to better absorb the impacts of recreational and tourism activities.
Facilitating enhancement of awareness and understanding of Scotland's biodiversity resource, and improvements in community engagement with biodiversity.
Facilitation of nature-friendly farming, fishing, and forestry.
Support for climate change mitigation, including through the protection and enhancement of key habitats with a carbon sequestration role (such as woodlands and peatlands) and appropriate land management activities.
Implementation of a range of nature-based solutions which will support climate change adaptation.
Improvements in the ability of ecosystems to help regulate water and soil quality and support their provisioning role.
Key:
Internationally designated biodiversity sites (SACs, SPAs and Ramsar sites)
Shetland
Orkney
Stornoway
Inverness
Aberdeen
Dundee
Glasgow
Edinburgh
Dumfries
Scotland-England Border
Biodiversity, flora and fauna
Climatic factors
Air
Water
Soil
Cultural heritage
Landscape and geodiversity
Material assets
Population and human health
All SEA themes
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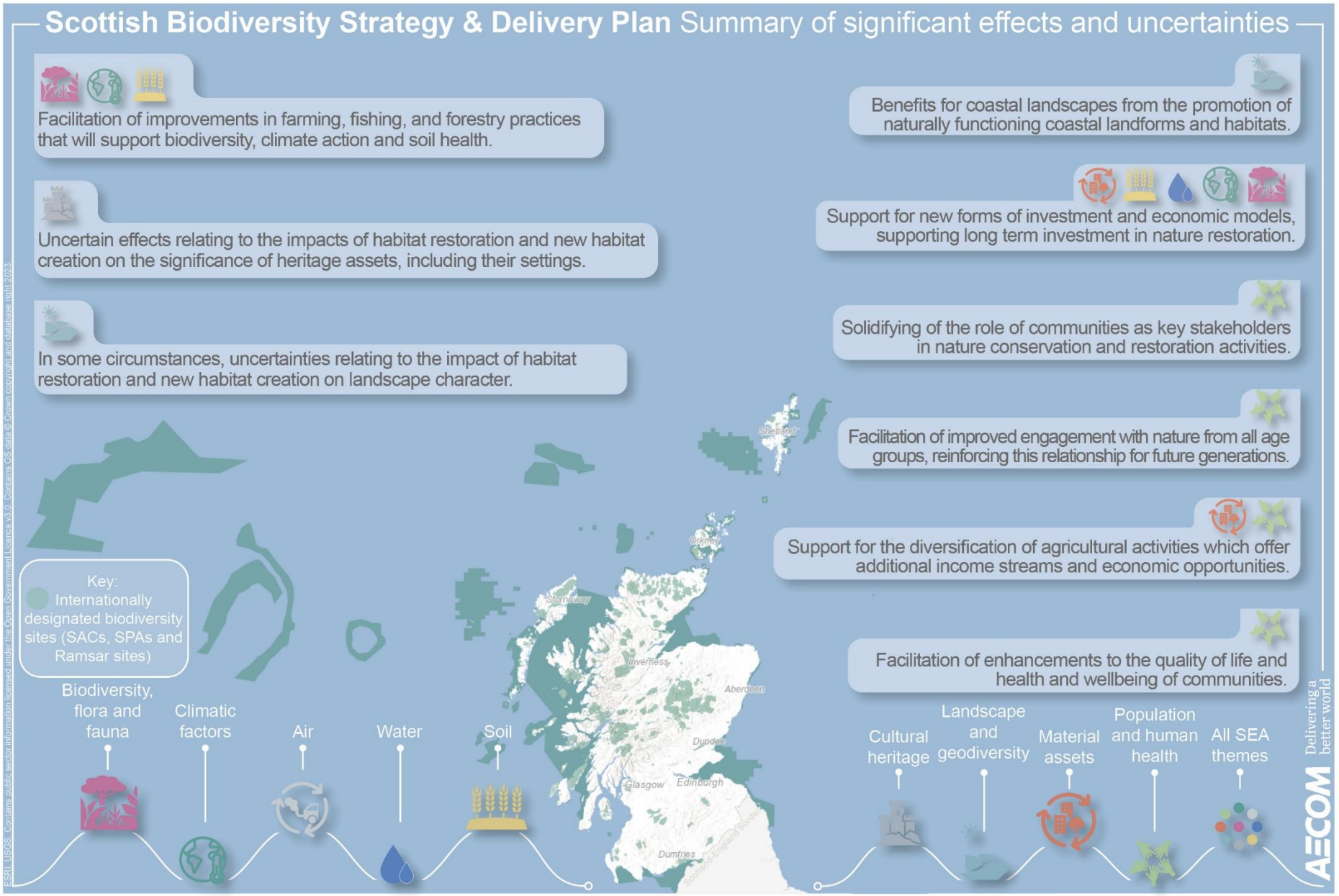
Scottish Biodiversity Strategy & Delivery Plan Summary of significant effects and uncertainties
Facilitation of improvements in farming, fishing, and forestry practices that will support biodiversity, climate action and soil health.
Uncertain effects relating to the impacts of habitat restoration and new habitat creation on the significance of heritage assets, including their settings.
In some circumstances, uncertainties relating to the impact of habitat restoration and new habitat creation on landscape character.
Benefits for coastal landscapes from the promotion of naturally functioning coastal landforms and habitats.
Support for new forms of investment and economic models, supporting long term investment in nature restoration.
Solidifying of the role of communities as key stakeholders in nature conservation and restoration activities.
Facilitation of improved engagement with nature from all age groups, reinforcing this relationship for future generations.
Support for the diversification of agricultural activities which offer additional income streams and economic opportunities.
Facilitation of enhancements to the quality of life and health and wellbeing of communities.
Key:
Internationally designated biodiversity sites (SACs, SPAs and Ramsar sites)
Shetland
Orkney
Stornoway
Inverness
Aberdeen
Dundee
Glasgow
Edinburgh
Dumfries
Scotland-England Border
Biodiversity, flora and fauna
Climatic factors
Air
Water
Soil
Cultural heritage
Landscape and geodiversity
Material assets
Population and human health
All SEA themes
AECOM
Delivering a better world
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Overall, the assessment of the SBS & Delivery Plan highlights that there are no likely significant negative effects arising as a result of the proposals. In addition there are, broadly, no conflicts between the objectives of the SBS and the SEA objectives. This is reflected by the conclusions of significant or minor positive effects against all SEA topics.

In this respect the assessment has highlighted that there are a range of actions outlined by the Delivery Plan that will support the protection and enhancement of the environment across Scotland, whilst also benefitting the quality of life and health and wellbeing of its communities. This includes relating to the objectives to address the twin crises of biodiversity loss and climate change, crises which ultimately affect natural resources, air, water, and soil quality, landscapes, and human health.

The assessment has however highlighted some uncertainties with regards to the effect of habitat restoration and new habitat creation on the fabric and setting of the historic environment and landscape character.

To help ensure that the environmental value of the proposals are maximised, and the uncertainties identified through the assessment are addressed, a number of recommendations can be made for the implementation of the SBS & Delivery Plan.

These are as follows:

- Mechanisms should be implemented to ensure that the location, species and scale of planting avoids negative impacts to historic environment assets, e.g. to archaeological sites or the setting of a listed building, or to minimise these and maximise opportunities for enhancement.
- Habitat restoration and re-creation should be informed by appropriate research and historic environment/landscape character assessments. In this respect appropriate methods for enhancements should be devised with input from historic environment and landscape specialists from the outset.
- Biodiversity enhancements should be appropriately designed to reinforce the special qualities of a landscape. The design of biodiversity enhancements should therefore be sensitive to the surrounding landscape, and exercises in habitat restoration and creation should be carefully selected to complement existing character and setting.

SEA monitoring programme

Schedule 2 of the Environmental Assessment (Scotland) Act highlights that the Environmental Report should include "*a description of the measures envisaged concerning monitoring*."

Monitoring in SEA is a means of evaluating the environmental performance of the plan or strategy and monitoring compliance through its implementation. It is also a way to check whether the effects predicted in the SEA arise as envisaged, or whether unforeseen issues arise.

Chapter 0 therefore sets out a proposed preliminary monitoring programme for measuring the SBS & Delivery Plan's implementation. It pays particular attention to the areas where the SEA has identified potential significant effects and also suggests where monitoring is required to help ensure that the positive effects of the proposals are achieved through implementation.

Next steps

This Environmental Report is being consulted on alongside the Delivery Plan.

Following the completion of the consultation period in November 2023, comments will be reviewed and analysed. Any changes arising to the proposals will need to be assessed as part of the SEA process.

Part 3 of the Environmental Assessment (Scotland) Act 2005 requires that a 'statement' be made available to accompany the proposals, as soon as possible after their adoption. The purpose of the SEA Adoption Statement is to outline how the SEA process has influenced and informed the proposals' development process and demonstrate how consultation on the SEA has been taken into account.

To meet these requirements, an SEA Adoption Statement will be published with the adopted Delivery Plan. The SEA Adoption Statement will set out: the reasons for choosing the preferred SBS & Delivery Plan in light of other reasonable alternatives; how environmental considerations were integrated into the SBS & Delivery Plan's development process; how consultation responses were taken into account; and the measures decided for monitoring the significant effects of the proposals.

1. Introduction

Background

1.1 AECOM has been commissioned to undertake an independent Strategic Environmental Assessment (SEA) in support of the emerging Scottish Biodiversity Strategy & Delivery Plan (hereafter referred to as the "SBS") on behalf of the Scottish Government.

1.2 SEA is a systematic process for evaluating the environmental consequences of proposed plans, strategies or programmes to ensure environmental issues are fully integrated and addressed at the earliest appropriate stage of decision making, with a view to promoting sustainable development.

1.3 This Environmental Report, which is the main output of the SEA process, accompanies the first SBS Delivery Plan for consultation.

The Scottish Biodiversity Strategy & Delivery Plan

1.4 The Scottish Government has recently prepared a draft Delivery Plan for the recently published Scottish Biodiversity Strategy.

1.5 The original strategy was made up of two parts. *Scotland's Biodiversity: It's in Your Hands*[2] was published in 2004 and sets out a strategy for conserving Scotland's biodiversity to 2030. Secondly, the *2020 Challenge for Scotland's Biodiversity*[3] was published in June 2013. This document showed how the Scottish Government, its public agencies, Scottish business and others could contribute to the Strategy's aims and to reflect Convention on Biological Diversity (CBD) International Aichi targets set for 2020.

1.6 In the period since its adoption, the Scottish Government has endorsed a number of international and national commitments, including associated with the following:

- The **Paris Agreement**, a legally binding international treaty on climate change, which seeks to hold the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels. Adopted by 196 Parties at the UN Climate Change Conference (COP21) in Paris, France, in December 2015, it entered into force in November 2016
- The **Scottish Biodiversity Strategy Post-2020: Statement of Intent** (2020)[4] which sets the direction for a new biodiversity strategy which will respond to the increased urgency for action to tackle the twin challenges of biodiversity loss and climate change. This includes a commitment to extend the area protected for nature in Scotland to at least 30% of Scotland's land area by 2030.

[2] Scottish Government (2004): 'Scotland's biodiversity: it's in your hands', [online] available to access via this link
[3] Scottish Government (2013): '2020 challenge for Scotland's biodiversity', [online] available to access via this link
[4] Scottish Government (2020): 'Scottish Biodiversity Strategy Post-2020: Statement of Intent', [online] available to access via this link

- The First Minister's endorsement of the **Leaders' Pledge for Nature** in November 2021, where world leaders have committed to reversing nature loss by 2030 and delivering a nature positive world.
- The adoption of the **Kunming-Montreal Global Biodiversity Framework** (GBF), negotiated at COP15 in 2022. The GBF aims to address biodiversity loss, restore ecosystems and protect indigenous rights, and includes targets to:
    - Restore 30% degraded ecosystems globally (on land and sea) by 2030.
    - Conserve and manage 30% areas (terrestrial, inland water, and coastal and marine) by 2030; and
    - Stop the extinction of known species, and by 2050 reduce tenfold the extinction risk and rate of all species (including unknown).

1.7 In light of these commitments and ambitions and given the urgent nature of the ongoing twin crises of biodiversity loss and climate change, it was recognised that Scotland must develop a new Biodiversity Strategy which safeguards and enhances ecological functions.

1.8 As such, the SBS seeks to out a nature positive vision for Scotland – one where biodiversity is regenerating and underpinning a healthy and thriving economy and society and playing a key role in addressing climate change. The SBS will be accompanied by a series of Delivery Plans, covering a five-year period. The first Delivery Plan will undergo consultation in September 2023.

Table 1.1: Key facts relating to the Scottish Biodiversity Strategy & Delivery Plan

Responsible authority	Scottish Government
Title of plan	Scottish Biodiversity Strategy & Delivery Plan
Subject	National-level biodiversity strategy
Purpose	The SBS provides a strategic framework for biodiversity across Scotland. A series of rolling delivery plans will implement the Strategy.
Timescale	The SBS covers a 25-year time period, with the first SBS Delivery Plan covering 2023 to 2028.
Area covered by the plan	Scotland
Summary of content	In light of mounting evidence that Scotland continues to experience dramatic declines in biodiversity, the Scottish Government seeks to set out through the SBS an ambitious new strategy to halt biodiversity loss by 2030 and reverse it with large-scale restoration by 2045. In this respect the SBS aims to deliver the transformational changes needed to protect and restore terrestrial, freshwater and marine biodiversity in Scotland. The SBS will be accompanied by a series of Delivery Plans, covering a five-year period. The first Delivery Plan will be published for consultation in September 2023.
Contact point	Liz Walker Biodiversity Programme Manager Biodiversity Unit, Scottish Government Email address: liz.walker@gov.scot

Vision, aims and scope of the SBS & Delivery Plan

1.9 The SBS is a 25-year document which sets out high level outcomes, conditions for success and priority actions.

1.10 The overarching strategy is framed under a clear ambition: for Scotland to be Nature Positive by 2030, and to have restored and regenerated biodiversity across the country by 2045.

1.11 The Vision for the SBS is as follows:

> *By 2045, Scotland will have restored and regenerated biodiversity across our land, freshwater and seas.*
>
> *Our natural environment, our habitats, ecosystems and species, will be diverse, thriving, resilient and adapting to climate change.*
>
> *Regenerated biodiversity will drive a sustainable economy and support thriving communities, and people.*

1.12 To deliver this Vision, the SBS identifies a detailed set of Outcomes which seek to define and understand what success will look like by 2045, including: on land; in rivers, lochs and wetlands; and marine and coastal environments. These are framed broadly across different ecosystems, for example: farmland; uplands (including peatlands); woodlands/forestry; rivers/lochs and wetlands; towns and cities; coastal; marine; and soils and geodiversity.

1.13 These Outcomes will be achieved through a series of detailed actions set out in SBS Delivery Plans. In the current Delivery Plan (discussed below), the actions are organised under six objectives. These include the five objectives set out in the Strategy, as well as an additional objective designed to take action on the indirect drivers of biodiversity.

1.14 The six objectives are as follows:

1) Accelerate restoration and regeneration.
2) Protect nature on land and at sea, across and beyond protected areas.
3) Embed nature positive farming, fishing and forestry.
4) Protect and support the recovery of vulnerable and important species and habitats.
5) Invest in nature; and
6) Take action on the indirect drivers of biodiversity.

Current stage of development for the SBS & Delivery Plan

1.15 This Environmental Report accompanies the first SBS Delivery Plan for consultation. The new Strategy & Delivery Plan should be viewed as parts 1 and 2 of the same SBS framework. Part 1 sets out the overall vision for biodiversity in Scotland over the next 25 years, with part 2 setting out how it will be achieved. In this context the SBS will be a scientific, evidence-based document that reflects the failing state of Scotland's biodiversity and the need for urgent action.

1.16 Work on the Strategy element of the SBS has been underway for some time, with an initial series of workshops taking place in early 2022 to scope out the detail of the Strategy, develop ideas and test concepts. The Strategy is the starting point in a process which will lead into the development of rolling delivery plans and, through the introduction of a Natural Environment Bill, statutory nature restoration targets.

1.17 The Scottish Government held an initial consultation on the draft Strategy in June 2022. This consultation was part of an ongoing engagement process with a wide range of stakeholders who have an interest in Scotland's biodiversity, including land managers, environmental organisations, local authorities and other partners. The consultation sought to obtain the views of a wider range of organisations and individuals to test and further develop ideas.

1.18 The consultation document set out a strategic vision and high-level milestones for the Strategy, along with indicative outcomes and conditions for success. Feedback from the consultation was that stakeholders found it difficult to comment without additional detail on the actions underpinning the Strategy. It

was therefore agreed to publish the Strategy in draft later in 2022 and then to further consult on the Strategy alongside the delivery plan in June 2023. This would also allow further amendments that may be required following COP15 when a finalised global framework is agreed.

1.19 In response to this the new Strategy was published in December 2022.[5] This was in lieu of the Delivery Plan element of the SBS being further developed during 2023, informed by further informal consultation with stakeholders.

1.20 In the period since the publishing of the Strategy, the first Delivery Plan for the SBS has been developed. Each chapter of the Delivery Plan sets out the proposed actions, showing where work is under way, planned, or needs further exploration. Whilst some of the actions are universal, and contribute to several outcomes, others are more specific to landscapes or marine environments.

1.21 This SEA Environmental Report therefore accompanies the Delivery Plan for consultation, published in September 2023 for a 12-week period.

[5] Scottish Government (December 2022): 'Scottish Biodiversity Strategy to 2045: Tackling the Nature Emergency in Scotland', [online] available to access via this link

2. Strategic Environmental Assessment (SEA) explained

Purpose of SEA

2.1 SEA considers and communicates the likely significant effects of an emerging plan, programme or strategy, and the reasonable alternatives considered during the plan making process, in terms of key sustainability issues. The aim of SEA is to inform and influence the plan-making process with a view to avoiding or mitigating negative effects and maximising positive effects. Through this approach, the SEA seeks to maximise an emerging plan's contribution to sustainable development.

2.2 An SEA is undertaken in line with the procedures prescribed by the Environmental Assessment (Scotland) Act 2005.

2.3 The Act requires that an environmental report is published for consultation alongside the draft plan that '*shall identify, describe and evaluate the likely significant effects on the environment of implementing (a) the plan or programme; and (b) reasonable alternatives to the plan or programme…taking into account the objectives and the geographical scope of the plan or programme*.' The report must then be taken into account, alongside consultation responses, when finalising the plan.

2.4 The 'likely significant effects on the environment', are those defined in the Act as 'including 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 interrelationship between the above factors'. Reasonable alternatives to the plan need to take into consideration the objectives for the plan and its geographic scope. The choice of 'reasonable alternatives' is determined by means of a case-by-case assessment and a decision.

Stages of SEA

2.5 The key stages of the SEA for the SBS & Delivery Plan are set out below.

Figure 2.1: Stages of the SEA for the SBS & Delivery Plan

This Environmental Report

Purpose of this Environmental Report

2.6 This Environmental Report accompanies the Delivery Plan for the SBS for consultation and is a key output of the SEA process. Its purpose is to:

- Identify, describe and evaluate the likely significant environmental effects of the SBS & Delivery Plan and alternative approaches; and
- Provide a perspective on the likely environmental performance of the SBS & Delivery Plan and key areas for monitoring during its implementation.

2.7 The Environmental Report is the third document to be produced as part of the SEA process for the SBS. The first document was the joint SEA Screening and Scoping Report (February 2022), which included information about the baseline against which the SBS would be assessed and the 'framework' against which

the SBS has been assessed. The second document was an updated version of the Scoping Report for stakeholder comment (February 2023).

Structure of this Environmental Report

2.8 In line with the provisions of the Environmental Assessment (Scotland) Act 2005, this Environmental Report has been structured as follows:

- **Chapter 3** presents an overview of the scoping process for the SEA (**Stage 1** in **Figure 2.1**).
- **Chapters 4 and 5** present an overview of the options appraisal undertakes as part of the process for assessing reasonable alternatives for the SBS & Delivery Plan (**Stage 2**)
- **Chapter 6** presents an assessment of the current version of the SBS & Delivery Plan, in terms of the likely significant environmental effects of the strategy and delivery plan components of the SBS (**Stage 3**)
- **Chapter 7** presents proposals for monitoring the significant environmental effects of the SBS, and opportunities for enhancements (linked to **Stage 5**)
- **Chapter 8** subsequently sets out the next steps for the SBS & Delivery Plan and accompanying SEA process.

2.9 Consultation on this Environmental Report alongside the SBS & Delivery Plan comprises **Stage 4**.

3. Scope of the SEA

What is the scope of the SEA?

SEA Scoping Report

3.1 The Environmental Assessment (Scotland) Act 2005 requires that: "*Before deciding on the scope and level of detail of the information to be included in the environmental report to be prepared in accordance with section 14; the responsible authority shall send to each consultation authority such sufficient details of the qualifying plan or programme as will enable the consultation authority to form a view on those matters*." In Scotland, the consultation bodies are Historic Environment Scotland, the Scottish Environmental Protection Agency (SEPA) and Scottish Natural Heritage (NatureScot).

3.2 These authorities were consulted on the scope of the emerging SBS through initial scoping and screening undertaken in early 2022, and a Combined Screening and Scoping Report was released to consultees in February 2022. Responses were received from Historic Environment Scotland, SEPA, and NatureScot in March 2022. Responses are detailed in **Appendix A**.

3.3 The authorities were further consulted on the scope of the SBS and Delivery Plan SEA in February 2023. This second Scoping Report provided an update to the 2022 iteration. Comments received on the Scoping Report (March 2023), and how they have been considered and addressed, are presented in **Table 3.1** below.

Table 3.1 Scoping consultation responses March 2023

Consultation response	How the response was considered/ addressed
Scottish Environment Protection Agency (SEPA)	
We agree with the scope of the assessment and are satisfied with the proposed SEA assessment framework. We welcome the inclusion of table 1 outlining how initial scoping consultation responses have been considered. It is noted that reasonable alternatives will be identified as the strategy develops and will be presented in the ER. Point 1 of section 5.5.5 should make it clear that the figures 2089 (64%) and 1164 (36%) are referring to water bodies. We are satisfied with the proposed SEA assessment framework. On completion, the Environmental Report and the strategy to which it relates should be submitted to the Scottish Government SEA Gateway (SEA_Gateway@gov.scot) which will forward it to the Consultation Authorities.	Comment noted. Baseline revised to clarify reference is being made to waterbodies.

Consultation response	How the response was considered/ addressed
In this case we will not be providing a detailed assessment of the Environmental Report.	
Scotland's Nature Agency (NatureScot)	
NatureScot declares an interest in this strategy since we are closely involved in drafting the revision of the Scottish Biodiversity Strategy and the development of its Delivery Plan. This includes assisting Scottish Government with the scope and content of the strategy, and ultimately a commitment to implementing the strategy. Due to our declared interest in this strategy we have considered our role as a Consultation Authority, in accordance with Section 15(2) of the Environmental Assessment (Scotland) Act 2005. We consider that it would not be appropriate for NatureScot to comment on further stages in the SEA process as a Consultation Authority. We note you have included our informal comments on the previous scoping report in Annex B. **Scope of assessment and level of detail** Subject to our declared interest, NatureScot is content with the scope and level of detail proposed for the Environmental Report. **Consultation period for the environmental report** We note that the duration of the period proposed for consultation on the Environmental Report has not been stated. **Concluding remarks** Although we are closely involved in the writing of the strategy and its delivery plan, and therefore consider it inappropriate for us to respond as a Consultation Authority, we would be happy to provide Scottish Government with any further advice in connection with the SEA of the revised Scottish Biodiversity Strategy and Delivery Plan.	Comments noted.
Historic Environment Scotland	
Scope and level of detail It is our understanding that the new Scottish Biodiversity Strategy and Delivery Plan will comprise both a high-level Strategy and Delivery Plan and is likely to be structured around a set of high-level outcomes for a range of land use types and marine environments. **We note that the historic environment has been scoped into the assessment.**	Comments noted. Assessment questions revised to include reference to historic battlefields, gardens and designated

Consultation response	How the response was considered/ addressed
On the basis of the information provided, we are content with this approach and are satisfied with the scope and level of detail proposed for the assessment, subject to the detailed comments provided below. **Assessment questions** You may wish to specifically refer to historic battlefields, gardens and designed landscapes and historic marine protected areas within the proposed assessment questions. These are generally larger landscape / seascape scale types of historic environment asset which are an important element of the interactions between the historic environment and biodiversity. **Consultation period for the Environmental Report** We are content with the 12-week period proposed for consultation on the Strategy and Delivery and associated Environmental Report. Please note that, for administrative purposes, we consider that the consultation period commences on receipt of the relevant documents by the SEA Gateway.	landscapes, and historic marine protected areas.

Content of the Scoping Report

3.4 Developing the draft scope for the SEA as presented in the Scoping Report has involved the following steps:

- Exploring the policy context for the SBS & Delivery Plan and SEA to summarise the key messages arising.
- Establishing the baseline for the SEA (i.e., the current and future situation in the area in the absence of the SBS & Delivery Plan to help identify the Strategy's likely significant effects.
- Identifying particular problems or opportunities ('issues') that should be a particular focus of the SEA; and
- Considering this information, developing an SEA framework comprising SEA objectives and assessment questions, which can then be used as a guiding framework for the subsequent assessment.

3.5 Given the strategic and national level focus of the SBS, all environmental topic areas have been scoped into the SEA (see **Table 3.2** overleaf).

Table 3.2 Scoping of SEA topics

SEA topic	Scoped In
 *Climatic factors*	✓
 *Biodiversity, flora and fauna*	✓
 *Population and human health*	✓
 *Soil*	✓
 *Water*	✓
 *Air quality*	✓
 *Cultural heritage*	✓
 *Material assets*	✓
 *Landscape*	✓

Key issues for the SBS and SEA Framework

3.6 Drawing on the review of the sustainability context and baseline, the SEA Scoping Report identified a range of sustainability issues that should be a particular focus of SEA, ensuring it remains targeted on the most important issues. These key issues are presented below by SEA topic heading.

3.7 Detailed baseline information (including the context review and baseline data) is presented in **Appendix A**.

Biodiversity, flora, and fauna

3.8 Almost ¼ of Scotland's protected sites are in unfavourable condition. Future development, and subsequently increased recreational disturbance could lead to further deterioration of sites, potentially leading to habitat fragmentation and loss. Habitat loss could impact on wider biodiversity networks, with the potential to lead to changes in the distribution and abundance of species and changes to the composition of habitats. This is likely to be exacerbated by the effects of climate change.

3.9 Biodiversity has the potential to be impacted by pollution. Trends of poor air quality and water quality can impact ecological sites, and factors such as noise and lighting can disturb vulnerable species.

3.10 Without further protection, Scotland's marine and terrestrial environment are likely to be impacted by both natural and human activities. It is therefore important to safeguard these ecosystems, alongside positive management to deliver clean, healthy, safe, productive and biologically diverse environments that meet the long term needs of people and nature.

Climatic factors

3.11 Continued human activities such as industrialisation, deforestation, and large-scale agriculture will likely further contribute towards increased GHG concentration in the atmosphere. Future changes in the climate has the potential to lead to an increased loss of certain habitats and species, or species migration and breeding.

3.12 Domestic transport is the largest contributor to emissions in Scotland and continues to be a key challenge nationally. Road transport account for a significant proportion of emissions, and it is considered that without intervention this trend is likely to continue.

3.13 Recognising that climate change and biodiversity loss are twin crises that should be tacked together, strategy interventions should include nature-based solutions. This includes woodland creation and peatland restoration, which can reduce emissions and help adapt to the impacts of climate change. Areas under agriculture, fisheries and aquaculture, and forestry can be managed more sustainably to reduce emissions while improving productivity and resilience of ecosystems.

3.14 Flood risk within Scotland has the potential to further intensify, with trends predicting a warmer, wetter climate. Healthy biodiversity can help prevent and

mitigate flooding, with nature networks delivering flood alleviation for people and homes, amongst other benefits.

Air

3.15 Continued poor air quality in parts of Scotland (i.e. reflecting the presence of numerous AQMAs) can lead to the deterioration of ecosystems, impacting the use of habitats by animals, as well as more broadly impacting animal and human health.

3.16 It will be important to maintain and enhance nature's contributions to regulation of air quality for all, recognising the co-benefits that can be provided for biodiversity, human health, and climate change mitigation and adaptation.

Water

3.17 The condition of Scotland's water environments vary throughout the country, with only 66% in good overall condition. The trend of localised areas of low water quality has the potential to continue, particularly given existing pressures such as urbanisation, invasive non-native species, intensive agriculture/aquaculture and climate change. More broadly, climate change is expected to lead to increases in water scarcity, flood risk, and to increase the risk of non-native species spreading and becoming established in water environments.

3.18 Groundwater quality also has the potential to be impacted by diffuse pollution from rural sources, discharges from industries such as mining and quarrying, and agriculture irrigation.

3.19 As an essential resource, it will be important to tackle issues identified above, restoring ecosystems and ensuring connectivity among them.

Soil

3.20 The quality and function of Scottish soils is likely to continue to face pressure, predominately from climate change and land management practices. Improved farmland practices has the potential to regenerate and restore soil and ecosystem health, and reduce carbon emissions, benefiting both people and the environment.

Cultural heritage

3.21 The continued preservation of historic sites and landscapes will likely ensure the continued preservation of associated local habitats and species. Wildlife can continue to support conservation initiatives, which will in turn lead to protection from development and agricultural improvement.

3.22 Larger sites will likely contribute to wildlife corridors, particularly where this includes linear features that are afforded protection at the international, national or local level.

3.23 Despite higher level policy protections, it is recognised that future pressures on the historic environment (namely development and climate change) could negatively affect historic character and setting, detract from settlement qualities, and disrupt viewpoints.

3.24 There are opportunities to support biodiversity through the sustainable production of traditional materials.

Landscape and geodiversity

3.25 There is the potential for Scotland's landscapes to experience further degradation in response to climate change, development pressure, and shift towards monoculture. Greatest changes in this respect are likely to occur in lowland and coastal areas where human population is highest.

3.26 The generation of energy, including on and offshore windfarms, may also adversely impact landscapes, geodiversity, and seascapes. However conversely, land management changes such as increasing hedgerows and woodland expansion could positively impact Scotland's landscapes, supporting functional connectivity.

3.27 More broadly, it is considered that the delivery of 'Nature networks' across Scotland's landscapes will likely underpin resilience and health of species and habitats, supporting diversity and distinctiveness.

Material assets

3.28 In terms of Scotland's natural and built assets, it is considered that climate change is likely to have the greatest impact on performance and longevity. Increased, and extreme, periods of flooding could negatively impact upon infrastructure performance, alongside extreme heat and occurrences of water scarcity.

3.29 There is likely to be an increasing pressure on green and blue infrastructure, in respect of both accessibility and function. Investing in blue and green infrastructure, notably Scotland's forests and woodlands can contribute to reduced GHG emissions while also providing spaces for people to enjoy.

Population and human health

3.30 As the overall population continues to rise, some local authorities will see a population decrease. Opportunities should be sought to spatially target these areas to support new green infrastructure provision or contributions that improve accessibility and reduce deprivation. This will likely support investment in the area, which will in turn support population increase.

3.31 Climate change poses a wide range of potential effects on human health. It is expected that climate change's potential risks and benefits to population and health will not be evenly distributed. Biodiversity can be used as a tool to regenerate and drive a healthy economy and society, playing a key role in addressing climate change.

3.32 The quality of Scotland's green spaces will likely continue to decline as users decline, without intervention to deliver improvements. Access to green and blue infrastructure should be improved where possible, recognising the significant and numerous health benefits that nature provides.

SEA Framework

3.33 The key sustainability issues for the SBS & Delivery Plan, as set out above, have been translated into an SEA 'framework' of objectives and assessment questions.

3.34 The SEA Framework, which has been tailored for the SBS & Delivery Plan, provides a way in which the sustainability effects of the SBS & Delivery Plan and alternatives can be identified and subsequently analysed based on a structured and consistent approach.

3.35 The SEA Framework and the assessment findings in this Environmental Report have been presented under nine SEA topics, as identified in **Table 3.2** above.

3.36 The SEA Framework is presented in **Table 3.3** below.

Table 3.3 SEA Framework for the SEA of the SBS and Delivery Plan

SEA topic	SEA objective	Assessment questions (will the proposal help to…)
 **Biodiversity, fauna, and flora**	Support the integrity of internationally, nationally and locally designated sites	• Protect the integrity of internationally, nationally, and locally designated sites in Scotland? • Manage the pressures on designated sites for biodiversity, fauna and flora in Scotland? • Expand and connect protected areas and improve their condition?
	Protect and enhance habitats and species in Scotland	• Protect and enhance priority habitats, and the habitat of priority species? • Recover and protect vulnerable and important species? • Protect and enhance ecological networks and connectivity, supporting restoration and regeneration? • Improve resilience in coastal and marine systems?
	Enhance understanding of biodiversity, fauna and flora	• Support access to, interpretation and understanding of biodiversity? • Encourage opportunities for engagement with biodiversity?

SEA topic	SEA objective	Assessment questions (will the proposal help to…)
 **Climatic factors**	Support the resilience of Scotland's biodiversity to the potential effects of climate change, including flooding	• Support productive forests and woodlands to deliver increased biodiversity and habitat connectivity whilst sustaining timber production and carbon sequestration? • Support species recovery, reintroduction and reinforcement to help prevent the extinction of species threatened by the effects of climate change? • Effectively manage existing and emerging pressures associated with climate change to improve the conservation status of marine biology? • Increase investment in nature restoration? • Improve and extend green infrastructure networks, supporting an extensive suite of connected protected areas? • Support resilience through protecting and restoring biodiversity features such as ponds, hedges and wildflower margins? • Reinforce the role of biodiversity in helping to prevent, mitigate and adapt to flood risk?
	Promote climate change mitigation	• Support access to and improvement of green infrastructure to promote the use of sustainable modes of transport, including walking and cycling? • Support continued opportunities to provide renewable energy? • Support nature-based solutions for emissions reductions, such as woodland creation and peatland restoration?
 **Air**	Maintain and enhance air quality	• Maintain and enhance the contribution of healthy ecosystems to regulation of air quality? • Support nitrogen use efficiency?
 **Water**	Maintain and enhance water quality	• Maintain and enhance the contribution of healthy ecosystems to quality and quantity of water?

SEA topic	SEA objective	Assessment questions (will the proposal help to…)
 **Soil**	Maintain and enhance soil quality	• Maintain and enhance the contribution of healthy ecosystems to quality and quantity of soil?
 **Cultural heritage**	Conserve and enhance Scotland's historic environment, including designated and non-designated heritage assets	• Conserve and enhance the significance of buildings, structures and features of architectural or historic interest, both designated and non-designated, and their setting? • Support the management objectives of Scotland's World Heritage Sites as stated within the relevant World Heritage Site Management Plans and Site Supplementary Planning Guidance, and the sites Outstanding University Value? • Conserve and enhance the special interest, character and appearance of conservation areas and their settings? • Conserve and enhance the special interest, character and appearance of Historic Marine Protected Areas and their settings? • Protect and where possible, enhance the wider historic environment, including historic battlefields, gardens and designated landscapes?
	Conserve and enhance Scotland's archaeological resource	• Conserve and enhance Scotland's archaeological resource, including features listed on the National Record of the Historic Environment?
	Promote opportunities for enhancing the understanding of Scotland's distinct historic environment	• Support access to, interpretation and understanding of the historic evolution and character of the environment?

SEA topic	SEA objective	Assessment questions (will the proposal help to…)
 **Landscape and geodiversity**	Conserve and enhance the special qualities and integrity of nationally protected landscapes in Scotland	• Support the management objectives as stated within the Management Plans for Scotland's NSA and National Parks? • Protect the special qualities of the NSAs and National Parks?
	Protect and enhance the character and quality of Scotland's landscapes, cityscapes, townscapes and villagescapes	• Protect and enhance key landscape, cityscape, townscape and villagescape features which contribute to local distinctiveness? • Protect locally important viewpoints contributing to sense of place and visual amenity? • Improve understanding of Scotland's distinctive landscape, cityscape, townscape and villagescape resources?
	Protect and enhance geodiversity.	• Protect and enhance geodiversity and support enhanced understanding of Scotland's geodiversity resource?
 **Material assets**	To reduce pressure on, and enhance sustainable use of, natural resources.	• Support the expansion of Scotland's forests and woodlands? • Affect the integrity of waste management infrastructure within Scotland? • Support the reinvigoration of areas of previously developed land, or vacant/ underutilised land? • Enhance the role of ecosystems for supporting the regulation and provisioning of water resources, including relating to water supply and quality?
 **Population and human health**	Drive a sustainable economy and support thriving communities.	• Support green jobs and economic opportunities? • Support nature-based education? • Deliver nature-rich environments close to all communities?
	Improve the health and wellbeing of Scotland's residents	• Maintain or enhance the quality of life of local residents? • Reduce pollution (from all sources) to levels that are not harmful to human health? • Increase the area of, access to, and benefits from green and blue spaces, for human health and wellbeing in urban areas and other densely populated areas?

4. Assessment of reasonable alternatives

Assessing reasonable alternatives in SEA

4.1 The assessment of 'reasonable alternatives' is a key element of the SEA process to meet the requirements of the Environmental Assessment (Scotland) Act 2005.

4.2 A central facet of the SEA process to date has been the appraisal of 'reasonable alternatives' for the SBS & Delivery Plan. The Environmental Assessment (Scotland) Act 2005 is not prescriptive as to what constitutes a reasonable alternative, stating only that the Environmental Report should "*identify, describe and evaluate the likely significant effects on the environment of implementing the plan…and reasonable alternatives to the plan… taking into account the objectives and geographical scope of the plan*…"

4.3 In developing reasonable alternatives for the SEA, a central consideration has been with respect to the key policy choices being made for the SBS. In this regard this Environmental Report has assessed a range of options as reasonable alternatives, with a view to exploring the options with particular potential for significant environmental effects. These assessments are designed to inform plan makers and stakeholders on the relative sustainability merits of alternative approaches the SBS could take on various strategy and delivery plan issues.

Development of options to assess as reasonable alternatives

4.4 In developing options to assess through the SEA process, the SEA team engaged plan-makers and stakeholders to understand where the focus of alternatives assessment should be. To aid in these discussions, two workshops were undertaken with key stakeholders to discuss reasonable alternatives in the context of the SBS. The purpose of these workshops was to discuss what options can be assessed as reasonable alternatives for the SBS, in conjunction with the objectives, key issues, challenges and opportunities associated with the strategy and delivery plan elements of the SBS.

4.5 The first SEA workshop was undertaken in March 2022 for the SBS. At the workshop it was agreed to formulate a series of options which focus on the key overarching strategy-wide issues associated with the SBS. This recognised that the detailed components associated with the implementation of the plan would be later considered during the development of the subsequent Delivery Plan component of the SBS.

4.6 The second workshop, which was undertaken in March 2023, focussed on the potential options that could be assessed as reasonable alternatives for the Delivery Plan component of the SBS.

4.7 The options formulated through these workshops relate to the following:

- Options exploring whether an ecosystem or a 'flagship species' approach to the SBS should be taken to the SBS.

- Options to explore whether the restoration of specific ecosystems should be focussed on through the SBS.
- Options relating to the implementation of SBS, including the appropriateness of sector specific strategies or plans.
- Options to explore whether SBS Delivery Plan actions should have a shorter term or longer-term timeframe, including relating to the 2030 and 2045 targets for biodiversity.

4.8 The following chapter presents details of the options assessed and the reasoning behind their choice as reasonable alternatives. This is accompanied by an assessment of these options against the SEA Framework developed during scoping.

5. Appraisal of options

Flagship species vs an ecosystem approach

5.1 The use of flagship species, including charismatic megafauna, is an established approach to raise the profile of biodiversity planning. Recognising species' role in healthy ecosystems, such an approach has benefits for biodiversity through increasing awareness and familiarity of the issues surrounding biodiversity conservation.

5.2 However, the use of a single species approach which utilises charismatic megafauna (or alternatively well-known habitats) has the potential to undermine a focus on the key interdependencies which support healthy ecosystems. In this respect a landscape-scale ecosystem approach is an approach which more closely recognises the building blocks and interdependencies which are inherent in healthy ecosystems.

5.3 In light of the above, the SEA will consider two options as reasonable alternatives, as follows:

- **Option FS1:** Utilise an approach which places an additional impetus on particular flagship species or well-known habitats.
- **Option FS2:** Utilise an approach which focuses on ecosystems at a landscape scale.

Table 5.1: Appraisal of options relating to flagship species vs an ecosystem approach

Option FS1: Utilise an approach which places an additional impetus on particular flagship species or well-known habitats.

Option FS2: Utilise an approach which focuses on ecosystems at a landscape scale.

SEA topic	Discussion of potential effects and relative merits of options	Rank of preference	
		FS1	**FS2**
 Biodiversity, flora and fauna	A flagship species approach proposed by FS1 may help facilitate enhanced engagement with the biodiversity resource of local areas amongst residents and visitors. This will help increase awareness and understanding of the biodiversity of different locations and their distinct ecological, geological and landscape resources. In this respect a focus on species such as capercaillie, black grouse, red squirrel, sea otters beavers and others would support a recognition of different areas' role for biodiversity conservation. It will also reinforce the role of ecotourism in supporting biodiversity conservation. Focusing on the conservation of a particular type of flagship species would also have indirect effects through helping to facilitate the management of large areas of habitat; in addition to facilitating the reintroduction and protection of certain flagship species, it would also support many other less well-known species. In this respect the approach may help the conservation of other co-occurring habitats and species. A flagship species-focused approach can however be inefficient, expending more resources on particular species, whilst not supporting wider biodiversity enhancements. In this respect, Option FS2, through taking a comprehensive place-based conservation approach, may provide additional opportunities to deliver biodiversity enhancements which benefit a broader range of habitats and species, whilst increasing the resilience of ecosystems which support a wider range of biodiversity assets. Both approaches therefore offer numerous potential benefits for the conservation and enhancement of biodiversity assets. Given these approaches are not exclusive, and both approaches could be taken forward in a complementary way, it is not possible to rank the options in terms of their sustainability performance in relation to this SEA topic.	**=**	**=**

Option FS1: Utilise an approach which places an additional impetus on particular flagship species or well-known habitats.

Option FS2: Utilise an approach which focuses on ecosystems at a landscape scale.

 Climatic factors	Option FS2 has the potential to support an approach which increases the resilience of habitats and species to the likely effects of climate change. In this respect, through enhancing ecosystems at the landscape scale, the option will support the adaptability of species through reinforcing ecological connections and networks. A place-based ecosystems approach will also help enable conservation planning to focus on the likely changes resulting from climate change, and the interventions required to help biodiversity adapt. In contrast the narrower focus of Option FS1 on flagship species may limit opportunities for enhancing the resilience of different locations to the effects of climate change.	**2**	**1**
 Air	Given the existing low levels of air and noise pollution in many areas earmarked for biodiversity enhancements, the options are unlikely to have significant differences relating to effects on the baseline for this SEA topic.	**=**	**=**
 Water	An ecosystems approach facilitated by Option FS2 has the potential to support water quality. This includes through helping to enhance the regulating ecosystem services provided by natural habitats. Enhanced ecosystems will also reinforce the capacity of the landscape to support the provisioning of water resources for users within different locations and their biodiversity. Otherwise, the approach facilitated by Option FS1 is unlikely to have any direct significant effects on water resources, although it may support indirect effects for the regulating ecosystem services provided by natural habitats.	**2**	**1**
 Soil	Through taking a more coordinated ecosystems approach, Option FS2 may do more to support enhancements to soils resources. In this regard, the delivery of enhancements to the key regulating and supporting ecosystems services provided by a wide range of natural habitats would have benefits for soils resources through helping to manage erosion, regulate water quality, facilitate soil formation, and enabling enhanced nutrient and water cycling.	**2**	**1**

Option FS1: Utilise an approach which places an additional impetus on particular flagship species or well-known habitats.

Option FS2: Utilise an approach which focuses on ecosystems at a landscape scale.

 Cultural Heritage	With regards to Option FS1, the presence of flagship species (when reintroduced) will contribute to the historic and cultural landscape of the specific areas given the historic presence of these species. Option FS2, through seeking to take an ecosystems approach at a landscape scale, has the potential to lead to the delivery of biodiversity conservation and enhancement measures which more appropriately fit within the context provided by the cultural landscapes and historic environment of different locations. This includes through the approach providing the opportunity to shape biodiversity enhancements in ways which complement and reinforce the intrinsic character of its landscapes and cultural settings. In this regard the broader approach promoted through this option is likely to bring wider benefits that those facilitated through Option FS1.	**2**	**1**
 Landscape and geodiversity	With regards to Option FS1, the presence of flagship species (when reintroduced) will contribute to the cultural landscape of a particular location given the historic presence of these species. Option FS2, through seeking to take an ecosystems approach at a landscape scale, has the potential to lead to the delivery of biodiversity conservation and enhancement measures which more appropriately fit within the context provided by the cultural and historic landscapes of the specific areas in Scotland. This includes through the approach providing the opportunity to shape biodiversity enhancements in ways which complement and reinforce the intrinsic character of its landscapes and cultural setting. These benefits for landscape character are likely to be broader through this option than for Option FS1.	**2**	**1**
 Material assets	The approaches facilitated by the options are unlikely to have any significant effects relating to the material assets SEA topic, including relating to waste or use of materials.	**=**	**=**

Option FS1: Utilise an approach which places an additional impetus on particular flagship species or well-known habitats.

Option FS2: Utilise an approach which focuses on ecosystems at a landscape scale.

 Population and human health	A flagship species approach proposed by FS1 may help facilitate enhanced engagement with the biodiversity resource of different locations in Scotland amongst residents and visitors. This will help increase awareness and understanding of each location's distinct ecological, geological and landscape resources. Option FS2 may be less effective in this regard. However, through taking a comprehensive place-based conservation approach, the option has increased potential to deliver wider ranging multifunctional benefits for human health, wellbeing and quality of life.	**2**	**1**

Summary conclusions:

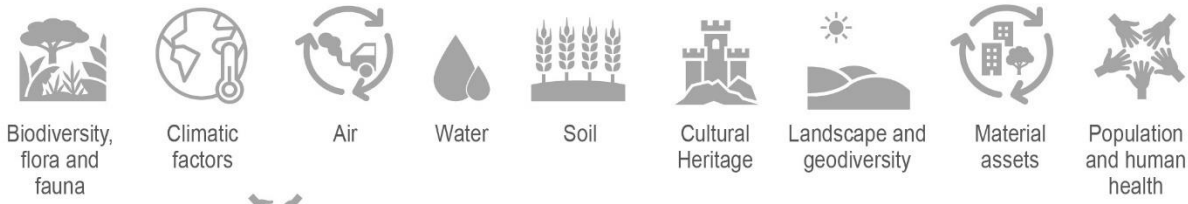
5.4 Option FS2 is most favourably performing overall, ranking highest in relation to the majority of the nine SEA topics (climatic factors, water, soil, cultural heritage, landscape and geodiversity and population and human health). In this respect it is considered that taking a coordinated ecosystems approach through Option FS2 could do more to support enhancements to soils and water quality and increase the resilience of habitats and species to the likely effects of climate change. Option FS2 also has the potential to lead to the delivery of biodiversity conservation and enhancement measures which most appropriately fit within the context provided by the cultural landscapes and historic environment of different locations. Through taking a comprehensive place-based conservation approach, Option FS2 also has increased potential to deliver wider ranging multifunctional benefits for human health, wellbeing, and quality of life.

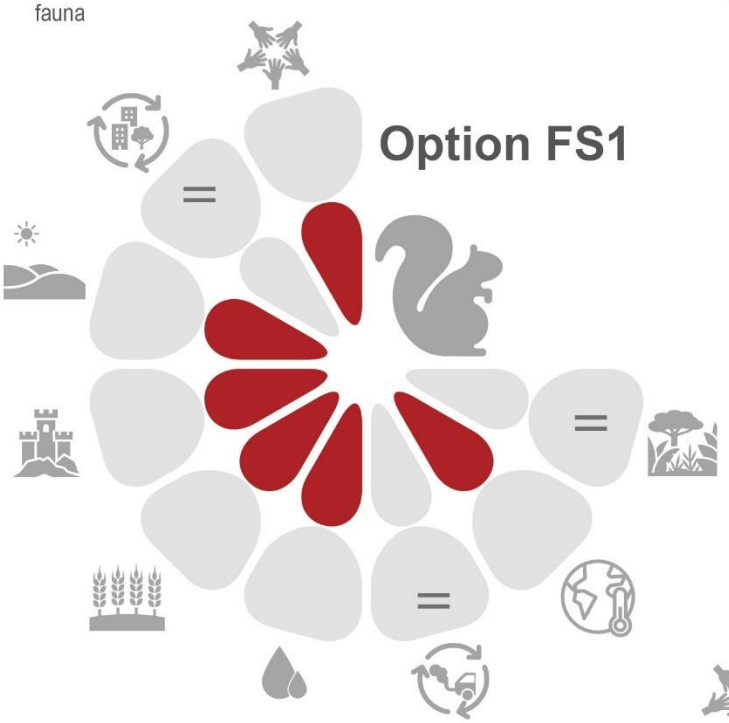
5.5 However, Option FS1 also has the potential to bring a number of positive significant effects relating to these topics. It should also be noted that the two approaches proposed by the options would not need to be exclusive, and both approaches could be taken forward in a complementary way. As such, it is likely that a mix of approaches would deliver the broadest range of significant positive effects across the topics.

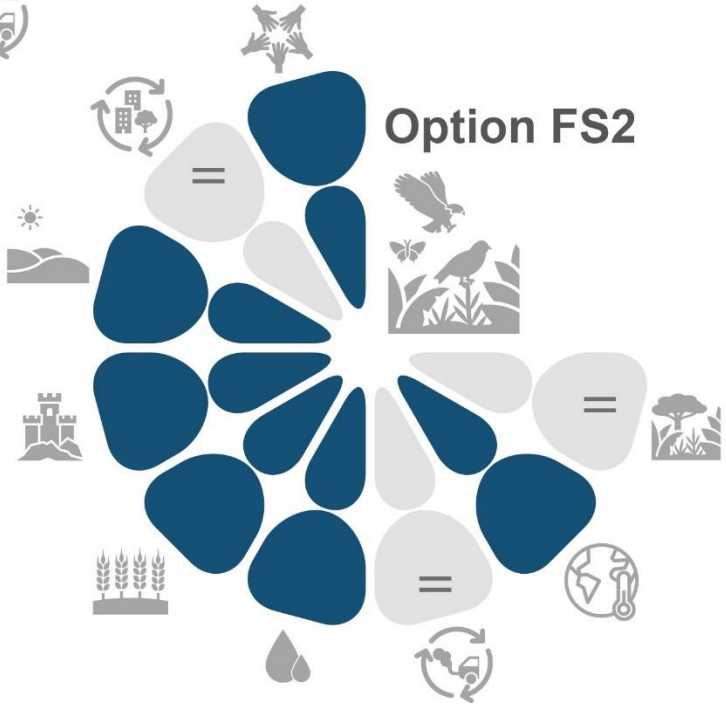
Flagship species vs an ecosystem approach

Option FS1:
Utilise an approach which places an additional impetus on particular flagship species or well-known habitats.

Option FS2:
Utilise an approach which focuses on ecosystems at a landscape scale.







Restorative vs regenerative approach

5.6 Traditionally conservation in Scotland has been focussed on restoring species and habitats lost, notably in recent centuries. This has concentrated on the restoration of ecosystems to previous states which have since been lost or heavily degraded. One problem with this is the climate has changed considerably, allied with land use intensification. Essentially, in many cases it is impossible to recreate the conditions of the past. And even if this was possible, the assemblages restored would not be resilient to changes ahead.

5.7 It was discussed at the workshop that there is a need for the SBS to take a regenerative approach. This is with a view to enhancing the richness and adaptability of habitats and species to ongoing pressures, including to the effects of climate change. It was noted though that this may lead to different outcomes in terms of conservation, where the habitats and species which benefit may be different to previous states.

5.8 To explore this issue in more detail, the following two options will be considered as reasonable alternatives through the SEA:

- **Option R1:** Take an approach through the SBS which focusses on the restoration of specific ecosystems.
- **Option R2:** Take a regenerative-led approach through the SBS which does not focus on the restoration of specific ecosystems.

Table 5.2: Appraisal of options relating to a restorative vs regenerative approach

Option R1: Take an approach through the SBS which focusses on the restoration of specific ecosystems.
Option R2: Take a regenerative-led approach through the SBS which does not focus on the restoration of specific ecosystems

SEA topic	Discussion of potential effects and relative merits of options	Rank of preference	
		R1	**R2**
 Biodiversity, flora and fauna	Taking a restoration-led approach through the SBS (Option R1) would likely engage the use of traditional management methods and focus on historic ecosystems that are unique and valued highly. Restoring specific ecosystems will help restore important groupings and concentrations of species. For example, in the case of Scotland's Atlantic Rainforest, ferns, lichens, fungi and mosses are characteristic. Another example is the globally important freshwater pearl mussel population, being supported through the physical restoration of rivers in priority catchments. Option R1 would align with the introduction of statutory nature restoration targets, which are considered to lead to positive effects in terms of species abundance, distribution, and extinction risk and habitat quality and extent.	=	=

Option R1: Take an approach through the SBS which focusses on the restoration of specific ecosystems.

Option R2: Take a regenerative-led approach through the SBS which does not focus on the restoration of specific ecosystems

However, a focus on restoring specific ecosystems could increase the vulnerability of wildlife, particularly in the context of climate change. In this respect, if living conditions were to change within a restored ecosystem, for example associated with changes in rainfall and temperature, the functionality of the systems which support habitats and species in the longer term could be undermined.

Taking a regenerative approach to the SBS (Option R2) arguably provides increased opportunities to enhance the resilience of habitats and species, including through connecting areas and better supporting the delivery of Nature Networks. The regenerative approach is likely to better allow the movement of wildlife across landscapes, supporting a range of species that makes an ecosystem diverse and adaptive and unique to its location. For example, sustainable natural regeneration through effective forest and woodland management can lead to a greater diversity of woodland species.

Overall, it is considered that a hybrid of both options is likely to lead to the greatest range of positive effects. This would allow the SBS to place focus on restoring Scotland's flagship ecosystems while also recognising the interconnected nature of ecosystems across landscapes and the importance of supporting ecosystems that are resilient.

Option R1: Take an approach through the SBS which focusses on the restoration of specific ecosystems.

Option R2: Take a regenerative-led approach through the SBS which does not focus on the restoration of specific ecosystems

 Climatic factors	Implementing nature-based measures that restore historic ecosystems (Option R1) can help to tackle climate change by, for example, storing carbon. Certain historic habitats such as peatland are vital carbon sinks; reflected through Scotland's widespread and ongoing programme of peatland restoration. Continued focus on restoring Scotland's peatland, alongside other key ecosystems, is therefore anticipated to lead to positive effects - supporting Scotland's efforts to deliver Net Zero and adapt to climate change. A regenerative approach (Option R2) will better facilitate the adaptation of ecosystems, allowing nature to respond to the changes in climate likely to be seen in the future. By being well adapted to their location, ecosystems can help manage climate change in a variety of ways. For example, coral reefs provide hotspots of marine life that are a key contributor to coastal communities' economic vitality, while also protecting coastal areas from storms. Positive effects can also be seen in the built environment, through regenerative transformation of existing ecosystems in urban areas. Regenerative agriculture also supports farming and food production, while rebuilding biodiversity to ensure the flow of ecosystem services. While it is considered that both options perform positively in relation to climate change mitigation and adaptation, Option R2 has additional scope to increase resilience to the effects of climate change.	**2**	**1**
 Air	It is considered that both options have the potential to support air quality. Both restoring and regenerating woodland, for example, will support the recovery of trees and other plants that help clean the air. Taking a regenerative-led approach through the SBS (Option R2) may however do more to support the regulating ecosystem services related to air quality that can be provided by a resilient ecosystem.	**2**	**1**
 Water	It is considered that both options have the potential to support water quality. This includes through helping to enhance the regulating ecosystem services provided by natural habitats. Restored ecosystems will also reinforce the capacity of the landscape to support the provisioning of water resources for users within different locations and their biodiversity. However, taking a regenerative-led approach through the SBS (Option R2) may do more to support the regulation ecosystem services provided by resilient ecosystems than Option R1.	**2**	**1**

Option R1: Take an approach through the SBS which focusses on the restoration of specific ecosystems.

Option R2: Take a regenerative-led approach through the SBS which does not focus on the restoration of specific ecosystems

 Soil	It is considered that both options have the potential to support soil quality. However, through supporting interconnected, evolving ecosystems, Option R2 may do more to support approaches which facilitate enhancements to soils resources over the longer term. In this regard, the delivery of enhancements to the key regulating and supporting ecosystems services provided by natural habitats would have benefits for soils resources. This includes through helping to manage erosion, regulate water quality, facilitate soil formation, and enabling enhanced nutrient and water cycling. For example, the approach promoted by Option R2 may support regenerative farming, which will support soil conservation to regenerate and contribute to multiple ecosystem services.	**2**	**1**
 Cultural Heritage	Focusing on the restoration of specific ecosystems (Option R1) will positively impact cultural heritage, replicating historic landscapes and supporting the historic setting of features and areas of historic environment interest. Peatland landscapes, specifically, are known to contain significant historic environment (including archaeological) features which depend upon healthy, stable habitats within fully functioning ecosystems for their long-term preservation. Restoring ecosystems therefore can have a role in supporting the long-term conservation of heritage assets and their settings and prevent their degradation. Furthermore, the restoration of ecosystems can contribute towards the understanding of, and access to, the historic environment, providing valued information on changes over time. Taking a regenerative approach to the SBS (Option R2) is less likely to support original habitat types or include an area's original species communities and is therefore less likely to directly replicate the historic condition of the landscape and the heritage assets that sit within it.	**1**	**2**

Option R1: Take an approach through the SBS which focusses on the restoration of specific ecosystems.

Option R2: Take a regenerative-led approach through the SBS which does not focus on the restoration of specific ecosystems

 Landscape and geodiversity	Focusing on the restoration of specific ecosystems (Option R1) will positively impact on the landscape, replicating historic landscapes and supporting landscape character and features. Peatland, for example, plays a role in contributing to the quality and character of the wider landscape in certain parts of Scotland. Scotland's forests and woodlands are another example of ecosystems that can represent the historic character of the landscape. Taking a regenerative approach to the SBS (Option R2) is less likely to support historic habitat types or comprise a representative reflection of area's historic species communities and is therefore less likely to lead to the direct replication of historic landscapes. However, a focus on a regenerative approach to ecosystems through Option R2 is a commitment that can provide multiple benefits over the longer term. This includes through the development of resilient and distinct landscapes that supports climate change mitigation and adaptation, promotes biodiversity, and provides other multifunctional benefits.	**1**	**2**
 Material assets	The approaches facilitated by the options are unlikely to have any significant effects or differences relating to the material assets SEA topic, including relating to waste or use of materials.	**=**	**=**

Option R1: Take an approach through the SBS which focusses on the restoration of specific ecosystems.

Option R2: Take a regenerative-led approach through the SBS which does not focus on the restoration of specific ecosystems

 Population and human health	Engagement of the public with 'traditional' habitats and species might be easier under Option R1, increasing awareness and understanding of a location's distinct ecological, geological and landscape resource. Both options have the opportunity to support community involvement, including through direct experiences and improved education, for example through community biodiversity initiatives. A focus on a regenerative approach to ecosystems through Option R2 could better connect ecosystems within and to the built environment. In this respect incorporating naturally functioning, evolving ecosystems into the planning and design of the built environment would deliver multiple benefits to benefit both biodiversity and communities. Option R2 may also support the multifunctionality of green space through, for example green infrastructure provision, etc., ensuring that communities have access to wild spaces near their home and place of work. Option R2 is subsequently likely to support the development of high quality natural and built environments which are resilient to climate change. A regenerative approach to managing local resources also has some potential to support communities through investment in sustainable farming (nature restoration, food production, etc.) and green tourism. In this respect a focus on regenerating ecosystems through Option R2 is anticipated to perform most positively overall, facilitating opportunities in terms of new investment, new job opportunities and supporting the overall health and wellbeing and quality of life of communities.	**2**	**1**

Summary conclusions

5.9 Option R2 ranks highest in relation to four of the nine SEA topics (climatic factors, air, water, soil, and population and human health). While both options perform positively in relation to these topics, taking a regenerative-led approach through the SBS may do more to support the regulating ecosystem services related to air, water and soil quality that can be provided by a resilient ecosystem. A focus on regenerating ecosystems is also considered to best facilitate social and economic opportunities relevant to the population and human health SEA topic. This includes through supporting the health and wellbeing and quality of life of communities, and through promoting investment and employment opportunities. While it is considered that both options perform positively in relation to climate change mitigation and adaptation, Option R2 has additional scope to increase resilience to the effects of climate change.

5.10 A focus on the restoration of specific ecosystems through Option R1 will most positively impact the cultural heritage and landscape SEA topics, including through replicating historic landscapes and supporting the historic setting of features and areas of historic environment interest.

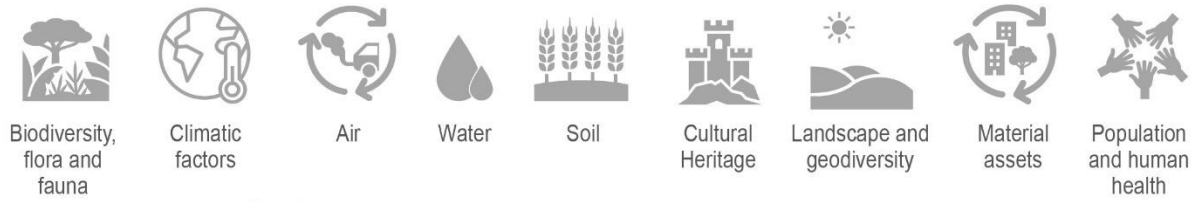
5.11 In terms of biodiversity, it is considered that a hybrid of both options is likely to lead to the widest range of positive effects. This would allow the SBS to place focus on restoring Scotland's flagship ecosystems while also recognising the interconnected nature of ecosystems across landscapes and the importance of supporting ecosystems that are resilient

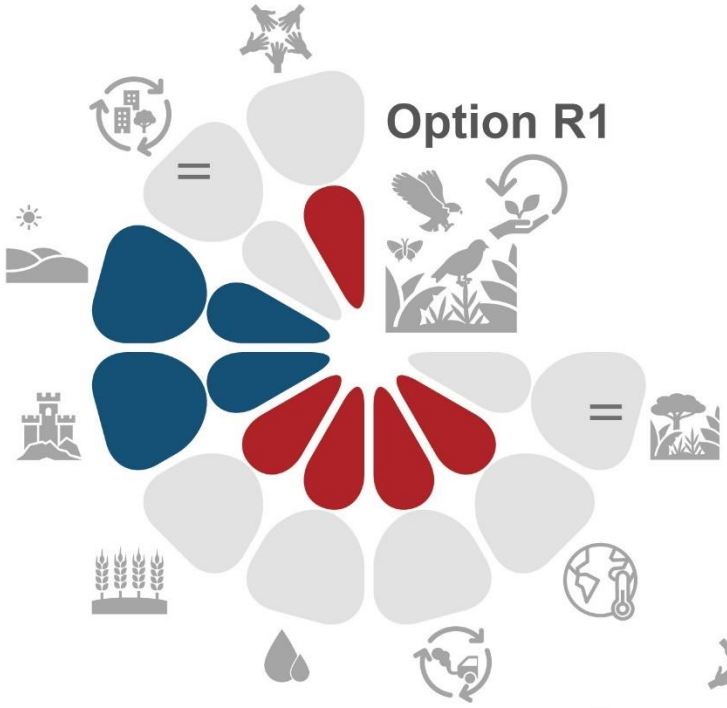
5.12 The approaches facilitated by the options are unlikely to have any significant effects or differences relating to the material assets SEA topic.

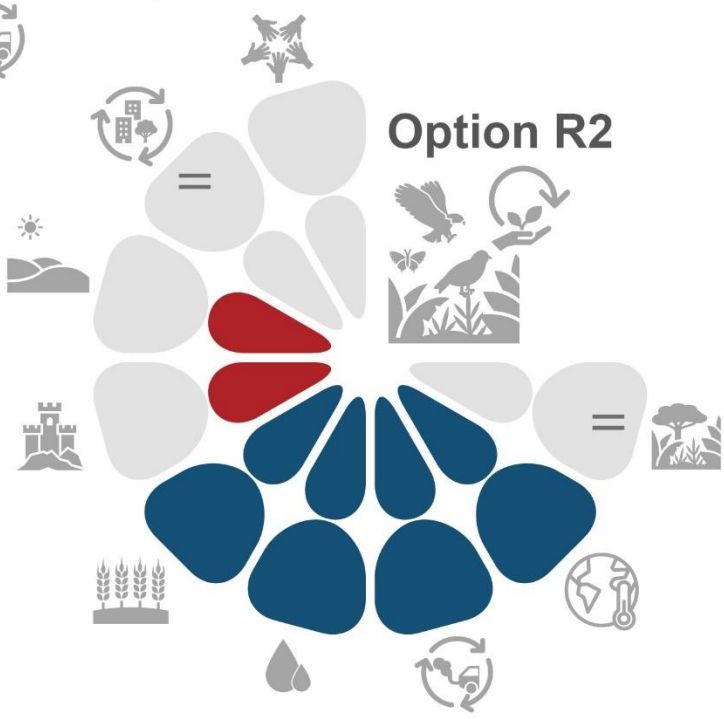
Restorative vs regenerative approach

Option R1:
Take an approach through the SBS which focusses on the restoration of specific ecosystems.

Option R2:
Take a regenerative-led approach through the SBS which does not focus on the restoration of specific ecosystems.







Options relating to the implementation of the SBS

5.13 A central element discussed at the March 2022 workshop is how the SBS relates to other sectors (such as agriculture, forestry, transport and others) in terms of the implementation of the strategy.

5.14 One approach would be to leave the implementation of the SBS to sector-specific strategies, plans and programmes. This would lead to the SBS acting as a standalone higher-level document for biodiversity, with a view to the key elements relating to biodiversity conservation and enhancement being implemented through the strategies, plans and programmes developed for specific sectors.

5.15 An alternative approach would be the delivery of a standalone SBS and delivery plans. This would involve the preparation of the overarching SBS, which would then be implemented through subsequent SBS-specific 5-year delivery plans (note, we understand that this is in effect the preferred option).

5.16 In this respect, two options have been assessed through the SEA:

- **Option DP1:** Develop an overarching SBS which would then be implemented through sector specific strategies, plans and programmes.
- **Option DP2:** Develop a standalone strategy, which would be accompanied by subsequent SBS-focussed delivery plans covering all sectors.

Table 5.3: Appraisal of options relating to the implementation of the SBS

Option DP1: Develop an overarching SBS which would then be implemented through sector specific strategies, plans and programmes.
Option DP2: Develop a standalone strategy, which would be accompanied by subsequent SBS-focussed delivery plans covering all sectors.

SEA topic	Discussion of potential effects and relative merits of options	Rank of preference	
		DP1	**DP2**
 Biodiversity, flora and fauna	By targeting specific sectors, Option DP1 is likely to be able to provide tailored/bespoke management initiatives reflecting the particular land use types affected by the sectoral plan. This may also encourage voluntary commitments to protect biodiversity, for example in relation to the use of natural resources, or sustainable agriculture, to support ecosystem functionality. It is also considered easier to quantify success/ enhancements through sector specific strategies, where monitoring indicators are tailored. However, a drawback of Option DP1 is that it is arguably more restrictive and labour intensive. Option DP2 conversely seeks to take a holistic, strategic approach which would better connect ecosystem enhancements across sectors, supporting the delivery of Nature Networks.	**?**	**?**

Option DP1: Develop an overarching SBS which would then be implemented through sector specific strategies, plans and programmes.

Option DP2: Develop a standalone strategy, which would be accompanied by subsequent SBS-focussed delivery plans covering all sectors.

	Developing a stand-alone strategy through Option DP2 would likely require multi-stakeholder engagement, taking a bottom-up approach to understanding key challenges and opportunities for biodiversity at a strategic scale. Biodiversity would be the main focus through Option DP2, compared to Option DP1 which risks the subsuming of biodiversity considerations within sectoral plans. Recognising the importance of stakeholder input, it is considered that this approach has the potential to better deliver biodiversity enhancements across sectors. This includes initiatives such as the delivery of Nature Networks. A stand-alone strategy could however take an extensive amount of time to agree and subsequently implement, likely being highly complex with extensive consultation required. It may also be difficult to implement adaptive management that responds to cross sectoral threats to biodiversity, and there may also be difficulties terms of identifying monitoring indicators which are targeted to any issues raised. At this stage it is not possible to differentiate between the relative performance of the options. This will be dependent on the effectiveness of implementation through either the sector specific strategies, plans and programmes (Option DP1) or SBS-focussed Delivery Plans covering all sectors (Option DP2).		
 Climatic factors	It is considered that both options could deliver positive effects in terms of increasing the resilience of habitats and species to the likely effects of climate change. However, in light of the factors highlighted under the biodiversity topic above, it is not possible to differentiate between the relative performance of the options at this stage. This will be dependent on the effectiveness of implementation through either the sector specific strategies, plans and programmes (Option DP1) or SBS-focussed Delivery Plans covering all sectors (Option DP2).	**?**	**?**
 Air	It is considered that a standalone strategy would deliver improvements to air quality across all sectors, with the potential for positive effects. However, Option DP1 presents an opportunity to tailor proposed initiatives within specific sectors such as transport where air pollution has the most potential to be addressed, and where intervention can be focused through biodiversity-related interventions. This may do more to deliver positive effects than Option DP2.	**1**	**2**

Option DP1: Develop an overarching SBS which would then be implemented through sector specific strategies, plans and programmes.

Option DP2: Develop a standalone strategy, which would be accompanied by subsequent SBS-focussed delivery plans covering all sectors.

	Option DP1 also presents an opportunity to target forestry/woodland as a sector which could contribute to significant improvements in air quality.		
 Water	It is considered that a standalone strategy would deliver improvements to water quality across all sectors, with the potential for positive effects. By targeting specific sectors, Option DP1 is likely to be able to provide tailored/bespoke water quality initiatives, with efforts focussed on those sectors most relevant (e.g., river basin, coastal and marine). This may do more to deliver positive effects than Option DP2. A cross-sector approach facilitated by Option DP2 though also has the potential to support water quality, including through initiating mutually complementary approaches to biodiversity enhancements across all sectors which support water quality.	**1**	**2**
 Soil	Through the delivery of sector-specific strategies, Option DP1 is likely to be able to facilitate the delivery of enhancements to the key regulating and supporting ecosystems services provided within key sectors associated with this SEA topic (e.g., agriculture and forestry). This is likely to support erosion management, water quality regulation, facilitate soil formation, and enable enhanced nutrient and water cycling. However, a standalone strategy may, through biodiversity-related interventions, better support interconnected, evolving ecosystems through initiating mutually complementary approaches to soil management across all sectors. It is therefore uncertain as to which approach would bring increased benefits in relation to the soil topic.	**?**	**?**
 Cultural Heritage	Option DP1 has the potential to lead to the delivery of biodiversity conservation and enhancement measures which more appropriately fit within the context provided by the cultural landscapes and historic environment associated with different sectors (e.g., agriculture, forestry or coastal). This approach provides the opportunity to shape biodiversity enhancements in ways which complement and reinforce the intrinsic character of specific landscapes, seascapes, and cultural settings, tailored towards the particular sector being considered. Option DP2 seeks to develop an overarching strategy that covers all sectors, which may do less to specifically benefit the historic environment in certain sectors. However, ensuring that all land and sea areas are under integrated biodiversity-inclusive planning can positively	**?**	**?**

Option DP1: Develop an overarching SBS which would then be implemented through sector specific strategies, plans and programmes.

Option DP2: Develop a standalone strategy, which would be accompanied by subsequent SBS-focussed delivery plans covering all sectors.

	address land and sea-use change to support the historic environment. At this stage it is not possible to differentiate between the relative performance of the options. This will be dependent on the effectiveness of implementation through either the sector specific strategies, plans and programmes (Option DP1) or SBS-focussed Delivery Plans covering all sectors (Option DP2).		
 Landscape and geodiversity	Option DP1 has the potential to lead to the delivery of biodiversity conservation and enhancement measures which more appropriately fit within the context provided by the cultural and historical landscapes of different sectors (e.g., agriculture, forestry or coastal). This approach provides the opportunity to shape biodiversity enhancements in ways which complement and reinforce the intrinsic character of specific landscapes and cultural settings, tailored towards the particular sector being considered. Option DP2 seeks to develop an overarching strategy that covers all sectors, which may do less to specifically benefit the historic environment in certain sectors. However, ensuring that all land and sea areas are under integrated biodiversity-inclusive planning can positively address land and sea use change, retaining and enhancing landscape and seascape character. The relative performance of the options will be dependent on the effectiveness of implementation through either the sector specific strategies, plans and programmes (Option DP1) or SBS-focussed Delivery Plans covering all sectors (Option DP2).	**?**	**?**
 Material assets	Given their biodiversity focus, the approaches facilitated by the options are unlikely to have any significant differences relating to the material assets SEA topic, including relating to waste or use of materials.	**=**	**=**
 Population and human health	Developing a standalone strategy through Option DP2 will do more to support a consistent multi-sectoral ‘whole society’ approach to becoming a nature positive Scotland. In this respect a series of biodiversity-related plans covering all sectors would potentially do more to support the health and wellbeing, quality of life and economic benefits that have the potential to arise from biodiversity enhancements. As such, Option DP2 has the potential to better ensure coherence and alignment between sectors in terms of coordinating the biodiversity enhancements that benefit communities.	**2**	**1**

Summary conclusions

5.17 It is difficult to differentiate between the options in relation to the majority of SEA topics. This is given the relative performance of the options will be dependent on the effectiveness of implementation through either the sector specific strategies, plans and programmes (Option DP1) or SBS-focussed Delivery Plans covering all sectors (Option DP2).

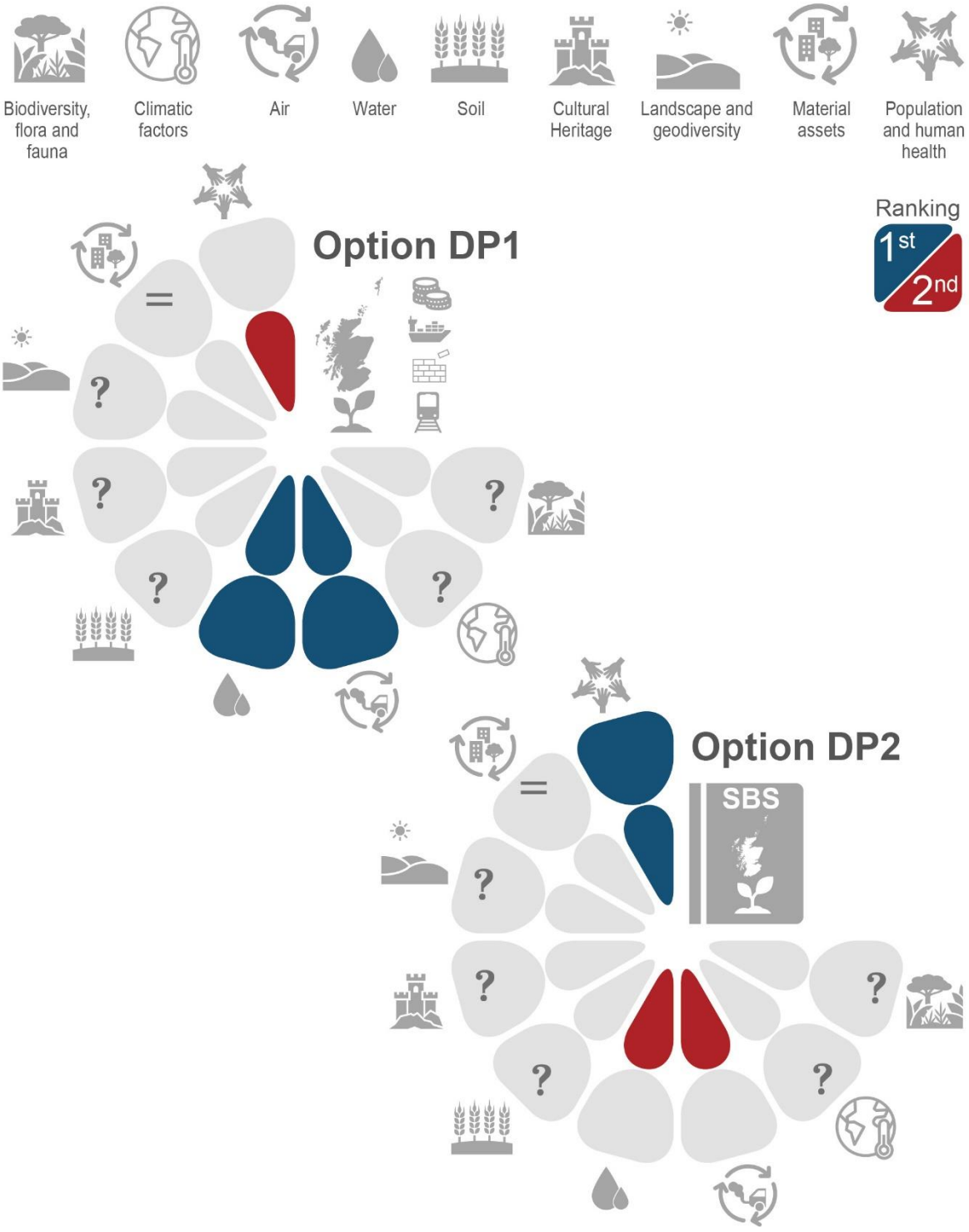
5.18 Options can though be differentiated in relation to the air quality and water topics, where Option DP1 has been identified as best performing. In this respect Option DP1 presents an opportunity to tailor proposed initiatives within most relevant sectors such as transport and forestry, enabling the delivery of targeted biodiversity interventions which maximise positive effects.

5.19 In terms of the population and human health SEA topic, Option DP2 has the potential to more effectively ensure coherence and alignment between sectors in terms of coordinating the biodiversity enhancements that benefit the health, wellbeing and quality of life of communities.

Options relating to the implementation of the SBS

Option DP1:
Develop an overarching SBS which would then be implemented through sector specific strategies, plans and programmes.

Option DP2:
Develop a standalone strategy, which would be accompanied by subsequent SBS-focussed delivery plans covering all sectors.



Options relating to the timeframes of Delivery Plans

5.20 A key aim of the Scottish Biodiversity Strategy is for Scotland to be Nature Positive by 2030, and to have restored and regenerated biodiversity across the country by 2045. This is in line with the commitment to halt biodiversity loss by 2030 in line with the Leaders' Pledge for Nature. This also aligns with the timescales of the key targets agreed by the Scottish Government associated with biodiversity, including relating to the 30 x 30 target which seeks to ensure that by 2030 at least 30 per cent of terrestrial, inland water, and of coastal and marine areas are effectively conserved and managed.

5.21 In this respect there is potential for the SEA to compare two approaches to the Delivery Plan element of the SBS. A first approach would be to focus the initial Delivery Plan actions (i.e., over the first five years) on the specific current drivers behind biodiversity loss, and by targeting those actions which will help deliver the required enhancements in the period to 2030. This would specifically focus on the key actions that can be achieved in this initial timeframe.

5.22 An alternative approach is to take a broader perspective which sees nature recovery as a longer-term process. This would shape Delivery Plan actions in a way that seeks to deliver benefits over the longer term, rather than limiting the focus of the first five-year Delivery Plan specifically on the 2030 targets.

5.23 On this basis, two options can be assessed through the SEA:

- **Option BT1:** Focus the first five-year Delivery Plan actions specifically on the current drivers behind biodiversity loss, targeting those actions which will help deliver the required enhancements in the period to 2030.
- **Option BT2:** Take a longer-term approach to Delivery Plan actions which seeks to deliver broader benefits for biodiversity.

Table 5.4: Appraisal of options relating to the timescales of Delivery Plans

Option BT1: Focus the first five-year Delivery Plan actions specifically on the current drivers behind biodiversity loss, targeting those actions which will help deliver the required enhancements in the period to 2030.

Option BT2: Take a longer-term approach to Delivery Plan actions which seeks to deliver broader benefits for biodiversity.

SEA topic	Discussion of potential effects and relative merits of options	Rank of preference	
		BT1	**BT2**
 Biodiversity, flora and fauna	Focusing the first five-year Delivery Plan specifically on the current drivers behind biodiversity loss (Option BT1) can help focus efforts on actions that can be delivered effectively and efficiently over the shorter term, helping to ensure that 2030 targets are met. Committing through the delivery plan to ambitious 5-year targets such as 30x30, and to be Nature Positive by 2030, will provide clarity as to the ultimate aims of the delivery plan. This is likely to facilitate the engagement of stakeholders and communities through relevant programmes and projects. Furthermore, placing focus on the 2030 milestone has the potential to better allow for effective monitoring of whether the SBS is on track to achieving its longer-term vision. However, there may be some difficulty in demonstrating 2030 targets are being met in the short term, as the benefits may not yet be realised (i.e., wholescale restoration of habitats and recovery of vulnerable species are likely to be delivered over a longer term). Additionally, it is considered that many priority actions will take significantly longer to implement, particularly where multiple stakeholders and investors are involved. The approach put forward through Option BT2 seeks to deliver broader benefits for biodiversity in the longer term, likely focusing on landscape scale projects and programmes, for example delivering ecosystem restoration to benefit a wider range of habitats and species and supporting the resilience of ecosystems. Longer term planning for biodiversity will also place focus on further strengthening ecosystems, including Nature Networks, building on and accelerating what has worked to date. The approach will also enable consideration to be given to longer term issues such as changes to the climate, or natural changes to habitats (e.g., succession), and how networks/groups of sites will look in a given number of years (10, 50, 100 years). However, delivering benefits over a longer term through Option BT2 may not specifically meet the 2030 commitments made alongside other countries (i.e., the 30x30 target). Option BT2 will instead likely do more in terms of looking ahead, recognising that in many	=	=

Option BT1: Focus the first five-year Delivery Plan actions specifically on the current drivers behind biodiversity loss, targeting those actions which will help deliver the required enhancements in the period to 2030.

Option BT2: Take a longer-term approach to Delivery Plan actions which seeks to deliver broader benefits for biodiversity.

	locations in Scotland the environment is different from that in the last century, and will seek to take an approach that supports diverse, rich, and resilient biodiversity over time. Overall, it is considered that a hybrid of both options is likely to lead to positive effects of greatest significance. This places focus on implementing the transformational changes needed to meet 2030 targets, while also restoring and regenerating Scotland's ecosystems to sustain diverse, rich, and resilient biodiversity over the long term for future generations.		
 Climatic factors	It is considered that climate change mitigation and adaptation will be supported through both options. However, through Option BT2, enhanced consideration will be able to be given to the future climate of Scotland, or natural changes to habitats (e.g., succession), recognising that longer term changes in climate affect the viability and health of ecosystems. Notably this includes through influencing the longer-term shifts in the distribution of plants, animals, etc. Option BT2 will enable the consideration of how networks/ groups of sites will look in a given number of years (10, 50, 100), enabling the delivery of broader benefits for biodiversity, including ecosystem services. In this respect Option BT2 has the potential to do more to enhance the longer-term adaptability and resilience of different locations to the likely effects of climate change.	**2**	**1**
 Air	Healthy ecosystems support air quality by reducing the levels of air pollution in their environment, absorbing carbon dioxide and filtering pollutants such as nitrogen dioxide through their leaves. A short-term focus on enhancements to biodiversity through Option BT1 will lead to positive effects in this respect. A longer-term approach supported by BT2 has the potential to do more to support ongoing enhancements to air quality over an extended timescale, for example supporting increased plant cover (trees and other vegetation) and adapting to the effects of climate change.	**2**	**1**
 Water	Option BT1 will have a focus on shorter term enhancements to biodiversity. This will support improvements in water quality. Healthy ecosystems support water quality by supplying, purifying, and protecting freshwater resources. A short-term focus on enhancements to biodiversity through Option BT1 will lead to positive effects in this respect.	**2**	**1**

Option BT1: Focus the first five-year Delivery Plan actions specifically on the current drivers behind biodiversity loss, targeting those actions which will help deliver the required enhancements in the period to 2030.

Option BT2: Take a longer-term approach to Delivery Plan actions which seeks to deliver broader benefits for biodiversity.

	A longer-term approach supported by Option BT2 has the potential to do more to support ongoing enhancements to water quality and quantity over an extended timescale, for example in response to climate change. This is likely to include restoring and enhancing ecosystems and natural features through the delivery of nature-based solutions. Building resilient ecosystems in this respect will support indirect effects for the regulating ecosystem services provided by natural habitats.		
 Soil	Option BT1 will have a focus on shorter term enhancements to biodiversity. This will support improvements in soil quality. Option BT2 may do more to support enhancements to soil resources over time. In this regard, the long-term delivery of resilient ecosystems (e.g., in response to climate change) will lead to enhancements to the key regulating and supporting ecosystems services provided by natural habitats. This would deliver multiple benefits for soil resources over the longer term through helping to manage erosion, regulate water quality, facilitate soil formation, and enabling enhanced nutrient and water cycling.	**2**	**1**
 Cultural Heritage	Through focusing the first five-year Delivery Plan actions specifically on the current drivers behind biodiversity loss, Option BT1 has the potential to deliver biodiversity enhancements in ways which complement and reinforce the intrinsic character of Scotland's landscapes and cultural settings. For example, as well as biodiversity value, hedgerows and other form of traditional boundaries have historic and cultural importance, indicative as they are of historic patterns of land use. It is however recognised that positive effects in this respect are dependent on the specific nature of proposed enhancements, and whether the cultural value of historic features is taken into consideration. It is considered that taking a longer-term approach to Delivery Plan actions (Option BT2) might better support the historic environment than the approach put forward by Option BT1. In this respect Option BT2 may better facilitate the adaptive management of ecosystems; an iterative process in which management actions are followed by targeted monitoring. This is a process that will help enable a better response to the longer-term realities relating to biodiversity, and the environmental enhancements which an effective SBS will facilitate. This has the potential to complement and reinforce the fabric	**2**	**1**

Option BT1: Focus the first five-year Delivery Plan actions specifically on the current drivers behind biodiversity loss, targeting those actions which will help deliver the required enhancements in the period to 2030.

Option BT2: Take a longer-term approach to Delivery Plan actions which seeks to deliver broader benefits for biodiversity.

	and setting of the historic environment (including Scotland's landscapes and their cultural settings) over the longer term.		
 Landscape and geodiversity	Through focusing the first five-year Delivery Plan actions specifically on the current drivers behind biodiversity loss, Option BT1 has the potential to deliver biodiversity enhancements in ways which complement and reinforce the intrinsic character of Scotland's landscapes and cultural settings. For example, as well as biodiversity value, hedgerows and other form of traditional boundaries have historic and cultural importance, indicative as they are of historic patterns of land use. It is however recognised that positive effects in this respect are dependent on the specific nature of proposed enhancements, and that the cultural value of historic features is taken into consideration. It is considered that the longer-term approach to Delivery Plan actions (Option BT2) might better support landscape character over the longer term than the approach put forward by Option BT1. In this respect Option BT2 may better facilitate the adaptive management of ecosystems; an iterative process in which management actions are followed by targeted monitoring. This is a process that will help enable a better response to the longer-term realities relating to biodiversity, and the environmental enhancements which an effective SBS will facilitate. This has the potential to complement and reinforce the intrinsic character of Scotland's landscapes and cultural settings over the longer term.	**2**	**1**
 Material assets	It is considered that both options have the potential to lead to positive effects in relation to material assets. However, it is considered that a long-term approach to Delivery Plan actions would best address built material assets, including a programme for long-term blue-green infrastructure investment which can improve living conditions, limiting infrastructure costs in the longer term.	**2**	**1**
 Population and human health	The approach put forward by Option BT1 would seek to set clear, ambitious actions and targets, which will likely effectively engage communities and induce public interest. This has the potential to support awareness of biodiversity, and may potentially support increase investment from stakeholders, including from within the private sector. Conversely Option BT2 takes a longer-term approach to Delivery Plan actions, which could struggle to generate initial investment and engagement without establishing	**2**	**1**

Option BT1: Focus the first five-year Delivery Plan actions specifically on the current drivers behind biodiversity loss, targeting those actions which will help deliver the required enhancements in the period to 2030.

Option BT2: Take a longer-term approach to Delivery Plan actions which seeks to deliver broader benefits for biodiversity.

	measurable targets and outcomes. However, Option BT2 will likely achieve longer term multifunctional benefits for communities, including economic and social opportunities – supporting new employment opportunities and providing scope for new development to provide lasting benefits for wildlife and increase people's ability to experience nature. While positive effects in this respect may also be delivered to an extent through Option BT1, planning for the long-term through Option BT2 will support approaches which encourage new investment and promote the health and wellbeing of communities over the longer term.

Summary conclusions

5.24 The assessment of the options suggests that Option BT2 performs more favourably in relation to eight of the nine SEA topics.

5.25 In this respect Option BT2 has the potential to do more than Option BT1 to enhance the longer-term adaptability and resilience of different locations to the likely effects of climate change and do more to support ongoing enhancements to air, water, and soil quality.

5.26 Option BT2 will likely achieve longer term multifunctional benefits for communities, including economic and social opportunities – supporting new employment opportunities and providing scope for new development to provide lasting benefits for wildlife and increase people's ability to experience nature. While positive effects in this respect may also be delivered to an extent through Option BT1, planning for the long-term through Option BT2 will support approaches which encourage new investment and promote the health and wellbeing of communities over the longer term.

5.27 With regards to the cultural heritage and landscape and geodiversity SEA topics, Option BT1 may help replicate some of Scotland's historic landscapes in the short term, with benefits for the setting of the historic environment and landscape character. However, through facilitating the adaptive management of ecosystems Option BT2 is likely to perform more positively in terms of complementing and reinforcing the intrinsic character of Scotland's landscapes and cultural settings over the longer term and reinforce the fabric and setting of its historic environment.

5.28 However, whilst potentially limiting longer-term positive effects, it should be noted that the shorter-term approach supported by Option BT1 will also facilitate benefits for the full range of SEA topics. In addition, in terms of biodiversity, flora and fauna, it is considered that a hybrid of both options is likely to lead to positive effects of greatest significance. This approach would place focus on implementing the transformational changes needed to meet 2030 targets, while also restoring and regenerating Scotland's ecosystems over the longer term to sustain diverse, rich, and resilient biodiversity networks for future generations.

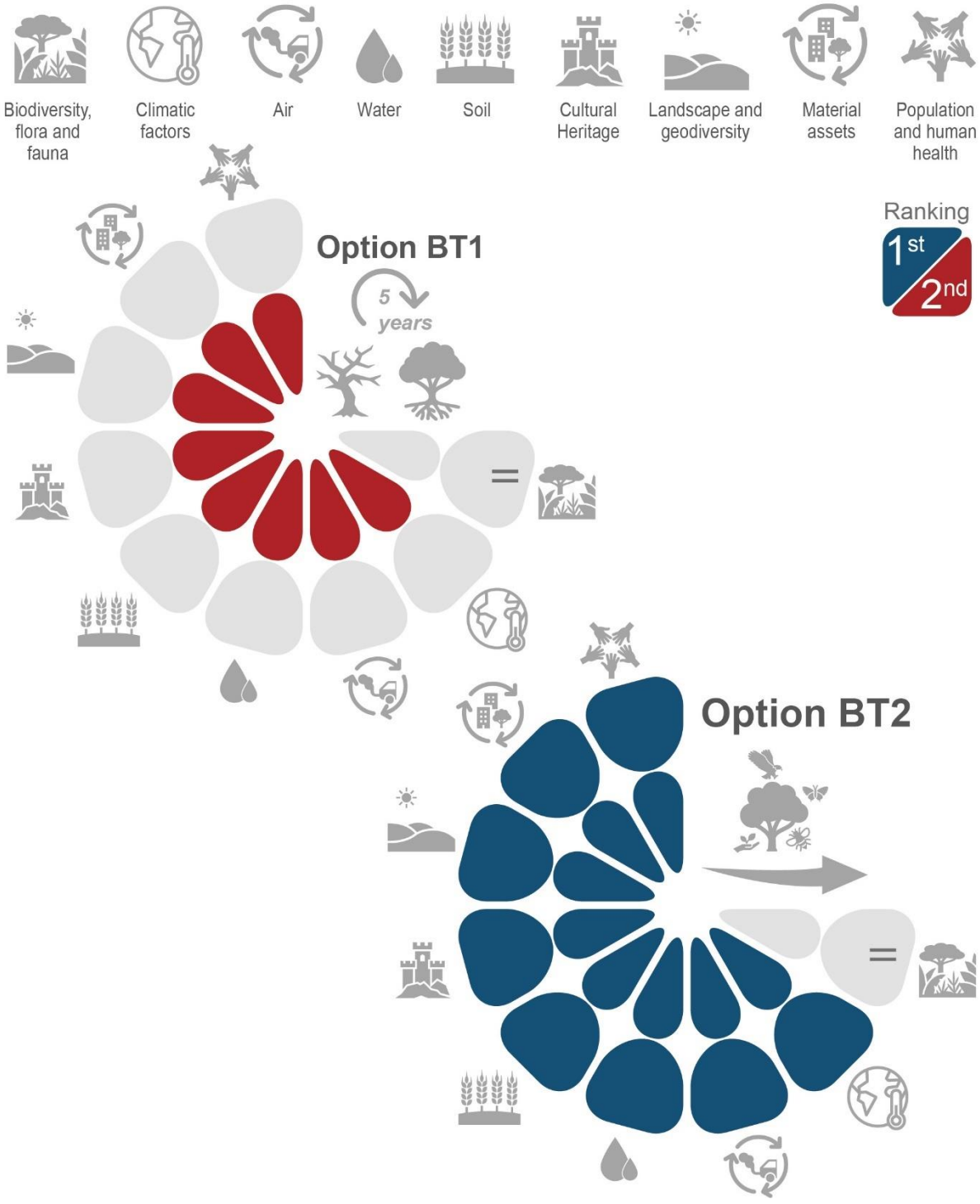
Options relating to the timeframes of Delivery Plans

Option BT1:

Focus the first five-year Delivery Plan actions specifically on the current drivers behind biodiversity loss, targeting those actions which will help deliver the required enhancements in the period to 2030.

Option BT2:

Take a longer-term approach to Delivery Plan actions which seeks to deliver broader benefits for biodiversity.



6. Assessment of the current version of the SBS & Delivery Plan

6.1 This chapter presents appraisal findings and recommendations in relation to the Scottish Biodiversity Strategy (SBS) to 2045 and its Delivery Plan (DP) for the period 2023 to 2028. The chapter is structured to present:

- An outline of the Strategy & Delivery Plan and component parts.
- An appraisal of the Strategy & Delivery Plan under the nine SEA topics identified through scoping.
- Consideration of cumulative effects; and
- The overall conclusions at this stage and recommendations for the next stage of plan-making.

Methodology

6.2 The assessment identifies and evaluates 'likely significant effects' on the baseline, drawing on the sustainability objectives identified through scoping (see **Table 3.3**) as a methodological framework.

6.3 Every effort is made to predict effects accurately; however, this is inherently challenging given the strategic nature of the Strategy under consideration and understanding of the baseline (now and in the future under a 'no plan' scenario) that is inevitably limited. Given uncertainties there is a need to make assumptions, e.g., in relation to Strategy implementation and aspects of the baseline that might be impacted. Assumptions are made cautiously and explained within the text (with the aim of striking a balance between comprehensiveness and conciseness). In many instances, given reasonable assumptions, it is not possible to predict 'significant effects', but it is possible to comment on merits (or otherwise) of the Strategy in more general terms.

6.4 Finally, it is important to note that effects are predicted taking account of the criteria presented within Schedule 2 of the Environmental Assessment (Scotland) Act 2005. So, for example, account is taken of the probability, duration, frequency, and reversibility of effects as far as possible. Cumulative effects are also considered, i.e., the potential for the Strategy & Deliver Plan to impact an aspect of the baseline when implemented alongside other plans, programmes, and projects. These effect 'characteristics' are described within the assessment as appropriate.

Strategy and Delivery Plan outline and component parts

6.5 Recognising the twin crises of biodiversity loss and climate change, the SBS has been introduced by Scottish Government to halt biodiversity loss and accelerate nature recovery. The Strategy aims for Scotland to be Nature Positive by 2030 (having halted biodiversity loss by this point in time) and to have restored and regenerated biodiversity across the country by 2045. The SBS will sit alongside Scotland's Climate Change Plan and contribute to Scotland's commitment to Net Zero.

6.6 The Strategy is supported by the first Delivery Plan, which covers the period 2023 to 2028 and builds upon the vision and outcomes articulated by the Strategy. The Strategy and Delivery Plan form part of a Strategic Delivery Framework aimed at providing the enabling conditions for success. In addition to the SBS and Delivery Plan, as part of this framework, Scottish Government will also introduce a Natural Environment Bill to put in place statutory targets for nature conservation, an Investment Plan setting out the cost of identified actions and investment drivers, and a monitoring and reporting framework to measure the effectiveness of actions.

6.7 By visioning the desired outcomes and determinants of success, the Strategy has identified priority actions for the period up to 2030 which will assist Scotland in becoming Nature Positive. These actions are explored in more detail and built upon through the Delivery Plan. Together the documents present 33 priority actions across six broad objectives. The first five objectives are identified in the SBS and broadly tackle direct drivers; they are:

- Accelerate restoration and regeneration.
- Safeguard land and sea.
- Support nature-friendly farming, fishing, and forestry.
- Recover and protect vulnerable and important species and habitats.
- Invest in nature.

6.8 The Delivery Plan adds an additional sixth objective to ‘act on the indirect drivers of change for biodiversity’ and breaks down the 33 priority actions into some 145 detailed actions, many of which are committed to in the period up to 2028.

Biodiversity, flora and fauna

6.9 The SBS clearly defines biodiversity and its global importance and sets out the evidence for Scotland’s biodiversity crisis. All six SBS objectives and their underpinning actions are geared towards halting biodiversity loss and accelerating restoration to improve biodiversity across Scotland by 2045.

6.10 The unfavourable condition of almost a quarter of Scotland’s protected sites is a significant factor to address in developing biodiversity, as identified through scoping. The SBS clearly defines priority actions to ‘expand protected areas to 30% [*of land surface*] and improve connectivity and condition’ and ‘recover and protect vulnerable and important species’. This includes key actions to ensure that every local authority has a defined nature network of locally driven projects that improve ecological connectivity, and that development proposals contribute to the enhancement of biodiversity, by restoring degraded habitats and strengthening nature networks. The Delivery Plan provides detailed measures for the next five years that will contribute to this, including: implementing a monitoring regime to ensure that protected area sites are effective at delivering objectives and informing appropriate management, increasing the number of sites in Scotland’s Marine Protected Area (MPA) network with specific fisheries management measures, targeted recovery actions for species at risk, and a programme to enable protected woodlands to be bought into favourable condition. Whilst in many respects a number of these are already anticipated to

take place, a continuance of these approaches during the plan period will bring a range of benefits.

6.11 Continued habitat loss is likely to be countered by the intention to implement statutory nature restoration targets, which will support a framework for realising the opportunities for enhancing habitats, species and ecological networks. This will be supported by proposals to restore six large scale landscape restoration areas with significant woodland components, which will bring a range of direct benefits for biodiversity. The Delivery Plan highlights that this includes developing a strategic approach for restoring Scotland's Atlantic Rainforest within the next five years. Given the habitat's international significance, and the opportunities available for the reestablishment and expansion of native woodlands on the west coast (supporting associated species such as bryophytes and lichens), this will being significant positive effects.

6.12 In addition to supporting biodiversity directly, these initiatives are also likely to have indirect effects through helping to reduce the impact of recreation and tourism at key biodiversity sites, including by widening opportunities for nature-based recreation. Further actions to invest in nature, better connect and engage with communities, and embed biodiversity and nature considerations in the education system provide long-term opportunities to support the protection and enhancement of key areas of biodiversity value, including by enhancing the understanding and awareness of their interest and factors affecting their integrity. As part of the objective to accelerate restoration and regeneration, measures are also identified to enhance water and air quality and undertake water management measures to enhance biodiversity and reduce the negative impacts of pollution on habitats and species.

6.13 Without further protection, Scotland's marine and terrestrial environments are likely to be impacted by both natural and human activities, making it important to safeguard these ecosystems, alongside positive management to deliver clean, healthy, safe, productive, and biologically diverse environments that meet the long term needs of people and nature. A clear intention of the proposals are to address the impacts of human activities is defined by the objective for nature-friendly farming, fishing, and forestry. The SBS recognises the need to manage these sectors more sustainably, and the Delivery Plan identifies key actions to increase uptake of high diversity, nature-rich, high soil-carbon, low intensity farming methods, implement further fisheries measures in vulnerable marine ecosystems, and ensure that timber production supports increased biodiversity habitat connectivity.

6.14 Considering the above, the combined effects of the SBS and Delivery Plan are considered likely to deliver a **wide range of significant positive effects** in relation to this SEA topic.

Climatic factors

6.15 The SBS & Delivery Plan recognises climate change and biodiversity loss as twin crises, in which a decline in biodiversity continues to exacerbate the climate crisis and a changing climate accelerates the rate of biodiversity loss. It also recognises the central role that biodiversity plays in addressing and adapting to the impact of climate change, identifying that when functioning well,

ocean and land ecosystems remove around 50% of human-made carbon dioxide emissions each year.

6.16 Scoping has identified that interventions should include nature-based solutions, for which the SBS responds with positive action. Of note, the actions in the Delivery Plan include those to extend and restore large woodland habitats, restore peatlands, and improve the sustainability performance of agriculture, fisheries, and forestry. In particular, the Delivery Plan identifies that the forestry sector should be designed and managed in ways that sustain diverse timber production and carbon sequestration. Furthermore, actions seek to ensure annual woodland creation targets are met which will see around 18,000 hectares of new woodland created each year. With a core objective to expand protected habitats and actions in place to introduce statutory nature restoration plans and implement a programme of ecosystem restoration, the contribution of biodiversity to mitigating the impacts of climate change is likely to increase. Of indirect benefit, biodiversity can ultimately help climate change adaptation, including through the prevention and mitigation flooding, and with the SBS targeting the creation of widespread nature networks, actions are likely to contribute to flood resilience with nature-based solutions.

6.17 The proposals also have a focus on actions that improve resilience in coastal and marine systems, including through reducing key pressures and safeguarding and extending space for coastal habitat change. With the various actions which seek to improve the conservation of marine wildlife, the proposals will help increase the resilience of marine ecosystems to the impacts of climate change. This includes the development of Coastal Change Adaptation Plans, which seek to promote naturally functionally coastal landforms using an embedded sea level rise predictive adaptive management approach, as well as measures to reduce marine litter.

6.18 Given these considerations, **significant long-term positive effects** are concluded as likely in relation to climatic factors.

Air

6.19 The presence of declared Air Quality Management Areas (AQMAs) in some parts of Scotland highlights that poor air quality can both result from and contribute to the deterioration of ecosystems. This link is recognised through the SBS & Delivery Plan which outlines specific measures that will both directly and indirectly benefit air quality. Key actions identify intentions to directly enhance air quality and link with the actions outlined by the Cleaner Air for Scotland 2 Strategy. Actions identified to extend and improve the quality and function of woodlands, restore peatlands, and move to low emission farming methods are also likely to directly and indirectly benefit air quality in the long-term.

6.20 With polluting vehicles being a significant contributor to poor air quality, it is recognised that nature networks can also provide opportunities for active travel uptake, which ultimately reduces the impact of vehicular movement. In this respect the Delivery Plan includes an action to ensure that by 2030, every new transport and active travel infrastructure project should incorporate elements of blue and green infrastructure. In addition to supporting air quality through promoting modal shift, the delivery of green and blue infrastructure

enhancements will have positive effects on air quality through facilitating increased absorption and dissipation of nitrogen dioxide, particulate matter and other pollutants.

6.21 The key consideration for this topic relates to nature's contribution to the regulation of air quality. With the SBS and Delivery Plan ultimately seeking to expand nature networks, priority and protected habitats, designations, and green and blue infrastructure, such contributions are set to increase. On this basis, the SBS & Delivery Plan has the potential to deliver **minor long-term positive effects** for air quality.

Water

6.22 Water quality and biodiversity are intrinsically linked. This recognises that habitats and species comprise a key ecosystem service role in regulating water quality and supporting the provisioning of water supply, whilst a healthy water environment supports increased biodiversity.

6.23 It is recognised that the condition of Scotland's water environment varies across the country, and overall, only 66% of waterbodies are in good condition. The SBS and Delivery Plan outlines measures that will both directly and indirectly benefit water quality. Key actions identified under the objective to accelerate restoration and regeneration include those to enhance water quality and undertake water management measures and address water scarcity. This includes the action to implement a programme of measures that restore catchments, rivers, and floodplains to achieve 81% of waterbodies at 'good' or 'better' condition by 2027 and ensure River Basin Management Plans implement further actions to achieve 'good' status in over 90% of waterbodies by 2030. Projects and programmes that complement existing regulatory processes, such as The One Health Breakthrough Partnership on pharmaceuticals and the water industry's Chemical Investigation Programme, are also provided support to address emerging or novel contaminants in the water environment. Additional actions seek to review abstraction rates and improve flow management to reduce the impacts of water scarcity, further invest in improvements to wastewater services (including upgrading 40 wastewater treatment works and 24 intermittent sewage discharges), control diffuse pollution and reduce inputs of nutrients to freshwaters and embed a vision for surface water management that incorporates nature-based solutions (including blue infrastructure).

6.24 Furthermore, there are targeted actions to reduce and/ or prevent the introduction and spread of invasive non-native species (including an action to reduce the rate of establishment of known or potential invasive non-native species by at least 50% by 2030 compared to 2020 levels) and a significant number of measures are outlined to target improvements to marine habitats and improve fisheries management. Notably this includes measures to reduce marine litter (including by implementing the Marine Litter Strategy through a six-year action plan), increase the number of sites in Scotland's Marine Protected Area network, deliver additional protections for spawning and juvenile congregation areas, improve monitoring, develop a Scottish Seabird Conservation Strategy and recover Scotland's wild Atlantic salmon and migratory fish populations, develop Fisheries Management Plans, consult on

implementing an inshore sustainable fishing cap, and introduce fisheries closures to protect vulnerable marine ecosystems in offshore waters.

6.25 Indirect benefits are also likely to be derived from measures to extend habitats and protected areas (both land and sea), and further invest in nature and natural capital, including continued investment in green and blue infrastructure.

6.26 Given the range of positive actions to support water quality and supply outlined above, **significant positive effects** are considered likely in relation to this SEA topic.

Soil

6.27 Climate change and land management practices continue to impact on soil resources and soil quality in Scotland. The SBS promotes measures that ultimately seek to improve soil health as part of habitat restoration and regeneration. The stated aim to increase the percentage of land that is protected for its biodiversity values and actions to significantly restore and extend woodland habitats and designate at least one new national park will provide long-term protection for soil quality in these areas.

6.28 The objective for nature-friendly farming, fishing, and forestry contains actions that will ultimately regenerate and restore soil health and improve agriculture and forestry practices to minimise their impacts on soil quality. Of note are actions to expand and connect upland, crofting, and lowland farmland habitats so that a minimum of 30% of the landscape in which a farm or croft site lies is managed as nature rich habitats, as well as actions to minimise the impacts of pesticides, embed evidence-based soil health indicators in whole farm plans and forest management plans, improve available information and rural support requirements for controlling soil compaction and assessing soil erosion risks and implementing mitigation, and improve the monitoring of soil quality. Furthermore, the actions of the Delivery Plan seek to ensure soil health is considered in planning decisions by supporting development proposals that protect and enhance soil quality and minimise soil sealing.

6.29 Given these points, the SBS & Delivery Plan will lead to **significant long-term positive effects** in relation to the soil topic.

Cultural heritage

6.30 Scotland's historic environment is rich in variety and extent and includes designated and non-designated assets and their settings. It is further recognised that there is potentially a wealth of further resources below ground, with known areas of high archaeological potential. The objectives and actions of the SBS do not directly target cultural heritage but indirect benefits can still be drawn from the broad ranging actions to preserve, enhance, and extend natural habitats that contribute to heritage settings and character. For example the introduction of nature-positive management strategies in towns and cities, actions which require the implementation of nature networks in every Local Authority area, and the introduction of statutory nature restoration targets could

help enhance the setting of the historic environment and support local distinctiveness.

6.31 It should be noted though that habitat restoration and new habitat creation may have negative impacts (direct and indirect) on the significance of heritage assets including their settings. For example, peatland restoration can have impacts on archaeology. In addition, localised ecologies, which reflect historic industry and character, should be considered for protection where possible, such as around historic mining areas. This includes plants that have adapted to changes in soil mineral levels or localised thermal differences. Care needs to be taken with the location, species and sizes of any new planting to avoid negative impacts, e.g. to archaeological sites or the setting of a listed building, or to minimise these and maximise opportunities for enhancement. Planting and other types of habitat restoration and re-creation will need to be informed by appropriate research and historic environment/landscape character assessments. For this reason, appropriate methods for enhancements should therefore be devised with input from historic environment specialists from the outset.

6.32 On this basis whilst **minor indirect positive effects** are considered as most likely in relation to cultural heritage, there are a **number of uncertainties** relating to the topic with regards to the effect of habitat restoration and new habitat creation on the historic environment.

Landscape and geodiversity

6.33 Habitats form landscape features that are intrinsic to landscape value and character. With clear SBS intentions and actions to improve and extend habitats across Scotland, it is likely that indirect landscape benefits will result from many of the proposals over the long term. Of note, the Delivery Plan outlines an intention to restore six large-scale landscapes with significant woodland components by 2030 and designate at least one new National Park by 2026. The actions seek to ensure National Parks and National Nature Reserves are exemplars in better delivery of biodiversity outcomes and nature-based solutions and that a range of new National Nature Reserves are identified and designated by 2028. Further actions also seek to expand and connect upland, crofting, and lowland farmland habitats so that a minimum of 30% of the landscape in which a farm or croft lies is managed as nature rich habitats. This will be supported by improved guidance for upland restoration to regenerate peatlands, increase native woodland cover, manage grazing, protect certain target species and priority habitats, and increase habitat heterogeneity. Additionally, many of the identified actions target improving and extending woodlands and forests (key landscape components) including enhanced protections for Ancient Woodland, a strategic approach for restoring Scotland's Atlantic Rainforest and implementing a Wee Forest Vision and Delivery Plan. The actions are ultimately expected to equate to wider protections for diverse and distinct landscapes and countryside. Landscape character also has the potential to benefit from actions to improve the sustainability performance of agricultural practices, improve soil quality, revise the Muirburn Code, and manage grazing and deer populations.

6.34 Additional measures that will introduce statutory nature restoration targets, require public bodies prepare and implement nature-positive amenity grassland

management strategies and develop nature networks, extend and improve green and blue infrastructure networks, and implement a programme of measures that restore catchments, rivers, and floodplains will also provide further landscape protection. Notably the strategy seeks to work with all Local Authorities to implement nature networks in every area and better connect important places for nature, including by embedding these networks within local planning policy and by providing a nature networks mapping tool and training for its use. In this respect the SBS & Delivery Plan has the potential to bring landscape and townscape benefits in both urban and rural areas.

6.35 Coastal landscapes are also expected to benefit from the Delivery Plan actions to promote naturally functioning coastal landforms and habitats and coastal accommodation space as well as actions to address the cumulative impacts of wildlife tourism in key locations.

6.36 Furthermore, the SBS highlights as a core objective the need to generate more investment to support nature recovery, including through the National Strategy for Economic Transformation programme and the Nature Restoration Fund and by developing a Biodiversity Investment Plan. On this basis, ongoing investment in activities which support landscape enhancements has the potential to be secured over the longer term.

6.37 Whilst in many respects the proposals set out by the SBS & Delivery Plan will support significant landscape enhancements, it should be recognised that biodiversity enhancements need to be appropriately designed to reinforce the special qualities of a landscape. The design of biodiversity enhancements will therefore need to be sensitive to the surrounding landscape, and exercises in habitat restoration and creation should be carefully selected to complement existing character and setting. Given the close relationship between landscape character and the fabric and setting of the historic environment, the elements highlighted above under ‘cultural heritage’ theme should be considered in the design of biodiversity enhancement schemes.

6.38 Considering these points, in many respects **significant long-term positive effects** are concluded as likely in relation to the landscape topic. However, there remain some **uncertainties** relating to the topic with regards to the effect of habitat restoration and new habitat creation on landscape character.

Material assets

6.39 The SBS and Delivery Plan contain measures likely to benefit natural resources. Notably, the objective to support nature-friendly farming, fishing, and forestry seeks to reduce pressures on, and enhance the sustainable use of natural resources. The actions seek to support a model of food production that improves soil health and reduces carbon emissions and support responsible, and sustainable fisheries management. Furthermore, there are targeted measures to improve the quality and extent of woodland habitats, improve the integration of trees within other land uses, and reduce the impacts of grazing, invasive species, climate change, and pests and pathogens. The Delivery Plan outlines multiple actions that seek to improve and extend green and blue infrastructure networks, including Scotland’s forests and woodlands, that will reduce the pressures of human impacts in some areas, and enhance sustainable access to natural resources.

6.40 Additionally, the objective to invest in nature prioritises actions to establish a values-led, high-integrity market for responsible private investment in natural capital, supported by a national project pipeline for nature-based solutions. The Delivery Plan identifies the action to develop a Biodiversity Investment Plan for Scotland, to directly address funding gaps and maintain and increase investment through the Nature Restoration Fund. Continued investment in natural capital will ultimately benefit natural resources, and support the restoration of healthy, functioning ecosystems. On this basis, **minor long-term positive effects** are considered likely in relation to this SEA topic.

Population and human health

6.41 The SBS recognises ecosystems, natural capital and biodiversity as integral parts of thriving communities and a sustainable economy. Numerous Delivery Plan actions are targeted as better involving local communities and businesses in nature conservation and restoration and securing long-term investment and a project pipeline for nature-based solutions. These actions are likely to support quality of life, positive health outcomes and new economic opportunities.

6.42 This will be supported by the range of Delivery Plan actions which seek to better connect people and nature. These include embedding access to nature and nature-based learning as part of the national curriculum, improving information/ knowledge sharing, developing communication and engagement programmes, encouraging more community ownership of local and national nature reserves and increasing opportunities for private investment (including investable nature recovery projects and targeted activities to restore Scotland's coasts and seas). These actions will facilitate improved engagement with nature from all age groups (reinforcing this relationship for future generations) and solidify the role of communities as key stakeholders in nature conservation and restoration activities. It will also support mechanisms for greater investment in nature, to the benefit of human health and economic vitality.

6.43 These aspects will be reinforced by the multiple objectives and actions which seek to extend and enhance habitats, protected areas, valued landscapes, amenity greenspace and green and blue infrastructure. This will support the quality of life and health and wellbeing of communities through enhancing access to nature, particularly where such actions address local deficits in greenspace needs.

6.44 The Delivery Plan actions seek to support the provisions of the Agriculture Bill by encouraging those supported by agricultural funds to deliver nature-based solutions and biodiversity actions. Whilst this will require careful design of agricultural and tenancy mechanisms, this will help encourage regenerative farming whilst facilitating the diversification of activities which offer additional income streams and economic opportunities.

6.45 Considering these points, the measures outlined by the SBS & Delivery Plan are considered likely to support a range of positive quality of life and health outcomes, and a range of socio-economic benefits. In this respect, the proposals are likely to being significant medium and long-term positive effects in relation to this SEA topic.

Cumulative effects

6.46 Intra-plan cumulative effects are anticipated to be positive in nature, with targeted actions to restore and regenerate biodiversity benefiting wider topics such as landscape, human health, natural resources, soil health, water and air quality, and climate resilience, as outlined above. Inter-plan positive cumulative effects are also anticipated as the SBS, and framework it sits within, complements the objectives and actions of Scotland's Environmental Strategy, Climate Change Plan, and National Strategy for Economic Transformation, as well Scotland's Blue Economy Vision, Vision for Agriculture, 2070 Vision for Forestry, and land reform bill. No negative cumulative effects are anticipated in implementation of the SBS.

Conclusions

6.47 The assessment of the SBS & Delivery Plan highlights that there are no likely significant negative effects arising as a result of the proposals. In addition there are, broadly, no conflicts between the objectives of the SBS and the SEA objectives. This is reflected by the conclusions of significant or minor positive effects against all SEA topics.

6.48 In this respect the assessment has highlighted that there are a range of actions outlined by the Delivery Plan that will support the protection and enhancement of the environment across Scotland, whilst also benefitting the quality of life and health and wellbeing of its communities. This includes relating to the objectives to address the twin crises of biodiversity loss and climate change, crises which ultimately affect natural resources, air, water, and soil quality, landscapes, and human health.

6.49 The assessment has however highlighted some uncertainties with regards to the effect of habitat restoration and new habitat creation on the fabric and setting of the historic environment and landscape character.

6.50 To help ensure that the environmental value of the proposals are maximised, and the uncertainties identified through the assessment are addressed, a number of recommendations can be made for the implementation of the SBS & Delivery Plan.

6.51 These are as follows:

- Mechanisms should be implemented to ensure that the location, species and scale of planting avoids negative impacts to historic environment assets, e.g. to archaeological sites or the setting of a listed building, or to minimise these and maximise opportunities for enhancement.
- Habitat restoration and re-creation should be informed by appropriate research and historic environment/landscape character assessments. In this respect appropriate methods for enhancements should be devised with input from historic environment and landscape specialists from the outset.
- Biodiversity enhancements should be appropriately designed to reinforce the special qualities of a landscape. The design of biodiversity enhancements should therefore be sensitive to the surrounding landscape, and exercises in habitat restoration and creation should be carefully selected to complement existing character and setting.

6.52 In addition, relating to the uncertainties and opportunities identified by the assessment, monitoring will be a key means of evaluating the environmental performance of the SBS & Delivery Plan and monitoring compliance through its implementation.

6.53 Monitoring proposals are presented in the next chapter.

7. Proposed monitoring programme

Monitoring in SEA

7.1 Monitoring in SEA is a means of evaluating the environmental performance of the plan or strategy and monitoring compliance through its implementation. It is also a way to check whether the effects predicted in the SEA arise as envisaged, or whether unforeseen issues arise.

7.2 Monitoring can help to evaluate whether a plan or strategy is fulfilling its core objective of delivering sustainable development and providing for a high level of protection of the environment. The information gathered through monitoring provides a basis to inform the review and preparation of subsequent iterations of plans, strategies and projects that sit within them, thus better informing future decisions.

7.3 Measuring indicators over time can identify long-term positive or negative changes and trends in the environment and can build knowledge on how these trends will affect (or will be affected by) the implementation of the plan or strategy itself. In this respect monitoring environmental changes occurring during the SBS & Delivery Plan's implementation phase can help to identify the need for additional mitigation measures or for appropriate remedial action to be undertaken where issues are identified, as well as to inform project-level assessments.

Proposed SEA monitoring programme for the SBS & Delivery Plan

7.4 Schedule 2 of the Environmental Assessment (Scotland) Act highlights that the Environmental Report should include "*a description of the measures envisaged concerning monitoring*."

7.5 In response to this, this Environmental Report presents a proposed draft monitoring programme for measuring the proposals' implementation.

7.6 It draws on the identified potential significant effects identified through the assessment of the various components of the proposals, and also suggests where monitoring is required to help ensure that the potential benefits of the proposals are effectively achieved through implementation.

7.7 This will enable appropriate interventions to be undertaken if monitoring highlights negative or underperforming trends relating to the proposals' implementation.

7.8 The Scottish Government intends to monitor and evaluate the performance of key performance indicators and use the data to enable them to adjust their approach if necessary. It is therefore beneficial if the SEA monitoring strategy builds on monitoring systems which are already in place. To this end, many of the indicators of progress chosen for the SEA are likely to reflect data that is already being routinely collected by the Scottish Government. As such, the indicators proposed for the SEA will be integrated into the Scottish Government's monitoring approach.

7.9 **Table 6.1** therefore outlines a proposed monitoring programme for measuring the SBS & Delivery Plan's implementation. It pays particular attention to the areas where the SEA has identified potential significant effects and also suggests where monitoring is required to help ensure that the positive effects of the proposals are achieved through implementation. It includes:

- The significant effect or environmental change to be monitored.
- The SEA topic(s) to which the monitoring proposal relates.
- The indicator to be monitored.
- The source of information and frequency of monitoring; and
- The trigger for where intervention should take place if monitoring suggests it is required.

7.10 It should be noted that the programme set out below comprises preliminary suggestions for the types of indicators which can be monitored. It is anticipated that a refined set of indicators will be developed following further engagement with stakeholders and during the implementation phase of the SBS & Delivery Plan (**Chapter 7**).

Table 6.1 Proposed (preliminary) SEA monitoring programme

Significant effect/ environmental change to be monitored	Indicator	Data source	Frequency	Trigger for intervention
Area of key biodiversity habitats 	Hectares of land supporting key habitats in designated areas	Scottish Government	Annual	When areas of specific habitat do not increase on a year-by-year basis to targets set by the Scottish Government.
Area of restored habitat 	Hectares of former farmland or other uses restored as biodiversity habitats in designated areas	Scottish Government	Annual	When area does not increase on a year-on-year basis to targets set by the Scottish Government.
Impact of proposals on woodland creation  	Area of woodland in designated areas	Scottish Government	Annual	Where area does not increase on a year-on-year basis to targets set by the Scottish Government.
Community involvement in ecological restoration projects  	Percentage of management and stewardship roles associated with biodiversity conservation and ecological restoration filled by those from local communities	Scottish Government	Annual	Where percentage decreases year on year.

Significant effect/ environmental change to be monitored	Indicator	Data source	Frequency	Trigger for intervention
Impact of habitat restoration and re-creation schemes on historic environment assets 	Proportion of habitat restoration and re-creation schemes informed by input from historic environment and landscape specialists	Scottish Government	Annual	Where percentage decreases year on year.
Impact of biodiversity enhancements on landscape character 	Landscape character assessment findings	Scottish Government	Ongoing	Where landscape character assessment suggests significant change has taken place
Impact of proposals on greenhouse gas emissions 	Carbon footprint of designated areas	Scottish Government	Annual	Where emissions increase year-on-year.

8. Next steps

8.1 This Environmental Report is being consulted on alongside the SBS Delivery Plan.

8.2 Following the completion of the consultation period in November 2023, comments will be reviewed and analysed. Any changes arising to the proposals will need to be assessed as part of the SEA process.

8.3 Part 3 of the Environmental Assessment (Scotland) Act 2005 requires that a 'statement' be made available to accompany the proposals, as soon as possible after their adoption. The purpose of the SEA Adoption Statement is to outline how the SEA process has influenced and informed the proposals' development process and demonstrate how consultation on the SEA has been taken into account.

8.4 To meet these requirements, an SEA Adoption Statement will be published with the adopted Delivery Plan. The SEA Adoption Statement will set out: the reasons for choosing the preferred SBS & Delivery Plan in light of other reasonable alternatives; how environmental considerations were integrated into the SBS & Delivery Plan's development process; how consultation responses were taken into account; and the measures decided for monitoring the significant effects of the proposals.

Appendix A Scoping information

A.1 Introduction

This Appendix presents additional information on the SEA scope, namely:

- Initial scoping consultation responses (February 2022).
- An overview of the relevant policy context in relation to wider and overarching plans, programmes, and strategies; and
- Baseline information for the SEA.

A.2 Initial scoping consultation responses

A summary of responses received as part of the initial scoping consultation (February 2022) is presented below. The table also indicates where comments have been addressed within the revised Scoping Report.

Historic England Scotland

Consultation responses from Historic England Scotland were as follows:

- **Scope and level of detail:** It is our understanding that the Scottish Government is committed to publishing a new Biodiversity Strategy by October 2022. The new strategy will be a scientific, evidence -based document that reflects the failing state of Scotland's biodiversity and the need for urgent action.

  We note that the historic environment has been scoped into the assessment. On the basis of the information provided, we are content with this approach and are satisfied with the scope and level of detail proposed for the assessment, subject to the detailed comments provided below.

  - AECOM response: Comment noted.
- **Assessment methodology**: We are broadly content with the two-stage assessment proposed. The stage one review of relevant SEA work should ensure that comments on the relevant environmental reports from the Consultation Authorities and other consultees are also taken into account. The stage two assessment should be at a level of detail which reflects the nature of the policy or action being assessed. This may vary across differing elements of the Strategy. Reporting of effects and mitigation / enhancement should be supported by commentary explaining the reasoning which underpins those findings. You may find a narrative summary supported by more detailed narrative and /or matrix presentation is a proportionate way of reporting which responds to the needs of varying users.

  It would have been helpful to have included more detail about the assessment method within the Scoping report, particularly in terms of any assessment criteria, questions or objectives. These should be informed by the environmental baseline and its likely interaction the aims and outcomes of the Strategy. We would be happy to provide comments on this or other detailed aspects of your methodology as it is developed.

  - AECOM response: Comment noted. Actioned.
- **Scope of assessment:** The scoping report explains that it is intended that the Scottish Biodiversity Strategy will frame outcomes broadly across different

ecosystems. We recognise that ecosystem services and natural capital accounting form the basis for much land-use based decision making. These methodologies do not recognise the contribution the historic environment provisioning and regulating service, for instance the contribution it makes to our landscapes, or how it relates to biodiversity. Significant work is required to ensure the historic environment is recognised within ecosystem services and natural capital accounting methodologies. In view of this, the assessment should consider the environmental effects of taking an ecosystems services-based approach to the framework and outcomes of the Strategy; any reasonable alternatives to this approach should also be considered.

  - AECOM response: An SEA Framework has been included in the updated Scoping Report which sets out the considerations that will be made in relation to the historic environment and the other topics being considered through the SEA process. For the appropriate SEA topics, the proposed assessment questions incorporate a recognition of how ecosystems contribute to the relevant services associated with each topic.

- **Cultural heritage baseline:** For information, paragraph 5.7.1 contains a reference to the 'Historic Environment Scotland (HES) Policy'. This is incorrect, and the reference should be to the Historic Environment Policy for Scotland 2019 (HEPS). This is correctly referenced and hyperlinked in the footnotes.

  Whilst we are broadly content with the baseline information, we consider that it could be expanded to better recognise that benefits and outcomes to both natural and historic elements of the environment are often interdependent.

  Historic sites can be special for biodiversity as many have been protected from development, particularly agricultural improvement, which has allowed the preservation of local habitats and species. Scotland's hedges, fields, forestry, water systems and wetlands are all man-made features. These habitats are part of the historic environment, and they play a significant role in the protection and enhancement of biodiversity. Many historic sites and landscapes are well preserved and have allowed the preservation of local habitats and species. They are reservoirs of wildlife which can support conservation initiatives, with important local populations of plants and animals.

  Larger sites and linear features, such as the Antonine Wall WHS, are important contributors to the wildlife corridors which allow plants and animals to migrate and spread as a result of pressure from development and climate change. Protecting historic landscapes from both natural and human threats also supports biodiversity and allows the preservation of local habitats and species. There are opportunities to support biodiversity through the sustainable production of traditional materials.

  - AECOM response: Actioned.

- **Contextual PPS:** We would expect the Historic Environment Policy for Scotland 2019 (HEPS) to be included here.

  - AECOM response: Actioned.

- **Consultation period for the Environmental Report:** We are content with the 12-week period proposed for consultation on the draft Strategy and its Environmental Report. Please note that, for administrative purposes, we consider that the consultation period commences on receipt of the relevant documents by the SEA Gateway.

  - AECOM response: Comment noted.

NatureScot

Consultation responses from NatureScot were as follows:

- NatureScot declares an interest in this strategy since we are closely involved in drafting the revision of the Scottish Biodiversity Strategy. This includes assisting Scottish Government with the scope of the strategy, the content of the strategy and ultimately a commitment to assisting the use of the strategy.

  Due to our declared interest in this strategy we have considered our role as a Consultation Authority, in accordance with Section 15(2) of the Environmental Assessment (Scotland) Act 2005.

  We consider that it would not be appropriate for NatureScot to comment on further stages in the SEA process as a Consultation Authority.

  We have not been involved in the preparation of the screening or scoping report; we are happy, therefore, to provide informal comments on these documents. Our comments on the screening report and the scope and level of detail to be included in the Environmental Report and on the duration of the proposed consultation period are provided in the annex to this letter.

  - AECOM response: Comment noted.
- **Scope of assessment and level of detail**: Subject to our declared interest and the specific comments set out in the annex to this letter, NatureScot is content with the scope and level of detail proposed for the environmental report.

  - AECOM response: Comment noted.
- **Consultation period for the environmental report**: We note that the length of the period proposed for consultation on the Environmental Report has not been stated.

  - AECOM response: Comment noted.
- **Setting the Context**: The policy principles outlined in section 2.2 imply a transformation of our relationship with nature to one that conserves, restores, and enhances its benefits for people and planet (2.2.5). Therefore, engagement and positive benefits for people including health and education are in scope but do not seem to have been considered. This risks the health impact from biodiversity, in particular connection to nature, being underplayed.

  With regard to the relationship with other plans, programmes and strategies (section 3) there is no reference to the Scotland's Fisheries Management Strategy 2020 – 2030, which is intended to sit within Scottish Government's wider marine policy framework including the Environment Strategy for Scotland.

  With regard to biodiversity, flora and fauna, it would be appropriate to consider the following, particularly in relation to non-native invasive species: Wildlife and Natural Environment (Scotland) Act 2011.

  3.1.3 "The Wild Birds Directive (2009/147/EC) requires the classification of European sites known as Special Areas of Conservation" is incorrect and should read 'known as Special Protection Areas'.

  - AECOM response: Comment noted. Actioned.
- **Baseline information**: The Environmental Report should include a description of the likely evolution of the environment without the strategy to provide a frame of reference for the assessment of the strategy. We would like to draw your

attention to the following issues and potential omissions, we have followed the numbering in the scoping report:

Para 5.2.3 Whilst they feature in the list of examples there is no mention of marine habitats in this paragraph. We would also highlight the lack of reference to fungi ("approximately 90,000 animals, plant and microbe species").

Para 5.2.3 Deer or other herbivore impacts have been omitted from the list of key threats (bullet 4); this is a significant omission.

Para 5.3.1 We agree with the content of this paragraph but note the need for better integration, in particular with regard to the Climate Change Plan, the Scottish Climate Change Adaptation Programme and the Scottish Biodiversity Strategy.

Para 5.3.3 The following have been omitted and are key: agricultural practice; urban development; consumption.

Para 5.4.3 This paragraph states that the emission of the eight main pollutants are lower in 2019 than they were in 2005. This is correct for the Air Quality in Scotland monitoring network, which it cites. This network does not monitor ammonia, however, which has remained at a steady level for a number of years and not reflecting this would be a major oversight of the SEA. Ammonia emissions are important due to their role in direct toxicity, nutrient enrichment and acting as a precursor to PM2.5. This last point means that elevated levels of ammonia in the countryside, mainly from agriculture, are likely to result in higher particulate matter levels in towns and cities. The key reference for trends in air pollution in the UK, with country breakdowns, is produced annually by the UK Centre for Ecology & Hydrology (UKCEH) for Defra and it should be cited.

The SEA should also refer to the Scottish Government (SG) Scottish Nitrogen Balance Sheet, which has been commissioned as a requirement of the Climate Change (Emission Reduction Targets) (Scotland) Act 2019. SG's commitment to improving Nitrogen Use Efficiency across the economy should be reflected in the SEA.

Para 5.5.2 The tone of this paragraph seems to underplay the fundamental and existential importance of water management in Scotland.

Para 5.5.5 First bullet point. With regard to the citation the water classification figures show current surface water figures as 2089 (64%) in good or better condition and 1164 (36%) in moderate or below, i.e. just over a third are classified as in moderate condition or below. Whilst there has been some improvement within the lower classifications this has been the case since 2008 so there is still considerable work to be done and the phrasing in the scoping report may therefore underplay this issue.

Second bullet point. Pressures on surface water listed includes urbanisation but soil sealing should also be specifically flagged in this context.

Fourth bullet point, on water abstraction, should be considered in the context that this issue is not only in relation to the resource as a whole but also on water distribution. Consideration needs to be given to overall hydrology across catchments, not just water quality and quantity, especially with regard to adapting to and mitigating the extremes of water availability that are anticipated by current climate change models. This is of particular importance in determining the health of wetlands. Catchment hydrology is influenced by land management beyond just intensive agriculture, including forestry, soil compaction, land drainage, etc.

Para 5.6.1 The current focus on prime agriculture soil is limited in scope. Most of this section is based on Scotland's soil framework and supporting information from Scotland's environment web. It does not fully reflect the current emphasis on soil carbon, emission reduction and sustainability in resources management. We would expect some consideration to be given to the promotion of soil health, its resilience to change and the role of soil as a sink and source of greenhouse gases and carbon. The relevance of soil biodiversity itself to support above ground communities and control vital biogeochemical processes to nutrient cycles, greenhouse gas emission, pollution control, soil structural stability and development and many other functions has been overlooked.

Para 5.6.2 The phrasing here does not seem to acknowledge that soil itself is a raw material which requires proper handling and management in order to control waste production and ensure proper use or reuse of soil materials.

A key soil function missing has been omitted from the list: providing a platform for buildings and roads. This is important as soil that fulfils this function becomes sealed and loses capacity to support other functions, thus having an impact on soil quality and soil health.

Para 5.6.4 The last sentence in this paragraph could be misinterpreted, it is important to recognise that a lot of our semi-natural habitats are over more mineral soils.

Para 5.6.5 The total carbon held in soil under peatland is likely to be greater than 1600 million tonnes as this can also include carbon stored in peaty soil often associated with shallower blanket bog habitat.

Para 5.8.1 The important role of National Parks in safeguarding landscape objectives appears to have been overlooked whereas it is overstated with regard to the protection of features of geological and geomorphological significance since it is the Site of Special Scientific Interest designation that is the principal driver of geoconservation activity rather than National Park status; National Nature Reserves, not mentioned, also play a role in this.

Para 5.8.3 The significant value of geodiversity for niche tourism has not been mentioned.

Para 5.8.5 First bullet point. The use of non-indigenous building materials has not been noted here. Fourth bullet point. The anthropogenic response associated with geodiversity assets being affected by climate change has not been noted here.

Para 5.10.3 The use of the data from Scottish Health Survey is potentially misleading; better data, including NatureScot's own SPANS Covid 19 surveys, have been collated here. Key headlines are as follows:

- During April 2021, over two thirds of adults (67%) reported that they had visited a green or open space in the previous four weeks. This was an increase from May 2020, during national lockdown restrictions, when 48% reported visiting a greenspace in the previous 4 weeks, and similar to November 2020 (63%).
- No differences in number of visits to green or open space, frequency of visits or benefits to mental health by COVID-19 vaccination status were found, including the time since vaccine or number of doses.
- Comparing data from Wave 1 (collected a year prior (April 2020)) there was a marked increase in number of visits to green and open space, frequency of

these visits and reported mental health benefits of being in these spaces. These increases were highlighted in Wave 2 data (collected in November 2020) and sustained in the most recent Wave 3 data.

There remain sharp inequalities in visiting green and open space: 73% of those classified as high socio-economic status visited in the previous four weeks, compared to just 59% of those classified as low socio-economic status.

- For those who reported use of green and open space in the previous four weeks, 78% visited a green or open space on one or more occasions in the previous week. The frequency of visits varied considerably by individual demographic group.
- 9 in 10 individuals agreed that being in green and open spaces benefitted their mental health. The most recent NatureScot SPAN survey1, undertaken in summer 2021, suggests a continuation of the trend towards higher levels of outdoor recreation participation in comparison to those recorded for the same period in 2019. This continuation may in part be explained by a proportion of the population establishing new habits, perhaps due to an increased amount of their time spent working from home. The groups most likely to state that they expected to visit the outdoors more often in future included women (50%), those aged under 35 (56%), members of the minority ethnic population (62%), dog owners (54%) and those with very good health (55%).

Para 5.10.4 Also worth noting is that visits to the outdoors are lowest among the lower social-economic (C, D, E) groups compared to the higher ones (A, B). As the surveys described above have observed, visits to the outdoors became more polarised during the pandemic with a large percentage of the population (39%) spending more time outdoors in 2020 than in the same period in 2019 but around a quarter of the population (24%) stating that they were spending less time outdoors than a year ago with older people and those in poor health more likely to state that this was the case.

Para 5.10.5 The penultimate sentence in this paragraph does not cover other important benefits which nature provides, for example, connectedness to nature has also been shown to have a range of positive physical and mental health benefits and is considered to be particularly important in young people with regard to establishing lifelong behaviours which support better health outcomes2 3.

Para 5.10.6 If life expectancy is still projected to increase in Scotland this masks significant and growing inequalities in average life span between different population groups and localities. Mental health issues have also become a significant and growing concern particular in younger age groups. It is worth noting that:

- Visits to the outdoors contribute significantly to Scotland meeting its physical activity targets with growth in recreational walking the key reason for the upward trend.
- The use of green health activity is growing in health practice with benefits for public health and nature.

Regular outdoor learning and play has been shown to support attainment and increase levels of physical activity and mental well-being in young people.

- The protection and management of nature can have an important role in managing disease and pathogens.

- Nature based solutions can not only help communities adapt to climate change but also to reduce its health impacts.

Any effects on Natura sites/species: Guidance recommends that plan-making bodies can consider opportunities to combine the earlier stages of SEA and Habitats Regulations Appraisal, where appropriate, even though the differing requirements mean that the two assessments cannot be fully integrated. One option is to conduct the earlier stages in parallel, such as environmental information gathering, prediction of plan effects, and some early consultation stages.

If the Habitats Regulations Appraisal is undertaken in parallel with SEA, it is important that the findings of both appraisals are separately and clearly documented and that the record of the Habitats Regulations Appraisal uses the correct terminology, applying them appropriately. In practice, it is easier to set out the Habitats Regulations Appraisal in a separate record, and where appropriate provide a cross-reference to it in the Environmental Report.

- AECOM response: Actioned. Note NatureScot's own SPANS Covid 19 surveys – link showing 'NOT FOUND'. Headlines have been included, nonetheless.

Scottish Environment Protection Agency

Consultation responses from Scottish Environment Protection Agency were as follows:

- As required under Section 15(2) of the Act, we have considered the document submitted and can confirm that we are generally content with regard to the scope and level of detail proposed to be included in the Environmental Report (ER), subject to the comments set out below. We would also highlight to you that SEPA is represented on the stakeholder working group for the development of this strategy and we look forward to continuing engagement in both the SEA and the strategy as work progresses.
- **Scope of the assessment**: We welcome that all SEA topics have been scoped into the assessment.
- **Approach to the assessment**: We are content with the two-tier approach proposed for the assessment. The initial first tier review of related SEAs should be used to help refine the focus for the second-tier assessment and flag up key issues for consideration during the development of the strategy. The second tier should form an integral element of the development of the draft strategy.

  No detail has been provided as to how the second tier of the assessment will be undertaken other than it will be reported in a narrative style. Whilst we are content with the reporting style, we would ask for clarification to be provided as to how the second-tier assessment will be conducted. The use of SEA objectives is a recognised approach, and further details can be found in SEPA's SEA topic guidance notes on our website: Strategic Environmental Assessment | Scottish Environment Protection Agency (SEPA).

  - AECOM response: Actioned.
- **Para 4.5 Reasonable alternatives**: Limited information has been included on the development and consideration of reasonable alternatives. We would encourage you to use the first-tier review proposed for the assessment to help in

the development and refinement of reasonable alternatives which would then be considered as part of the second-tier assessment.

- AECOM response: Actioned.

- **Para 5. Baseline**: We are generally content with the Environmental Baseline and Trends information presented; we would highlight the following for your consideration:

  Para 5.6 Soil: 5.6.7 Approximately 80% of peatland is thought to be damaged. However, the majority of designated peatland sites were found to be in favourable condition.

  It would be useful context in comparing these two facts to understand what proportion of peat is covered by designation – the implication of the above is that only a minority is protected by designation. It would be helpful to clarify these statements.

  Para 5.9 Material assets: 5.9.5 – We would highlight the reduction of the urban heat island effect as an additional potential benefit to be gained as a result of blue-green infrastructure.

  5.9.8 – We would recommend including reference in this section to the green economy e.g. increasing use of recycled aggregate may mean a decrease in new extractions of primary resources which may result in a reduction of negative impacts on habitats and species.

  - AECOM response: Actioned.

- **Para 6. Programme of works**: Although no specific consultation period has been specified, we note that the public consultation on the draft strategy and ER is proposed between May and August 2022. We would recommend a consultation period of not less than 6 weeks.

  - AECOM response: Comment noted.

A.3 Policy context

As required by Schedule 3 of the 2005 Act, the wider plans, programmes and strategies (PPS) to which the Scottish Biodiversity Strategy relates have been reviewed. A detailed analysis of relevant plans, programmes and strategies in relation to the SBS & Delivery Plan is presented below.

International and EU level PPS and legislation

- **Directive 79/409/EEC on the conservation of wild birds/Directive 2009/147/EC**: Relates to the long-term conservation of all species of naturally occurring birds in the wild state across European Member States. Applies to factors with potential to affect birds including human activity leading to the destruction and pollution of habitats. Allows for designation of Special Protection Areas, as part of a coherent ecological network, known as European Sites network.
- **Directive 92/43/EEC the conservation of natural habitats and of wild fauna and flora**: Aims to promote the maintenance of biodiversity as part of sustainable development. Allows for designation of Special Areas of Conservation, as part of a coherent ecological network. Notes that land-use planning and development policies should encourage the management of features of the landscape which are of major importance for wild fauna and flora. Also requires an Appropriate Assessment to be made of any plan or programme likely to have a significant effect on the conservation objectives of a designated site.
- **EU Biodiversity Strategy for 2030**[6]: Long term plan to protect nature and reverse the degradation of ecosystems. The strategy aims to put Europe's biodiversity on a path to recovery by 2030 and contains specific actions and commitments.
- **Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services**[7]: In 2012 the world's governments agreed to establish the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) as a mechanism for strengthening the global science-policy interface for biodiversity and ecosystem services. Since then, IPBES has become the leading intergovernmental body for assessing the state of the planet's biodiversity, its ecosystems and the essential contributions they provide to society.
- **Edinburgh Declaration on post 2020 global biodiversity framework**[8]: Sets out the aspirations and commitments of the Scottish Government, Edinburgh Process partners, and the wider subnational constituency of the Convention on Biological Diversity, in delivering for nature over the coming decade.

UK level PPS and legislation

- UK Post-2010 Biodiversity Framework: Development of the Framework reflects a revised direction for nature conservation, towards an approach which aims to

[6] European Commission (2020): 'EU Biodiversity Strategy for 2030', [online] available to access via this link
[7] JNCC (2012): 'Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services', [online] available to access via this link
[8] Scottish Government (2021): 'Edinburgh Declaration on post-2020 global biodiversity framework', [online] available to access via this link

consider the management of the environment as a whole, and to acknowledge and take into account the value of nature in decision-making. The Framework sets out the common purpose and shared priorities of the UK which is to be owned, governed, and implemented by the four countries.

National level PPS and legislation

- **Climate Change (Emissions Reductions Targets) (Scotland) Act 2019 and Climate Change Plan Update 2020**: The Climate Change Plan update reflects the increased ambition of the new targets set by the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019. To meet Scotland's targets, a rapid transformation across all sectors of our economy and society is required. It commits Scotland to reduce emissions by 75% by 2030 (compared with 1990) and to net zero by 2045. These PPS support the transition to a net zero Scotland directly, as well as influence wider PPS such as the Scottish Biodiversity Strategy.
- **Environment Strategy for Scotland 2020: Vision and Outcomes**: The Environment Strategy creates an overarching framework for Scotland's existing environmental strategies and plans, including the Climate Change Plan. These will be reviewed over time, to reflect international targets and other policy developments. The vision and outcomes set out in this document will help to guide the future development and delivery of these strategies and plans by establishing our long-term direction and shared goals.
- **State of Nature Report for Scotland 2019**[9]: This report draws on the best available data on Scotland's biodiversity, produced by partnerships between conservation non-governmental organisations (NGOs), research institutes, UK and national governments, and thousands of dedicated volunteers. It focuses on the trends in species as the key evidence of how nature is faring.
- **Scottish Biodiversity Strategy post 2020 – Statement of Intent**: Sets the direction for this emerging biodiversity strategy in a response to the increased urgency for action to tackle the twin challenges of biodiversity loss and climate change.
- **The National Performance Framework**[10]: The framework sets national outcomes which describe the kind of Scotland it aims to create. The outcomes reflect the values and aspirations of the people of Scotland; are aligned with the United Nations Sustainable Development Goals; and help to track progress in reducing inequality.
- **Draft National Planning Framework 4**: The fourth National Planning Framework, sets out how Scotland's approach to planning and development will help to achieve a net zero, sustainable Scotland by 2045.
- **Programme for Government (PfG)**[11]: The programme sets out the Government's plans for the year and includes Bills that will be introduced to the Scottish Parliament.

[9] NatureScot (2019): 'State of Nature Scotland Report', [online] Available to access via this link
[10] Scottish Government (2022): 'National Performance Framework', [online] available to access via this link
[11] Scottish Government (2021): 'A Fairer, Green Scotland: Programme for Government 2021 to 2022', [online] available to access via this link

- **Draft River Basin Management Plan for Scotland 2021-2027**[12]: The draft river basin management plan (RBMP) sets out how Scottish Government, SEPA, other responsible authorities and partners work together to protect and improve the water environment in Scotland. The plan aims to prevent deterioration and improve the quality of the water environment to at least good condition. The plan is prepared by SEPA and approved by Scottish ministers.
- **Future Fisheries: Management Strategy 2020 to 2030**[13]: This strategy sets out Scottish Government's approach to managing Scotland's sea fisheries from 2020 to 2030, as part of the wider Blue Economy. It explores approaches to achieve the delicate balance between environment, economic and social outcomes, and how working in partnership with fisheries stakeholders at home, within the UK, and in an international context, can deliver the best possible results for the marine environment, fishing industry and fishing communities. The Strategy is intended to sit within Scottish Government's wider marine policy framework including the Environment Strategy for Scotland.
- **Historic Environment Policy (HEPS) for Scotland 2019**: The Historic Environment Policy for Scotland (HEPS) is a policy statement directing decision-making that affects the historic environment. It is relevant to a wide range of decision-making at national and local levels. It is supported by detailed policy and guidance. HEPS should be taken into account whenever a decision will affect the historic environment.
- **National Marine Plan 2015**: This plan covers the management of both Scottish inshore waters (out to 12 nautical miles) and offshore waters (12 to 200 nautical miles). This Plan provides a comprehensive overarching framework for all marine activity in Scotland's waters. It enables sustainable development and use of the marine area in a way which will protect and enhance the marine environment whilst promoting both existing and emerging industries.
- **Wildlife and Natural Environment (Scotland) Act 2011**: This Act amends existing legislation in relation the protection of wildlife, biodiversity and nature conservation. The Wildlife and Countryside Act 1981 is amended in relation with, among other things: protection of game species (including close seasons and "poaching" offences); abolishment of "areas of special protection" for wild birds; the use of snares to catch animals; extension of the regime for controlling non-native and invasive species; delegation of licensing functions under the Act.
- **Scottish Soils Framework 2009**[14]: Scotland's soils perform a large number of economic and environmental functions. Many industries, including farming and food production, forestry and tourism, depend on the sustainable use of soils. Soil management also plays an important role in sustainable flood management.
- **Scottish Government (SG) Nitrogen Balance Sheet**: The SG Scottish Nitrogen Balance Sheet has been commissioned as a requirement of the Climate Change Act and sets out SG's commitment to improving Nitrogen Use Efficiency across the economy.

[12] SEPA (2020): 'Draft River Basin Management Plan for Scotland 2021-2027', [online] available to access via this link
[13] Scottish Government (2020): 'Future fisheries: Management Strategy 2020-2030', [online] available to access via this link
[14] Scottish Government (2009): 'The Scottish Soil Framework', [online] available to access via this link

A.4 Baseline information

The following section sets out the baseline for the SEA (i.e., the current and future situation in the area in the absence of the SBS&DP, to help identify the Strategy's likely significant effects). Given the strategic and national level focus of the Scottish Biodiversity Strategy, all environmental topic areas have been scoped in to this SEA (see **Table 3.2**). The scope is therefore presented under these environmental topics.

Biodiversity, flora and fauna

Biodiversity is crucial for the functioning of healthy ecosystems and supports life by providing resources such as clean air, water and food. Biodiversity is also closely linked with the other environmental topics.

Scotland's biodiversity has been depleted due to human activity over centuries, with pockets of rich biodiversity struggling to sustain themselves in the faces of climate change. Scotland's biodiversity is complex and includes varied habitats across land, freshwater and marine environments, making up the diverse landscapes and seascapes. Approximately 90,000 animal, plant and microbe species are found in Scotland[15] along with habitats, ranging from raised bog to native and ancient woodland. Scotland is home to a wide range of species and internationally important habitats. While there is no accurate figure for the fungi of Scotland, it is considered that there are perhaps 1,600 large fungi present, and many thousands of microscopic species.[16]

Scotland's protected areas include 251 Special Areas of Conservation, 153 Special Protection Areas, 51 Ramsar sites and 2 Biosphere Reserves, 1,422 Sites of Special Scientific Interest (SSSI), 43 National Nature Reserves and 2 National Parks, among other designations[17]. There are also 244 Marine Protected Areas and a wide range of designated Priority Marine Features which help conserve and enhance the marine environment[18]. Greenspaces such as public and private gardens, parks, woodlands, recreational grounds, green corridors, allotments and community growing spaces can also provide habitats and ecosystems which are not only important to wildlife, but for human health and wellbeing[14].

Global declines in biodiversity are mirrored in Scotland and the abundance and distribution of Scotland's species has on average declined over recent decades, with most measures indicating this decline has continued in the most recent decade[14].

Some of the key pressures and trends the assessment is likely to consider include:

- The abundance and distribution of Scotland's species has on average declined over recent decades.

[15] NatureScot (2020): 'Scotland's Biodiversity', [online] available to access via this link
[16] Scotland Guides (2023): 'What is special about fungi in Scotland', [online] available to access via this link
[17] NatureScot (undated): 'Protected areas', [online] available to access via this link
[18] NatureScot (undated): 'Priority marine features in Scotland's seas', [online] available to access via this link

- Only 65% of natural features on protected sites are classed as being in favourable condition, with a further 13% classed as unfavourable but recovering.[19]
- 11% of species have been classified as threatened with extinction from Great Britain and 133 (of those assessed) have already become extinct[20].
- The greatest drivers of change in biodiversity in Scotland are climate change, urbanisation, pollution, woodland management, fisheries, invasive non-native species, deer and other herbivores, freshwater management and agricultural management.
- Currently, 37% of Scotland's marine environment receives protection with 22.7% of terrestrial land protected for nature. There is a commitment to increasing protection on land and sea to 30% by 2030 and examining options to extend this even further.[11]

Climatic factors

There is a global climate emergency. Due to human activities including industrialisation, deforestation, and large-scale agriculture, quantities of greenhouse gases (GHG) in the atmosphere have risen to record levels not seen in three million years[21]. The concentration of GHGs in the atmosphere is directly linked to the average global temperature, and there is unequivocal evidence that human influence has warmed the atmosphere, ocean and land[22]. The scale of recent changes across the climate system as a whole, and the present state of many aspects of the climate system, are unprecedented over many centuries to many thousands of years[25]. Scotland's climate has already changed and is both warmer and wetter on average[23]. In Scotland an estimated 284,000 homes and premises are at risk of flooding; with an additional 110,000 properties predicted to be at risk by the 2080s[24]. As such, Climate adaptation will be crucial to ensure that Scotland's society and economy will be resilient to future climate impacts.

Some of the key pressures and trends the assessment is likely to consider include:

- Changes in climate resulting in the loss of certain habitats and species, or species migration and breeding[25]. For example through sea-level rise.
- Climate change and biodiversity loss are twin crises that should be tackled together. Conserving, managing, and restoring ecosystems are key to success.
- Agriculture contributes considerably to GHG emissions. Measures are being implemented/ explored to ensure that farmland practices result in increased uptake of high diversity, nature-rich, high soil carbon, low intensity farming methods while sustaining high quality food production.

[19] NatureScot (2022): ;The Proportion of Scotland's Protected Sites in Favourable Condition 2022', [online] available to access via this link
[20] Walton P et al. (2019): 'State of Nature Scotland Report', [online] available to access via this link

[21] United Nations (2021): 'Climate Change', [online] available to access via this link
[22] The UN Intergovernmental Panel on Climate Change (2021): 'Climate Change 2021: The Physical Science Basis', [online] available to access via this link
[23] Kendon M et al. (2021): 'State of the UK Climate 2020', [online] available to access via this link
[24] SEPA (2018): 'National Flood Risk Assessment 2018', [online] available to access via this link
[25] UK Government (2022): 'UK Climate Change Risk Assessment 2022', [online] available to access via this link

- Between 1990 and 2019, there was a 43.8 per cent reduction in estimated emissions, a 37.3 MtCO2e decrease[26].
- The most significant contributors to this decrease were energy supply, waste management, business and land use, land use change and forestry (LULUCF)[30].
- In 2019, domestic transport was the largest source of net emissions.[30]
- Human activities such as land clearing, housing, urban development and construction of roads or other infrastructure, all place pressure on biodiversity and climate change. However sustainable development can support climate and biodiversity objectives.
- Drivers of biodiversity loss including those associated with peoples' consumption and production choices. Overconsumption of food and other materials can have a considerable impact on the global environment, nature, and nature's contribution to people.

Air

Air pollution effects ecosystems. Air pollution and its deposition onto vegetation, soil and water can damage vegetation directly or indirectly through the addition of nutrients or changes in acidity levels within a habitat. These can lead to a shift in the competitive balance between species, changes in plant species composition or subtle changes in vegetation structure, which can affect the use of a habitat by an animal species[27]. Air pollution also has significant effects on public health and animal health. Exposure to air pollution is harmful to health in terms of premature mortality and morbidity, mainly related to respiratory and cardiovascular disease[28].

Some of the key pressures and trends the assessment is likely to consider include:

- Air pollution can affect habitats and species.
- Currently, 36 AQMAs have been declared in Scotland, 34 are transport-related and the remaining two have been declared for industrial emissions[29].
- Emissions of the eight main air pollutants are lower in 2019 than they were in 2005[30]. This network does not monitor ammonia, however, which has remained at a steady level for a number of years.[31] Ammonia emissions are important due to their role in direct toxicity, nutrient enrichment and acting as a precursor to PM2.5. This means that elevated levels of ammonia in the countryside, mainly from agriculture, are likely to result in higher particulate matter levels in towns and cities.
- The main sources of emissions are transport, domestic and industrial.

[26] Scottish Government (2021): 'Scottish Greenhouse Gas statistics: 1990-2019', [online] available to access via this link
[27] Institute of Air Quality Management (2019): 'A Guide to the assessment of air quality impacts on designated nature conservation sites', [online] available to access via this link
[28] Scottish Government (2021): 'Cleaner Air for Scotland 2 – Towards a Better Place for Everyone', [online] available to access via this link
[29] Air Quality in Scotland (2021): 'Air Quality Management Areas', [online] available to access via this link
[30] National Atmospheric Emission Inventory (2021): 'Air Quality Pollutant Inventories for England, Scotland, Wales and Northern Ireland: 2005-2019', [online] available to access via this link
[31] DEFRA (2021): 'Trends Report 2021: Trends in critical load and critical level exceedances in the UK', [online] available to access via this link

- Policies that improve air quality can potentially have multiple co-benefits for biodiversity, as well as population health, for addressing inequality and for mitigating and adapting to climate change.

Water

Scotland's water environments are highly dynamic, supporting a diverse range of habitats and species of national and international importance, while also being of significant cultural and socio-economic importance. Water provides numerous benefits including drinking water provision, water for use in industry and agriculture, hydropower, wave and tidal energy, fisheries, aquaculture, recreation from, for example, wildlife watching, angling and water sports[32,33,] and carbon storage[34.].

Scotland has a wide range of water bodies including two thirds of British river systems and streams, varying from mountain burns to wide lowland rivers such as the Tay. There are over 30,000 lochs in Scotland, Loch Ness holds the most water with 7.4 million m3, more than all English and Welsh lakes combined[35]. Scotland's coast stretches 18,000 km with marine waters out to 12 and 200 nautical miles making up Scotland's territorial and offshore waters, which combined make up 13% of all European seas. There are also 1,526 protected areas associated with the water environment.

Much of the water environment in Scotland is in good condition. However, there are still significant problems affecting water quality, physical condition, water flows and levels, and the migration of wild fish. Invasive non-native species are also damaging aquatic plant and animal communities. The river basin management plans for Scotland set out a range of actions to address these impacts[36].

Some of the key pressures and trends the assessment is likely to consider include:

- Figures show current surface water figures as 2089 (64%) in good or better condition and 1164 (36%) in moderate or below, i.e. just over a third are classified as in moderate condition or below. Whilst there has been some improvement within the lower classifications this has been the case since 2008 so there is still considerable work to be done. [37].
- Pressures on the surface water environment include urbanisation (notably soil sealing), invasive non-native species, intensive agriculture/aquaculture and climate change.
- Groundwater quality and flow can be affected by diffuse pollution from rural sources, discharges from industries such as mining and quarrying, and agriculture irrigation[38].
- Water abstraction and storage can also place a burden on water resources, with demand growing[39]. This issue is not only in relation to the resource as a whole but also on water distribution. Consideration is also given to overall hydrology

[32] Scotland's Environment (2019): 'Scotland's freshwater', [online] available to access via this link
[33] Scotland's Environment (2016): 'Scotland's seas', [online] available to access via this link
[34] Shafiee R. (2021): 'Blue Carbon', [online] available to access via this link
[35] NatureScot (2020): 'Freshwater lochs', [online] available to access via this link
[36] SEPA (2021): 'River Basin Management Planning', [online] available to access via this link
[37] SEPA (undated): 'Water Classification Hub', [online] available to access via this link
[38] SEPA (undated): 'Groundwater', [online] available to access via this link
[39] SEPA (2019): 'Guidance on consideration of water in SEA', [online] available to access via this link

across catchments, not just water quality and quantity, especially with regard to adapting to and mitigating the extremes of water availability that are anticipated by current climate change models. This is of particular importance in determining the health of wetlands. Catchment hydrology is influenced by land management beyond intensive agriculture, including forestry, soil compaction, and land drainage.

- Airborne pollution can impact water bodies causing overgrowth of plants and algae and depleting oxygen levels.
- Climate change is expected to lead to increases in water scarcity, flood risk, and to increase the risk of non-native species spreading and becoming established in water environments[40].

Soil

Soil is a non-renewable resource and is one of Scotland's most important assets. Soil is a raw material which requires proper handling and management in order to control waste production and ensure proper use or reuse of soil materials. Soils support a wide range of functions and provide many environmental, economic, and societal benefits including[41]:

- Providing valued habitats and sustaining and supporting biodiversity
- Providing a platform for buildings and roads.
- Providing the basis for food and biomass production.
- Storing carbon and maintaining the balance of gases in the air as a major store of terrestrial carbon.
- Providing raw materials such as the use of sand and sand gravel in construction.
- Controlling and regulating environmental interactions such as water flow and quality – for example, soil sealing can change the rate at which water enters rivers and other water functions.
- Preserving cultural and archaeological heritage by providing records and protective cover.

Soil quality is defined as the ability of soil to carry out the above functions. Soils contribute to ecosystem services such as food provision, fibre and raw material (a provisioning service), provision of clean water (a regulating service), protects and is part of Scotland's cultural heritage (a cultural service) and soil formation itself (a supporting service)[41].

Scotland has a diverse range of soils, which are generally more organic, more acidic, more leached and wetter than those of most other European countries. Over 25% of Scotland is used for arable crops (mostly in the eastern half of the country) and improved grassland, mostly on the more mineral soils of the central belt and in lowland areas, and predominantly found in the south west. The remainder of the country is occupied by semi natural habitats over more organic soils with over 20%

[40] SEPA (undated): 'Water scarcity', [online] available to access via this link
[41] Natural Scotland, Scottish Government (2011): 'The State of Scotland's Soil', [online] available to access via this link

of Scotland being covered in peatland habitat on peat soils42. However it is noted that a lot of Scotland's semi-natural habitats are over more mineral soils.

Scotland's soils play a key role as the main store of terrestrial carbon, acting as "carbon sinks", most of it being held in soils under peatland habitat, including carbon stored in peaty soil often associated with shallower blanket bog habitat. As with all soils, those under peatland habitat are at risk from land use change and the effects of climate change, and their loss or degradation (and the associated loss of carbon) has the potential to be a significant contributor to Scotland's GHG emissions[43]. The role of healthy peatland in sequestering soil carbon, helping to reduce downstream flood risk and providing benefits to biodiversity is recognised in Scotland's National Peatland Plan. Healthy, functional soils, capable of delivering a full range of ecosystem services, are needed to support species and habitat condition and diversity.

There is a strong interrelation between soil deterioration and the increased number of extreme floods as soils sealing, soil compaction and capping exacerbates flooding as the capability of soils to absorb water decreases and water runs off more quickly. Appropriate soil management therefore is a central plank for the development of a sustainable approach to flood risk management.

Some of the key pressures and trends the assessment is likely to consider include:

- Scotland's soils are considered to generally be in good health.
- Approximately 80% of peatland is thought to be damaged. However, the majority of designated peatland sites were found to be in favourable condition[44]. This highlights that only a minority of peatland is protected by designation.
- Climate change and loss of organic matter pose significant threats to Scottish soils, with both likely to affect soil function.
- Changes in land use and land management practices are also a key pressure on soil.
- Contaminated and vacant and derelict land can have a number of negative impacts on the environment, including on soil[45].

Cultural heritage

Scotland's many and varied historical sites are unique and irreplaceable. These sites and features are regarded as making a valuable contribution to quality of life, cultural identity, education and economy. While these assets are distributed widely throughout Scotland, there are clusters of sites in and around Scotland's settlements and coastlines.

The majority of Scotland's historic environment is undesignated, with estimates that the scale of the undesignated resource is around 90-95% of the total resource[46].

[42] Scottish Government (2009): 'The Scottish Soil Framework', [online] available to access via this link
[43] NatureScot (2014): 'Scotland's peatland – definitions & information resources', [online] available to access via this link
[44] NatureScot (2021): 'Restoring Scotland's Peatlands', [online] available to access via this link
[45] SEPA (2019): 'Guidance on consideration of soil in SEA', [online] available to access via this link
[46] Historic Environment Scotland (2020): 'Scotland's Historic Environment Audit 2016', [online] available to access via this link

There are more than 56,000 designated/protected historic assets across Scotland. These are protected through the process of designation, which aims to identify the most important parts of the historic environment, to recognise their significance and enhance protection. Designations include world heritage sites, listed buildings, scheduled monuments, gardens and designed landscapes, battlefields, historic marine protected areas and conservation areas.

Some of the key pressures and trends the assessment is likely to consider include:

- Existing pressures affecting the historic environment, including development pressures, maintenance, land use, coastal erosion and climate change.
- Climate change has the potential to affect cultural heritage and historic sites by accelerating decay, this may increase the pressure on natural assets needed to repair or maintain sites[47].
- Communities, such as coastal communities, are intimately tied to the environment and biodiversity surrounding them - which provide a rich Scottish cultural heritage[48].
- Biodiversity driven land management changes such as increasing hedgerows, native and semi-ancient woodland expansion and reinstatement of field patterns could impact on landscape and cultural heritage.

Landscape and geodiversity

Scotland's diverse and distinctive geological features and landscapes are a significant part of the country's natural and cultural heritage contributing to the economy and the population's wellbeing and providing a range of benefits[49]. Scotland is internationally renowned for its varied and dramatic landscapes including impressive mountain ranges, broad plateaus, expansive lowlands, and striking coastal features[50]. Many of these landscapes are the result of ancient glacial and periglacial activity as well as changes in sea level[51]. The primary classifications are the Central Lowlands, the Highlands and Islands to the north and west, and the Southern Uplands[52]. Situated among these natural features are the many iconic built landmarks and townscapes that help give Scotland its reputation as a tourist destination[53]. The character of many of Scotland's buildings strongly depends on the local stone used to build them. Even the location of settlements themselves is often down to landscape and soil properties.[54]

Geodiversity underpins landscape, and protecting our rocks, landforms and soils is also an important part of landscape planning and management55. Many places in Scotland are of great importance to geoscience for their rocks, fossils and landforms,

[47] Historic Environment Scotland (2018): 'Climate Change Risk Assessment', [online] available to access via this link
[48] Scottish Government (2013): '2020 challenge for Scotland's biodiversity', [online] available to access via this link
[49] Scotland's Environment Web (2014): 'Landscape', [online] available to access via this link
[50] James Hutton Institute (2018): 'Regional Landscapes of Scotland', [online] available to access via this link
[51] NatureScot (undated): 'Landforms', [online] available to access via this link
[52] Ibid.
[53] Historic Environment Scotland (2020): 'Scotland's Historic Environment Audit 2018', [online] available to access via this link
[54] NatureScot (2020): 'Geodiversity and cultural heritage', [online] available to access via this link
[55] NatureScot (2017): 'Landscape policy and guidance', [online] available to access via this link

demonstrating important geological processes or events that have significant value for education and research and as part of Scotland's geo-heritage[56]. Geodiversity is also significant for niche tourism has not been mentioned.

Geodiversity is also the physical basis for Scotland's varied landscapes (both rural and urban) and scenery. It has a profound influence on terrestrial and marine habitats, wildlife and use of land and water[57]. Geodiversity assets of regional or local importance may be protected as Local Geodiversity Sites but coverage is not complete. Around 9.5% of the total area covered by Scotland's National Parks and 37% of National Nature Reserve areas have Geological Conservation Review site status[58]. Some of these are also protected at the national level by SSSI legislation[59]. Landscapes of the highest quality have been designated and include 40 National Scenic Areas and two National Parks (Loch Lomond and the Trossachs, and the Cairngorms). There is a high concentration of wildland areas, National Scenic Areas and other designations along the west coast of Scotland, and in the Highlands.

Some of the key pressures and trends the assessment is likely to consider include:

- A move towards a monoculture has created a less diverse landscape of field types and hedgerows.
- Geodiversity has a close link to local character, including through building stone and through influencing the location of settlements.
- Climate change is expected to lead to extensive landscape change across Scotland, with the greatest changes likely to occur in lowland and coastal areas where human population is highest. Geodiversity assets are also expected to be affected by climate change[60].
- The coast and foreshore are under many pressures, particularly from climate change, rising sea levels and coastal erosion[61].
- Aquaculture development, energy generation development, including on and offshore windfarms, can impact landscape, geodiversity and seascape[62].

Geodiversity assets (including as revealed by distinctive buildings and structures) are increasingly at risk from the impacts of climate change, including extreme weather events. There is a need to enhance the resilience of these assets.

Regional and local landscapes are becoming less distinct due to more similarities in building form, settlement patterns, and agricultural practices[63].

Biodiversity driven land management changes such as increasing hedgerows, native and semi-ancient woodland expansion and reinstatement of field patterns could impact on Scotland's landscape.

[56] Scotland's Environment (2019): 'Rocks and landforms', [online] available to access via this link
[57] NatureScot (undated): 'Importance of geodiversity', [online] available to access via this link
[58] NatureScot (undated): 'Protecting Our geodiversity', [online] available to access via this link
[59] NatureScot (undated): 'Geodiversity in protected areas', [online] available to access via this link
[60] NatureScot (undated): 'Climate change: Impacts on landscape', [online] available to access via this link
[61] Scottish Government (2019): 'Climate Ready Scotland: Climate Change Adaptation Programme 2019-2024', [online] available to access via this link
[62] NatureScot (2019): 'Climate change impacts in Scotland', [online] available to access via this link
[63] Scotland's Environment (2014): 'Landscape', [online] available to access via this link

Material assets

The 2005 Act requires material assets as a topic to be addressed in SEA but does not set out a specific definition of the factors it should encompass. SEPA guidance[64] notes that consideration of material assets in SEA is usually taken to cover a wide variety of both natural and built assets.

As Scotland's energy mix continues to change, the electricity transmission network (grid) that supports the balance between energy generation and demand will change significantly, for example, as a result of the increased electrification of the transport and heat network. Infrastructure will play a key role in ensuring security of supply and decarbonising Scotland's energy systems in the most cost effective and affordable way[65]. This is partly because the spatial pattern of electricity generation is changing from a centralised system focused on small number of large power stations to a decentralised system with development in areas with a previously weak network.

Blue-green infrastructure is an interconnected network of natural and semi-natural areas, ranging in size from small rain gardens and green streets to larger parks and greenspace including ponds and watercourses. These features can perform several functions and provide a range of benefits within the same spatial area[66]. Benefits of blue–green infrastructure include a reduced potential for flooding, improved water quality, reduced infrastructure costs, and increased space for communities and wildlife[67].

Some of the key pressures and trends the assessment is likely to consider include:

- Material assets is considered to comprise all natural and built assets in Scotland.
- Increasing demand for goods and services puts pressure on natural resources.
- Flooding poses the greatest long-term climate related risk to infrastructure performance, however, growing risks posed from heat, water scarcity and slope instability caused by severe weather could also prove significant[68].
- Expanding the area of Scotland's forests and woodlands can also contribute to reduced GHG emissions, and provide an important commercial natural resource, improve biodiversity and provide spaces for people to enjoy[69].
- An additional potential benefit to be gained as a result of blue-green infrastructure is the reduction of the urban heat island effect.
- Increasing use of recycled aggregate may mean a decrease in new extractions of primary resources which may result in a reduction of negative impacts on habitats and species.

[64] SEPA (2019): 'SEA', [online] available to access via this link
[65] DECC (2015): 'Towards a Smart Energy System', [online] available to access via this link
[66] Scottish Government (2011): 'Green Infrastructure: Design and Placemaking', [online] available to access via this link
[67] Green Growth Knowledge Platform (2018): 'Blue and Green Cities', [online] available to access via this link
[68] Committee on Climate Change (2017): 'UK Climate Change Risk Assessment 2017 Evidence Report – Summary for Scotland', [online] available to access via this link
[69] Scottish Government (2020): 'Update to the Climate Change Plan 2018-2032 – Securing a Green Recovery on a Path to Net Zero', [online] available to access via this link

Population and human health

The population of Scotland was estimated at 5,479,900 in 202170. The population increased by 13,900 people (0.25%) in the year to mid-2021. The average annual growth in the 5 years before the pandemic was higher than this, at around 23,100 people (0.43%).

Projections forecast that the population will continue to rise to around 5.57 million by 2043, an increase of 2.5%71. Whilst life expectancy is also projected to increase by 2043, the expected rate of increase will be slower than previous projections.

During April 2021, over two thirds of adults (67%) reported that they had visited a green or open space in the previous four weeks. This was an increase from May 2020, during national lockdown restrictions, when 48% reported visiting a greenspace in the previous four weeks, and similar to November 2020 (63%).[72]

There remain sharp inequalities in visiting green and open space: 73% of those classified as high socio-economic status visited in the previous four weeks, compared to just 59% of those classified as low socio-economic status.

9 in 10 individuals agreed that being in green and open spaces benefitted their mental health. The most recent NatureScot SPAN survey[73], undertaken in summer 2021, suggests a continuation of the trend towards higher levels of outdoor recreation participation in comparison to those recorded for the same period in 2019. This continuation may in part be explained by a proportion of the population establishing new habits, perhaps due to an increased amount of their time spent working from home. The groups most likely to state that they expected to visit the outdoors more often in future included women (50%), those aged under 35 (56%), members of the minority ethnic population (62%), dog owners (54%) and those with very good health (55%).

Visits to the outdoors are lowest among the lower social-economic (C, D, E) groups compared to the higher ones (A, B). As the surveys described above have observed, visits to the outdoors became more polarised during the pandemic with a large percentage of the population (39%) spending more time outdoors in 2020 than in the same period in 2019 but around a quarter of the population (24%) stating that they were spending less time outdoors than a year ago with older people and those in poor health more likely to state that this was the case.

Life expectancy at birth in Scotland fell in 2021, with the average life expectancy at birth for males being 76.6 years and 80.8 years for females. The figures for 2019-2021 continue the decrease of the previous year, which was the sharpest fall since 1980-1982.[74]

Deprivation continues to have an impact on life expectancy. In the most deprived areas of Scotland, average male life expectancy was 13.7 years lower than in the

[70] National Records for Scotland (2022): 'Mid 2021 Population Estimates Scotland', [online] available to access via this link
[71] National Records for Scotland (2019): 'Projected Population of Scotland (2018-based)', [online] available to access via this link
[72] NatureScot (2021): 'Enjoying the Outdoors – Monitoring the impact of Coronavirus and social distancing – Wace 3 survey results (September 2021)', [online] available to access via this link
[73] Ibid.
[74] National Records of Scotland (2023): 'Life expectancy continues to fall in Scotland', [online] available to access via this link

least deprived areas. For females the difference was 10.5 years. This gap has become wider in recent years and Scotland has the lowest life expectancy of all UK countries.[75]

Life expectancy was highest in Orkney Islands and lowest in Glasgow city for both males and females in 2019-2021, and most of Scotland's council areas have seen life expectancy fall over the last few years. Life expectancy was higher in rural areas than in urban areas.[76]

The physical environment can influence health directly (e.g. through air quality or water pollution) and more widely through how people interact with the natural and built environment (e.g. enjoying well-designed public and/or green spaces within our towns and cities). The impact of environmental factors such as climate, geography, geology, topography and environmental hazards on health is termed the environmental burden of disease, much of which (in theory) could be preventable[77]. Key service areas such as social care, housing, education, employability and leisure also have a relationship with health inequalities and health improvement[78]. Nature provides physical, consumable goods and services that humans cannot live without, such as breathable air, drinkable water and food. Other important benefits which nature provides includes connectedness to nature has also been shown to have a range of positive physical and mental health benefits and is considered to be particularly important in young people with regard to establishing lifelong behaviours which support better health outcomes. Beyond these, there are additional benefits including trees which provide fuel and plants which provide medicines.[79]

Some of the key pressures and trends the assessment is likely to consider include:

- Projections forecast that the population will continue to rise. Most of the central belt and other urban areas are projected to grow in population. But it is projected that the population in almost half of the 32 local authorities will decline[80].
- Life expectancy is projected to increase. However there remains significant and growing inequalities in average life span between different population groups and localities.
- Climate change poses a wide range of potential effects on human health. It is expected that climate change's potential risks and benefits to population and health will not be evenly distributed[81].
- The quality of Scotland's parks and greenspaces has continued to decline, with fewer people using these spaces regularly[82].
- Scientific research highlights the clear physical and emotional health benefits where enhanced green infrastructure encourages spending more time outdoors and exposure to nature. Studies show that spending time with nature reduces

[75] Ibid.
[76] Ibid.
[77] SEPA (2019): 'SEA', [online] available to access via this link
[78] Scottish Government (2016): '2015 Review of Public Health in Scotland: Strengthening the Function and Re-Focusing Action for a Healthier Scotland', [online] available to access via this link
[79] NatureScot (2022): 'Benefits of Biodiversity', [online] available to access via this link
[80] National Records of Scotland (2021): 'Scotland's Population 2020 – The Registrar General's Annual Review of Demographic Trends', [online] available to access via this link
[81] Kovats S (2015): 'Health Climate Change Impacts: Report Card 2015', [online] available to access via this link
[82] Greenspace Scotland (2018): 'The Third State of Scotland's Greenspace Report', [online] available to access via this link

blood pressure, lowers body mass index, helps to tackle depression and improves social cohesion.[83]

- Derelict and vacant land can affect a community's health, environment, economy and social cohesion[84].
- Mental health issues have also become a significant and growing concern particular in younger age groups. It is worth noting that:
  - Visits to the outdoors contribute significantly to Scotland meeting its physical activity targets with growth in recreational walking the key reason for the upward trend.
  - The use of green health activity is growing in health practice with benefits for public health and nature.
  - Regular outdoor learning and play has been shown to support attainment and increase levels of physical activity and mental well-being in young people.
  - The protection and management of nature can have an important role in managing disease and pathogens.
  - Nature based solutions can not only help communities adapt to climate change but also to reduce its health impacts.

[83] European Commission (2013): 'The European Union Strategy on Green Infrastructure', [online] available to access via this link

[84] Greenspace Scotland (undated): 'Negative impacts of vacant land on communities', [online] available to access via this link

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