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SEA of the Crown Estate Scotland Investment Strategy

Environmental Report

Final Report
Prepared by LUC
December 2018

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Introduction to the Crown Estate Scotland Draft Investment Strategy

Crown Estate Scotland is responsible for managing assets across the whole of Scotland both on land, at the coast and within the marine environment. The assets include:

- 37,000 hectares of rural land with agricultural tenancies, residential and commercial properties and forestry on four rural estates (Glenlivet, Fochabers, Applegirth and Whitehill).
- Rights to fish wild salmon and sea trout in river and coastal areas.
- Rights to naturally-occurring gold and silver across most of Scotland.
- Just under half the foreshore (590km square) around Scotland including 5,800 moorings and some ports and harbours.
- Leasing of virtually all seabed out to 12 nautical miles covering some 750 fish farming sites and agreements with cables & pipeline operators.
- The rights to offshore renewable energy and gas and carbon dioxide storage out to 200 nautical miles.
- Retail and office units at 39-41 George Street Edinburgh (2,760 square metres).

Crown Estate Scotland has a duty to maintain and enhance the value of the estate and the returns obtained from it, but with due regard to the requirements of 'good management'. The Draft Investment Strategy is guided by the Crown Estate Scotland Corporate Plan 2017-2020 and will inform future business plans and annual reports. The development of an investment strategy will contribute towards the strategic objectives of the Corporate Plan. This includes contributing to Scotland's economic, social and environmental wellbeing; and growing revenue and enhancing the capital value of the estate.

What is Strategic Environmental Assessment?

Strategic Environmental Assessment (SEA) is a way of considering the environment when preparing public plans, programmes and strategies. It identifies potential significant environmental effects and, where necessary, describes how these effects can be avoided or reduced. Through consultation, SEA also provides an opportunity for the public to express their views on proposed policies and their potential environmental impacts.

In this case, SEA is being used to assess the likely environmental effects of the Crown Estate Scotland Draft Investment Strategy.

How was the Strategic Environmental Assessment undertaken?

SEA is an assessment of the likely significant environmental effects of the Draft Investment Strategy and the alternatives to it. The Environmental Report considers the environmental effects of the Draft Investment Strategy investment objectives as they would influence activities across each of the four portfolios.

The assessment identifies positive and negative environmental effects and the significance of these, considers whether they would be temporary or permanent, and notes where they would arise in the short, medium or long term. It also distinguishes between effects arising directly from the Draft Investment Strategy and any 'secondary' effects, which would indirectly impact on the environment. .

Which reasonable alternatives have been considered?

Part of the assessment involves considering alternative approaches to the Draft Investment Strategy (referred to as 'reasonable alternatives'). Crown Estate Scotland identified that three alternatives to the proposed strategy were considered and were based on the scale of rebalancing assets:

- Ambitious rebalance of assets £30m (high option would have resulted in quicker disposal of low yielding assets and increased emphasis on acquiring higher yielding assets – shift from rural to urban with potential loss of environmental benefits associated with rural stewardship).
- Medium rebalance of assets £15m.

- Low rebalance of assets £5m (low option might have failed to bring in sufficient revenue to fund Crown Estate Scotland as an organisation or to allow other corporate objectives to be met).

All the alternatives were based around value and were not spatial. The proposed strategy is between the medium to low scenarios at £10m. The assessment of the reasonable alternatives has considered the relative scale of effect under the three scenarios, and the preferred option.

What are the key environmental challenges relevant to the Crown Estate Scotland Draft Investment Strategy?

The biodiversity across the land and marine environment is important at an international and national level but these environments are also under a number of pressures including land use intensification and modification, pollution, invasive species and disease, climate change and marine exploitation.

Scotland has seen a general decline in greenhouse gas emissions however energy is one of the main contributors to greenhouse gas emissions. Crown Estate Scotland operates in the area of marine renewables and carbon capture and storage.

Likely climate changes include hotter drier summers and warmer wetter winters with implications for management of property, agriculture and forestry. This includes issues such as flood management and water availability. In addition, sea level rise is likely to affect coastal assets, such as Rhu Marina.

Key pressures on water quality originate from human activity and climate change is predicted to impact on the seasonality, frequency and intensity of precipitation with flooding impacts which may affect the viability of rural assets for agricultural and forestry use.

Scotland is considered to have moderate levels of air quality. In most areas, the majority of ambient pollutants are present at levels well below limits set for protecting human health and the environment. It is estimated that air quality levels in Scotland will remain stable or continue to improve.

Competing land uses remain a principal threat to managing landscape change including impacts from new development. Climate change will also impact on Scotland's landscapes as a result of both direct and indirect impacts (from adaptation).

Scotland's historic environment includes thousands of historic buildings and monuments. Key impacts on the historic environment include development and land use change, alongside climate change. Crown Estate Scotland's assets include many historic environment features both within the rural, urban and marine environment.

There is a general trend for population growth in Scotland as a whole and an increasing trend in the proportion of older people in Scotland. The crucial role of environmental quality in maintaining human health is well-documented, particularly in relation to protecting water quality and air quality. Levels of air pollution are relatively stable and there has been steady improvement in the water quality of Scotland's designated bathing sites. The quality of individual living environments also impacts on health.

Levels of physical activity have an important bearing on many aspects of health and physical activity levels in Scotland and the proportion of adults who regularly meet the guidelines for Moderate or Vigorous Physical Activity remains relatively stable.

The principal threats to soil functions are erosion and soil sealing, landslides, changes in soil biodiversity, loss of organic matter and land-use changes. These affect the functionality of the soil as a growth medium and impact on climate change.

Agricultural and forestry land play an important role in supporting rural development and in delivering wider environmental benefits through activities such as flood attenuation and climate regulation. Land management practices can affect the ability of land to perform these functions.

Foreshores, seabeds and other marine habitats play an important role in delivering wider environmental benefits such as supporting ecosystem function and providing recreational opportunities.

In terms of the energy grid network, Scotland faces significant challenges in grid capacity constraints and infrastructure development requirements. Infrastructure development requirements affect residential and commercial property, as well as ports and harbours.

Which existing environmental protection objectives are relevant?

The environmental objectives contained within international and national plans and programmes are relevance to the Crown Estate Scotland Draft Investment Strategy. Objectives for biodiversity seek to protect, restore and enhance biodiversity and habitats. Public health is protected in relation to air and water and promotes good health through supporting physical activity. Protection, enhancement and sustainable use of soil quality is recognised as important, alongside the protection of peatlands, including recognition of their role in relation to greenhouse gas emissions. The water environment includes inland, coastal and marine waters and policies include protection of water quality and managing and limiting the impacts of flood risk, including coastal flood risk. The protection of air quality is achieved through European and national legislation, with a key emphasis on health. The impacts of climate change are being addressed at an international and European level, and Scotland has set ambitious climate change targets which are supported by emissions reductions, renewable energy development and improvements in energy efficiency. Cultural and archaeological heritage is protected and includes protection of marine historic assets. Landscape and geodiversity are protected through recognition of nationally and locally important landscapes. Material assets encompass a wide variety of topics which includes infrastructure for energy generation and distribution, flood protection, water supply and the transport network. Development in the marine environment is managed through the leasing process. Impacts on water supply are managed through a range of water management legislation. The management of transport, including that in the marine environment, seeks to manage the impacts of shipping, ports and harbours. Development of minerals, forestry and agriculture are managed to support environmental quality, manage climate change and develop access and health.

Findings of the Strategic Environmental Assessment

The assessment has assessed the effects of the Draft Investment Strategy across the three alternatives and the preferred strategy. Although the assessment has identified where the level of investment under Alternative 1 would result in a greater level of effect than for the other alternatives and the preferred strategy, the overall difference in the scale of effect between the alternatives is identified as variations within 'minor' positive or negative.

The environmental effects of the **rural** portfolio includes mixed minor positive and negative effects on biodiversity, flora and fauna resulting from potential impacts from improvements to buildings, forest restocking, new forest planting and farm diversification. There is uncertainty over the impacts of actions such as granting of servitude rights, and disposal of non-core assets depending on the range of activities carried out or future use of the assets.

Mixed minor positive and minor negative effects are also identified for population and human health including potential impacts on access and recreation from forest restocking activities and minor positive effects on the quality and energy efficiency of residential buildings, effects of farm diversification on community wellbeing, impacts of farm restructuring, and environmental effects of new forestry planting on access and recreation. There is uncertainty around the effects of capital release, the sale of agricultural units and the sale of core assets reflecting the change in ownership associated with these.

In relation to soil mixed minor positive and minor negative effects are identified in relation to forest and building works, and farm diversification. Uncertainties are identified in relation to the granting of servitude rights, which could encompass a range of activities, and capital release, the sale of agricultural units and the sale of non-core assets which reflect a change in ownership.

Impacts on the water environment may result in mixed minor negative and minor positive effects from forest restocking, building and construction works and farm diversification. There is uncertainty associated with the granting of servitude rights due to uncertainty around the type of development which may occur.

Mixed effects on air quality are identified reflecting the positive effects of forestry which positively supports air quality, and positive effects from improved energy efficiency of buildings. There may also be localised negative impacts on air quality from construction activities associated with building works, and farm diversification generating additional vehicle movements.

Mixed effects on climatic factors are identified with forest restocking supporting the cycle of carbon sequestration, and building improvements supporting energy efficiency. Negative effects may arise as farm diversification can increase vehicle movements, and there may be impacts on high carbon soils. There is uncertainty over effects related to the grant of servitude rights as this could encompass a range

of activities. There is also uncertainty around the effects of capital release, the sale of agricultural units and the sale of core assets depending on the future use of the asset.

Cultural and archaeological heritage could be affected by forest restocking activities, new forestry planting, works to buildings, farm diversification and construction activities. Minor positive effects may arise from the maintenance of the quality of rural buildings and structures. There is uncertainty around the effects of the grant of servitude rights which could encompass a range of activities, and capital release which will depend on the future use of the asset in question.

Mixed effects on landscape and geodiversity are identified. This reflects the landscape effects from forest restocking, new forestry planting, building improvements and farm diversification activities. The sale of land for strategic development could result in indirect negative landscape effects, arising from new development.

Minor positive effects are identified for material assets resulting from forest restocking and improvements to the farm estate which support the viability of these assets. There is uncertainty around potential effects from the sale of agricultural units and the sale of core assets depending on the future use of the asset in question.

For the **coastal** portfolio, negligible effects are identified in relation to biodiversity, flora and fauna due to the limited extent of impacts in relation to development at Rhu marina, and the role of existing regulatory controls for activities such as dredging. Disposal of non-core assets generates a range of uncertainty depending on the different management aims of new landowners.

In relation to population and human health negligible effects are identified, with uncertainty relating to the disposal of no-core assets, which will depend on the future management aims and activities of new landowners.

For soil, negligible effects are identified, and uncertain effects are identified from the disposal of non-core assets depending on the management aims of the new owners.

Negligible effects are identified for water, reflecting the low levels of development and existing regulatory controls. There is uncertainty associated with identifying and disposing of non-core assets depending on the management aims of the new land managers.

Negligible effects are identified in relation to air quality, however there is uncertainty around identifying and disposing of non-core assets depending on the management aims of the new landowners.

Impacts on climatic factors are negligible with some uncertainty over the future effects arising from feasibility studies and the disposal of non- core assets, depending on the future management aims of the new landowners.

Negligible effects are identified in relation to cultural and archaeological heritage and there is uncertainty associated with the sale of sale of foreshore, occupied seabed and coastal infrastructure, depending on the management aims of the new landowners.

Effects on landscape and geodiversity are negligible although there is uncertainty around the impacts of the sale of foreshore, occupied seabed and coastal infrastructure depending on the management aims of the new landowners.

Minor positive effects on material assets are identified from dredging which can support the viability of coastal infrastructure. There is uncertainty over effects from the sale of foreshore, occupied seabed and coastal infrastructure, depending on the management aims of the new landowners.

For the **marine** portfolio investment in renewable energy could result in indirect minor positive and minor negative effects, however the existing regulatory framework mitigates the impact of these effects and there is a high degree of uncertainty surrounding the location of these developments and local conditions.

No impacts on population and human health are identified.

Negligible impacts are identified in relation to impacts on soil.

Minor negative effects are identified in relation to water through the indirect effects of offshore renewable energy development, impacts from carbon capture and storage, and expansion of aquaculture.

In relation to climatic factors a minor positive effect is identified in relation to the indirect positive effect from offshore renewable energy and carbon capture and storage.

Minor negative effects on cultural and archaeological heritage may arise indirectly as a result of construction of offshore renewable energy installations.

Facilitating offshore renewable energy may have adverse visual impacts on the character and quality of seascapes with minor negative effects on landscape and geodiversity.

Minor positive effects are identified from facilitating offshore renewable energy development through increasing the domestic capacity for renewable energy generation.

For the **urban** portfolio which relates to 39 – 41 George Street, Edinburgh, no significant positive or negative effects are identified across the SEA topic areas.

Cumulative, secondary and synergistic effects

The scale of effects arising from the draft Investment Strategy, are typically low, and impact across a range of geographic areas and SEA topics and therefore no cumulative, secondary or synergistic effects have been identified

What measures could be put in place to avoid, reduce or manage the environmental effects of the Draft Investment Strategy?

The assessment has not identified significant adverse effects, however it has identified a range of potential environmental effects which may require mitigation, and has also identified opportunities for the Draft Investment Strategy to secure enhancement of the environment.

At a strategic level the potential for environmental impacts could be reduced by inclusion of a clear statement committing Crown Estate Scotland to the:

- Appraisal of the social, economic and environmental costs and benefits of proposed investment decisions and strategic management decisions; and
- Rejection of investment and strategic management decisions where the environmental costs clearly outweigh the social and/or economic benefits;
- Making the grant of leases conditional on developments obtaining all necessary consents through existing planning and consenting processes.

What monitoring is proposed?

Monitoring seeks to ensure that plans avoid generating unforeseen adverse environmental effects. The monitoring will be aligned with the monitoring for the Value Project which is being developed to better understand, measure and monitor the benefits generated from the Scottish Crown Estate. The recommended monitoring for environmental effects reflects the consideration of natural capital through the SEA process, and is based on this approach. This ensures consideration of a wide range of issues relevant to all of the SEA topic areas.

How can I comment on this Environmental Report?

The consultation on the Draft Investment Strategy runs for a ten-week period from 14 December 2018 to 22 February 2019. Comments on the Draft Investment Strategy can be submitted to:

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Email: Hannah.hendron@crownestatescotland.com

Following the consultation period the consultation responses on the Draft Investment Strategy and this Environmental Report will be analysed.

1 Introduction

1.1 LUC was commissioned by Crown Estate Scotland to undertake a Strategic Environmental Assessment (SEA) of its Draft Investment Strategy. The SEA of the Investment Strategy represents an important opportunity to bring environmental considerations into the decision-making process, and influence the outcome of the Strategy.

1.2 The purpose of this Environmental Report is to present the findings of the SEA process.

Background

Study area

1.3 Crown Estate Scotland is responsible for managing assets across the whole of Scotland, including:

- 37,000 hectares of rural land with agricultural tenancies, residential and commercial properties and forestry on four rural estates (Glenlivet, Fochabers, Applegirth and Whitehill).
- Rights to fish wild salmon and sea trout in river and coastal areas.
- Rights to naturally-occurring gold and silver across most of Scotland.
- Just under half the foreshore (590km square) around Scotland including 5,800 moorings and some ports and harbours.
- Leasing of virtually all seabed out to 12 nautical miles covering some 750 fish farming sites and agreements with cables & pipeline operators.
- The rights to offshore renewable energy and gas and carbon dioxide storage out to 200 nautical miles.
- Retail and office units at 39-41 George Street Edinburgh (2,760 square metres).

Crown Estate Scotland

1.4 The *Scotland Act 2016*[1] established a process for devolution of the management of The Crown Estate's economic assets in Scotland, and the revenue generated from these assets to the Scottish Parliament. Devolution of management of The Crown Estate's Scottish assets to Scottish Ministers took place on 1 April 2017.

1.5 Crown Estate Scotland (Interim Management) received the Scottish functions of the Crown Estate Commissioners. Crown Estate Scotland (Interim Management) has a duty under the *Crown Estate Act 1961*[2] to maintain The Crown Estate's Scottish assets as an estate in land and to maintain and enhance its value and the return obtained from it, with due regard to the requirements of good management.

1.6 Crown Estate Scotland's strategic aims must be aligned to support the Scottish Government's purpose of creating a more successful country, with opportunities for all of Scotland to flourish through increasing sustainable economic growth, stimulating investment in the environment, physical infrastructure and investment companies. Scottish Ministers expect Crown Estate Scotland (Interim Management) to do this by aligning its aims and objectives with the Scottish Government's published Economic Strategy[3] and *National Performance Framework*[4].

[1] Scotland Act 2016 (Statutory Instrument 2016/c.11)
[2] Crown Estate Act 1961 (Statutory Instrument 1961/c.55)
[3] Scottish Government, 2015. *Scotland's Economic Strategy* [pdf]. Available at: https://beta.gov.scot/publications/scotlands-economic-strategy/
[4] Scottish Government, 2016. *National Performance Framework* [pdf]. Available at: http://www.gov.scot/About/Performance/scotPerforms

1.7 Crown Estate Scotland operates under various different pieces of legislation. Below is a summary of the key elements.

- **Crown Estate 1961 Act**[5] established the commercial lines on which The Crown Estate must operate. Under the act, there is a duty for The Crown Estate to maintain and enhance the capital value of the estate and its revenue. It also includes a duty to ensure 'good management' as well as securing best consideration. In practice, this means obtaining market value (for leases, sales and other transactions) while contributing to Scotland's economic, social and environmental well-being and prosperity.
- **Scotland Act 1998**[6] **(as amended)** and **Scotland Act 2016**[7] prepared the ground for devolution by enabling HM Treasury to establish a 'transfer scheme'.
- **The Crown Estate Statutory Transfer Scheme 2017**[8] provides secondary legislation which transferred Scottish functions of Crown Estate Commissioners to Scottish Ministers. These powers consisted of property, rights or interests in land in Scotland and rights relating to the Scottish renewable energy zone.
- **The Crown Estate Scotland (Interim Management) Order 2017**[9] established Crown Estate (Scotland) Interim Management as a public corporation, directed by its board, to oversee the management of the Crown assets in Scotland. The board is appointed by Scottish Ministers and regulated by the Commissioner for Ethical Standards in Public Life in Scotland.
- **Scottish Crown Estate Bill**[10] was introduced to the Scottish Parliament on 24 January 2018. The Bill is current at Stage 2, detailed consideration of the bill by parliamentary committee. The purpose of the Scottish Crown Estate Bill is to:
  - Rename Crown Estate Scotland (Interim Management) to Crown Estate Scotland.
  - Establish the provision that Scottish Ministers may transfer management of the Scottish Crown Estate to a 'transferee' (colloquially a manager) which could include Crown Estate Scotland, a local authority, another Scottish public authority or a community organisation.
  - Make provision for a number of managerial provisions including: allowing managers to dispose and/or acquire assets on behalf of the Crown as if they were owners; to maintain the financial value of the assets; to maintain and enhance the wider socio-economic benefits of Scotland; and prepare management plans.

Description of activities undertaken by Crown Estate Scotland

1.8 The estate is a unique mix of land, property and rights, with a total property value of £275.7m. The assets are split across four portfolios: (1) Rural; (2) Coastal; (3) Urban; and (4) Marine. **Table 1.1** provides further details on these assets. Table 1.1 differentiates between activities relating to revenue, and capital income and expenditure. For example, activities relating to investment in land and property or research and development relate primarily to capital income and expenditure (the subject of the draft Investment Strategy). Activities relating to leases, licenses and consents relate primarily to revenue income.

[5] Crown Estate Act 1961 (Statutory Instrument 1961/c.55)
[6] Scotland Act 1998 (Scottish Statutory Instrument 1998/c.46)
[7] Scotland Act 2016 (Statutory Instrument 2016/c.11)
[8] The Crown Estate Transfer Scheme 2017 (Statutory Instrument 2017/524).
[9] The Crown Estate Scotland (Interim Management) Order 2017. (Scottish Statutory Instrument 2017/36)
[10] Scottish Crown Estate Bill (SP Bill 24)

Table 1.1 The Scottish Crown Estate

Sector	Property/ Land	Lease/ Licence / Consent	R&D	Capital Value (£m)[11]	Asset
					Rural
Agriculture	✓		✓	94.8 for agriculture	Crown Estate Scotland invests in farming businesses by: • Supporting tenant farmers (with tenancies totalling approximately 30,000 hectares) to strengthen, grow and diversify their businesses. • Investing to repair and improve farm buildings and infrastructure. • Collaborating with Moredun Research Institute to improve farms biosecurity and promote understanding of livestock diseases and animal welfare.
Wild salmon fishing		✓			Crown Estate Scotland manages around 140 river salmon fishing tenancies, on around 60 rivers across Scotland, including the Allan Water, the River Leader, the Findhorn, the Stinchar, the Clyde, the Almond and the Forth. Crown Estate Scotland improves fisheries and works with anglers to promote responsible management of fishing. It also conserves fisheries by supporting local conservation policies and best practice through lease arrangement and limiting the number of rods.
Residential	✓			11.2 for residential	Crown Estate Scotland invests in residential units across the rural portfolio.
Forestry	✓			14.8	Crown Estate Scotland manages 5,000 hectares (around 12,000 acres) of commercial forestry, mostly in Glenlivet. Crown Estate Scotland: • Invest in paths, roads and access. • Increase woodland diversity through conservation and landscape projects such as peatland restoration, native broadleaf replanting and preserving habitats for native species. • Invite communities to help determine how forestry can work side by side with leisure (mountain bike trails, skiing, camping, bird-watching) and business activities (water bottling, biomass fuel burners and community business centres). • Harvest mature timber in forests, replanting with commercial species and native Scottish trees to create mixed woodlands.
Minerals		✓		2	Crown Estate Scotland grants leases to commercial mineral operators to exploit minerals found on the four rural estates (operators are required to obtain planning approval for their activity). Crown Estate Scotland also manages the rights to naturally occurring gold and silver across most of Scotland. There is one current lease at Cononish (the commercial gold mine was granted full planning permission in February 2018) and 14 lease options are identified across Scotland. Crown Estate Scotland can grant a lease for the commercial extraction of minerals, however it does

[11] Property value of Crown Estate assets in Scotland, as at 31 March 2017.

Sector	Property/ Land	Lease/ Licence / Consent	R&D	Capital Value (£m)[11]	Asset
					not have the power to grant access, this lies with the landowner.
					Coastal
Marine leisure		✓		28.5	Whilst navigation in coastal waters is a public right, the laying of permanent moorings and other equipment to hold vessels requires consent from Crown Estate Scotland.
					Marine
Wave and tidal		✓	✓	61.1	Crown Estate Scotland helps to develop the wave and tidal industry by leasing areas of the seabed and managing the associated seabed rights and by funding research and technical studies to support sector growth.
Offshore wind		✓	✓		Crown Estate Scotland plays a critical role in the development of offshore wind by awarding and managing seabed leases for offshore wind projects. There are a range of offshore wind projects in Scottish waters at various stages of project development. There are a number of operational sites, some projects in their construction phase and sites currently going through the planning process.
Aquaculture		✓	✓		Fish farm operations require a Crown Estate Scotland lease and planning consent issued by local authorities. Crown Estate Scotland currently lease around 750 sites to fish farm operators to grow finfish and shellfish. Crown Estate Scotland also licence seaweed harvesting to help ensure it is sustainably practiced with regard to possible impacts on a range of factors (the stock itself, habitat and feed provision, coastal processes, etc.). Proposals are only licenced if Scottish Natural Heritage can confirm that there is no associated environmental/sustainability risk with the licenced activity. Crown Estate Scotland also invests in research and other activities to help the fish farming sector.
Cables and pipelines		✓		23.7	Crown Estate Scotland provide licences to give developers the property rights they need to lay, maintain and operate cables and pipelines on the seabed, up to 12 nautical miles from the shore. This includes oil and gas pipelines, electricity and telecommunication cables, and carbon capture and storage.
Marine works		✓		0.9	Crown Estate Scotland issue leases, licences and consents for activities and developments such as: • Offshore energy developments. • Aquaculture. • Ports and harbour development. • Coastal protection and flood defence works. • Dredging and dumping of material from, and onto, the seabed. • Filming on foreshore. • Laying of moorings. • Laying of outfall and intake pipes. • Deployment of research equipment e.g. wave buoys, acoustic Doppler current profilers (ADCPs), passive acoustic monitoring equipment.

Sector	Property/ Land	Lease/ Licence / Consent	R&D	Capital Value (£m)[11]	Asset
					• Seabed investigation work such as grab samples or boreholes to inform research or development activities.
					Urban
Commercial property	✓			15	Crown Estate Scotland manages 39-41 George Street, Edinburgh which has retail on the ground floor with office spaces on the upper floors. The second floor has recently been refurbished.

Crown Estate Scotland Draft Investment Strategy

1.9 Crown Estate Scotland (Interim Management), trading as Crown Estate Scotland, is a public corporation established by the Scottish Government to manage the Scottish Crown Estate . Crown Estate Scotland operates under a Framework Document[12] drawn up by the Scottish Government which specifies that there is a business requirement to produce an investment strategy.

1.10 Crown Estate Scotland's legislative/statutory framework[13] includes a duty to maintain and enhance the value of the estate and the returns obtained from it, but with due regard to the requirements of 'good management'. The Draft Investment Strategy will be guided by the Crown Estate Scotland Corporate Plan 2017-2020[14] and will inform future business plans and annual reports. The development of an investment strategy will contribute towards the strategic objectives of the Corporate Plan to: (1) contribute to Scotland's economic, social and environmental wellbeing; and (2) grow revenue and enhance capital value of the estate. The Corporate Plan was not subject to SEA as it was considered exempt as per Section 7 of the Environmental Assessment (Scotland) Act 2005.

1.11 The Corporate Plan provides a framework for the work of Crown Estate Scotland, and the Investment Strategy includes actions to implement the Plan, and is supported by the annual business plans and annual report.

1.12 Crown Estate Scotland operates as a landlord, catalyst and supportive partner for tenants and other partners who develop and work with the Crown Estate Scotland assets.

1.13 The Crown Estate Scotland Draft Investment Strategy aims to develop the resilience of the income streams and improve asset performance whilst broadening the wider public benefits delivered. Although Crown Estate Scotland activity covers both revenue and capital activities, (as illustrated in Table 1.1), the Draft Investment Strategy relates only to **capital**. Crown Estate Scotland manages assets through four principal activities:

- **Investment Management**: buying and selling assets in line with the investment strategy.
- **Development Management**: planning, constructing and developing property to create successful places where tenants' businesses and communities can thrive sustainably.
- **Asset Management**: actively leasing, licencing and managing the use of assets by third parties, working closely with tenants to help achieve their business objectives, while increasing asset value and revenue return.
- **Property Management**: investing in the long-term sustainable development of property, working in partnership with others to ensure the needs of Scottish Government, tenants, stakeholders and communities are recognised.

1.14 Much of what happens on the land and property is carried out by tenants - very little is managed directly by Crown Estate Scotland. All tenants, as well as Crown Estate Scotland, are required to adhere to the relevant statutory consenting procedures in developing their specific projects and how they manage land. In that sense, Crown Estate Scotland's role is similar to any other land manager.

1.15 The draft investment strategy focusses on largely capital investment decisions relating to how Crown Estate Scotland will manage the assets as a portfolio – it does not prescribe specific projects at specific locations. It is based on the current model of cross-subsidy with capital income from different parts of the portfolio funding capital investment in other parts of the portfolio.

1.16 Each asset class (rural, coastal, urban, and marine) requires ongoing expenditure to maintain and enhance value, meet various statutory obligations, and manage liabilities. Therefore, the Crown Estate Scotland Investment Strategy contains the aims and objectives for the strategy and the investment requirements and opportunities for each asset class.

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[12] Scottish Government, 2017. Framework Document for Crown Estate Scotland (Interim Management) March 2017 [pdf]. Available at: http://www.crownestatescotland.com/maps-and-publications/download/107 [Accessed on 25th April 2018]

[13] Crown Estate Scotland, 2017. Key legislation [Word]. Available at: http://www.crownestatescotland.com/maps-and-publications/download/114 [Accessed on 25th April 2018]

[14] Crown Estate Scotland, 2017. Corporate Plan 2017-20 [pdf]. Available at: http://www.crownestatescotland.com/maps-and-publications/download/115 [Accessed on 25th April 2018]

1.17 Crown Estate Scotland is not a planning authority or a regulator. Crown Estate Scotland expects all tenants to work within statutory planning frameworks and plans such as Scotland's Marine Plan, local plans, and to consistently cooperate with regulators.

1.18 The investment aims are:

i. Maintain and enhance the value of the estate.

ii. Increase the resilience and diversity of income streams generated from the estate.

iii. Improve the social capital and environmental impacts derived from our assets.

1.19 The objectives are:

i. Maintain and enhance the rural, coastal and urban assets through investment in infrastructure development and fixed equipment.

ii. Invest in the development of offshore renewable energy, carbon capture and storage, and aquaculture (finfish, shellfish and seaweed).

iii. Build a capital fund of £10m over 3 years (equivalent to 3.6% of the capital value of the estate as at 31 March 2017). This is in addition to the ongoing minimum requirements for capital expenditure, approx. £4m to £5m per annum. The total capital requirement over 3 years is therefore in the range of £22 – 25m.

iv. Identify and dispose of non-core assets (assets that are not integral to the aims and operation of Crown Estate Scotland and which may typically be lower yielding).

v. Comply with lease obligations and manage liabilities.

vi. Develop and keep under review criteria for appraising investment opportunities including assessing commercial returns, sustainability, economic, social and environmental benefits.

vii. Ensure that decisions do not constrain future management of assets following new legislation.

1.20 **Table 1.2** on the following page outlines the key facts relating to the SEA of the Crown Estate Scotland Draft Investment Strategy.

Table 1.2 Key facts

Name of Responsible Authority	Crown Estate Scotland (Interim Management) hereafter Crown Estate Scotland
Title of the plan, programme or strategy (PPS)	Crown Estate Scotland Draft Investment Strategy
What promoted the PPS	Crown Estate Scotland's legislative framework includes a duty to maintain and enhance the value of the estate and the returns obtained from it. There is a business requirement to produce an investment strategy. This is based on the public corporation continuing their current approach to managing the assets, providing tenants with continuity during this interim period before legislation is considered by Parliament.
Subject	The approach to investment in Crown Estate Scotland assets, in terms of developing the resilience of income streams and improving asset performance whilst broadening the wider public benefits delivered across the rural, urban, coastal and marine portfolios.
Period covered by the PPS	2018-2020
Area covered by the PPS	Scotland, including Scottish territorial waters (out to 12 nautical miles, and the Renewable Energy Zone (from 12 nautical miles out to 200 nautical miles).
Purpose and/or objectives of the PPS	The Draft Investment Strategy sets out how Crown Estate Scotland will make investment decisions and manage its diverse portfolio of assets in terms of: • Maintaining and enhancing the value of the estate; • Increasing the resilience and diversity of income streams generated from the estate; and • Improving the social capital and environmental impacts derived from the assets.
Contact point	Hannah Hendron Crown Estate Scotland 6 Bells Brae Edinburgh EH4 3BJ

Strategic Environmental Assessment

1.21 The SEA Directive[15] is implemented by the Environmental Assessment (Scotland) Act 2005 ('the 2005 Act')[16], and is a means to judge the likely impact of the plan, programme or strategy on the environment and to seek ways to minimise adverse effects, if likely to be significant.

1.22 The Crown Estate Scotland Draft Investment Strategy is considered to fall under Section 5(3) of the 2005 Act and, as such, a SEA is required.

Meeting the requirements of the 2005 Act

1.23 Schedule 3(6) of the 2005 Act requires the Environmental Report to consider "*The likely significant effects on the environment, including (a) on issues such as – (i) biodiversity; (ii) population; (iii) human health; (iv) fauna; (v) flora; (vi) soil; (vii) water; (viii) air; (ix) climatic factors; (x) material assets; (xi) cultural heritage including architectural and archaeological heritage; (xii) landscape; and (xiii) the inter-relationship between the issues referred to in heads (i)–(xii); (b) short, medium and long-term effects; (c) permanent and temporary effects; (d) positive and negative effects; and (e) secondary, cumulative and synergistic effects".*

[15] Directive 2001/42/EC
[16] The Environmental Assessment (Scotland) Act 2005

Table 1.3 Meeting the requirements of the 2005 Act

Requirements of the 2005 Act	Covered in this Environmental Report?
Environmental Report	
In relation to any qualifying plan or programme, the responsible authority shall secure the preparation of an Environmental Report. The report 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. (Section 14(1) and (2) and Schedule 3).	
1. An outline of the contents and main objectives of the plan or programme, and of its relationship (if any) with other qualifying plans and programmes.	Chapter 1, 2, 3 and Appendix 1.
2. The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.	Chapter 3.
3. The environmental characteristics of areas likely to be significantly affected.	Chapter 3.
4. Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds and Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna (as last amended by Council Directive 97/62/EC).	Chapter 3.
5. The environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation.	Chapter 3 and Appendix 1.
6. The likely significant effects on the environment, including— (a) on issues such as - (i) biodiversity; (ii) population; (iii) human health; (iv) fauna; (v) flora; (vi) soil; (vii) water; (viii) air; (ix) climatic factors; (x) material assets; (xi) cultural heritage, including architectural and archaeological heritage; (xii) landscape; and (xiii) the inter-relationship between the issues referred to in heads (i) to (xii); (b) short, medium and long-term effects; (c) permanent and temporary effects; (d) positive and negative effects; and (e) secondary, cumulative and synergistic effects.	Chapter 4
7. The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme.	Chapter 5
8. An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of expertise) encountered in compiling the required information.	Chapter 2.
9. A description of the measures envisaged concerning monitoring in accordance with section 19.	Chapter 6
10. A non-technical summary of the information provided under paragraphs 1 to 9.	The Environmental Report includes this requirement.
The report shall include such of the information specified in schedule 3 as may reasonably be required, taking account of— (a) current knowledge and methods of assessment of	This is reflected in the Environmental Report.

Requirements of the 2005 Act	Covered in this Environmental Report?
environmental matters; (b) the contents of, and level of detail in, the plan or programme; (c) the stage of the plan or programme in the decision-making process; and (d) the extent to which any matters to which the report relates would be more appropriately assessed at different levels in that process in order to avoid duplication of the assessment (Section 14 (3)).	
Consultation	
Before deciding on— (a) the scope and level of detail of the information to be included in the Environmental Report to be prepared in accordance with section 14; and (b) the consultation period it intends to – (i) specify under section 16(1)(b); and (ii) notify under section 16(2)(a)(iv), 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. (Section 15(1)).	Consultation on this Scoping Report was undertaken with the relevant statutory environmental bodies for the statutory 5 week period from 18th June 2018 to 23rd July 2018.
As soon as reasonably practicable, and in any event within 14 days of the preparation of the Environmental Report, the responsible authority shall— (a) send a copy of the report and the qualifying plan or programme to which it relates ("the relevant documents") to the consultation authorities; and (b) invite each consultation authority to express its opinion on the relevant documents within such period as the responsible authority may specify. The responsible authority shall also— (a) within 14 days of the preparation of the Environmental Report, secure the publication of a notice — (i) stating the title of the plan or programme to which it relates; (ii) stating the address (which may include a website) at which a copy of the relevant documents may be inspected or from which a copy may be obtained; (iii) inviting expressions of opinion on the relevant documents; and (iv) stating the address to which, and the period within which, opinions must be sent; (b) keep a copy of the relevant documents available at the authority's principal office for inspection by the public at all reasonable times and free of charge; and (a) display a copy of the relevant documents on the authority's website. The periods referred to in subsections (1)(b) and (2)(a)(iv) must be of such length as will ensure that those to whom the invitation is extended are given an early and effective opportunity to express their opinion on the relevant documents. (Section 16(1), (2) and (3)).	Public consultation on the Draft Investment Strategy and the Environmental Report is anticipated to commence in October 2018 for an eight week period.

Requirements of the 2005 Act	Covered in this Environmental Report?
Taking the Environmental Report and the results of the consultations into account in decision-making (relevant extracts of Section 18)	
As soon as reasonably practicable after the adoption of a qualifying plan or programme, the responsible authority shall— (a) make available a copy of— (i) the plan or programme; (ii) the Environmental Report relating to it; and (iii) a statement containing the particulars specified in subsection (3), at the authority's principal office for inspection by the public at all reasonable times and free of charge. (Section 18(1)(a))	Requirement will be met at a later stage in the SEA process.
As soon as reasonably practicable after the adoption of a qualifying plan or programme, the responsible authority shall inform the consultation authorities of the adoption of the plan or programme and shall send them a copy of— (a) the plan or programme as adopted; and (b) the statement containing the particulars specified in subsection (3). The particulars referred to in subsections (1)(a)(iii) and (b)(iii) and (2)(b) are— (a) how environmental considerations have been integrated into the plan or programme; (b) how the Environmental Report has been taken into account; (c) how the opinions expressed in response to the invitations mentioned in section 16 have been taken into account; (d) how the results of any relevant consultation under regulation 14 of the Environmental Assessment of Plans and Programmes Regulations 2004 (S.I. 2004/1633) have been taken into account; (e) the reasons for choosing the plan or programme as adopted, in the light of the other reasonable alternatives considered; and (f) the measures that are to be taken to monitor the significant environmental effects of the implementation of the plan or programme. Nothing in subsection (1)(b)(iii) shall require the responsible authority to provide a copy of any document free of charge; but where a charge is made, it shall be of a reasonable amount. (Section 18(1), (2), (3) and (4))	Requirement will be met at a later stage in the SEA process.
Monitoring	
The responsible authority shall monitor the significant environmental effects of the implementation of every qualifying plan or programme for which it has carried out an environmental assessment. The responsible authority shall do so in a manner (which may comprise or include arrangements established otherwise than for the express purpose of compliance with subsection (1)) which enables the authority to— (a) identify any unforeseen adverse effects at an early stage; and (b) undertake appropriate remedial action. (Section 19(1) and (2))	Requirement will be met at a later stage in the SEA process.

Main stages of the SEA

1.24 The SEA process comprises a number of stages which are identified in Table 1.3.

Table 1.3 Main stages of the SEA

Stage A: Setting the context and identifying environmental objectives, establishing the baseline and deciding on the scope.
Stage B: Deciding the scope of the SEA and developing policy alternatives.
Stage C: Environmental Assessment (preparing the Environmental Report).
Stage D: Main consultation on the Environmental Report and the draft Investment Strategy
Stage E: Monitoring the significant effects of implementing the Investment Strategy

Structure of the SEA Report

1.25 This chapter has described the background to the Crown Estate Scotland Draft Investment Strategy and the requirement to undertake SEA. The remainder of this report is structured into the following sections:

- Section 2 sets out the approach to the SEA;
- Section 3 describes the sustainability context;
- Section 4 sets out the findings of the SEA;
- Section 5 outlines proposed mitigation and monitoring;
- Section 6 sets out proposed monitoring; and
- Section 7 sets out the conclusions and next steps.

1.26 The main body of the report is supported by a number of appendices:

- Appendix 1: Review of relevant Plans, Programmes and Strategies, and Environmental Protection Objectives;
- Appendix 2: Consultation authority responses to the Screening opinion;
- Appendix 3: Consultation authority responses to the Scoping Report;
- Appendix 4: Investment Strategy aims and objectives presented across the portfolios; and
- Appendix 5: Assessment tables for each portfolio.

2 Methodology

Introduction

2.1 This section of the report sets out the approach to the SEA. Schedule 3(6) of the SEA Act requires the Environmental Report to consider:

"The likely significant effects on the environment, including (a) on issues such as (i) biodiversity, (ii) population, (iii) human health, (iv) fauna, (v) flora, (vi) soil, (vii) water, (viii) air, (xi) climatic factors, (x) material assets, (xi) cultural heritage including architectural and archaeological heritage, (xii) landscape and (xiii) the inter-relationship between the issues referred to in heads (i)–(xii), (b) short, medium and long-term effects, (c) permanent and temporary effects; (d) positive and negative effects; and (e) secondary, cumulative and synergistic effects".

Relationship between the SEA of the Crown Estate Scotland Draft Investment Strategy and SEA assessments of other plans, programmes and strategies

2.2 A review has been undertaken of plans, programmes and strategies of relevance to the scope of the Crown Estate Scotland Draft Investment Strategy which have been subject to SEA. These SEA have been identified as providing context for the SEA of the Crown Estate Scotland Draft Investment Strategy and inform the approach to the assessment. These are summarised in Table 2.1.

Table 2.1 Relevant SEA assessments of other plans, programmes and strategies

Plan, programme or strategy	SEA stage
Marine	
National Marine Plan	Environmental Report was published in July 2013. National Marine Plan was adopted in March 2015.
Scotland's Climate Change Plan and Energy Strategy	Environmental Report was published in May 2017. Scotland's Energy Strategy was launched in December 2017. The final version of the Climate Change Plan was published in February 2018.
Renewables Action Plan	Post Adoption. Renewables Action Plan was adopted on 1 July 2009.
Renewable Energy Roadmap and Electricity Generation Policy Statement	Post Adoption. The Scottish Government adopted the Electricity Generation Policy Statement and the 2020 Renewable Energy Routemap in June 2013.
Proposals for Nature Conservation Marine Protected Areas (MPAs in Scotland's seas to deliver a MPA network	Environmental Report was published in November 2013. Following the consultation in 2013, 30 new Nature Conservation MPAs have been designated.
Scotland's 2nd Sectoral Marine Plan for Offshore Wind Energy	Environmental Report was published in July 2013
Draft Sectoral Marine Plan for Offshore Wind Encompassing Deep Water Options	Scoping Report was published June 2018.
Blue seas – Green Energy: A Sectoral Marine Plan for Offshore Wind Energy in Scottish Territorial Waters	Environmental Report was published in 2010.
Sectoral Marine Plan for Wave and Tidal Energy in Scotland's Renewable Energy Zone	Scoping.
UK Offshore Energy Plan	Environmental Report – Post Consultation Report was published in July 2016.
Seaweed Policy Statement	Environmental Report was published in August 2013. Seaweed Cultivation Policy statement was published by SG in March 2017.
Wild Seaweed Harvesting	Environmental Report was published in November 2016
Aquaculture and Fisheries Bill – Consultation Document: *The Aquaculture and Fisheries (Scotland) Act 2013*	Environmental Report was published in February 2012.
Amendments to permitted development rights for finfish and shellfish developments: *The Town and Country Planning (General Permitted Development) (Fish Farming) (Scotland) Amendment Order 2017*	Screening report was prepared in March 2017. Following CA comments, it was considered that an SEA was not required.
The Alien and Locally Absent Species in Aquaculture (Scotland) Regulation 2014	Pre-Screening.
Marine Policy Statement – DEFRA	Sustainability Appraisal Report published 2010. Final version of MPS published in 2011.
Proposed Marine Protected Areas	Scoping, June 2018

Plan, programme or strategy	SEA stage
Coastal	
National Marine Plan	Environmental Report was published in July 2013. National Marine Plan was adopted in March 2015.
Proposals for Nature Conservation Marine Protected Areas (MPAs in Scotland's seas to deliver a MPA network.	Environmental Report was published in November 2013. Following the consultation in 2013, 30 new Nature Conservation MPAs have been designated.
Marine Litter Strategy	Environmental Report was published in July 2013. Marine Litter Strategy was launched by the Scottish Government in August 2014.
Flood Risk Management Strategies for Scotland	Environmental Report was published in March 2015. Flood Risk Management Strategies are available for each of the 14 Local Plan Districts in Scotland.
Harbours (Scotland) Bill 2015	A pre-screening report confirmed that the Bill would have no impact on the environment. Subsequently, a full SEA did not need to be undertaken.
National Flood and Coastal Erosion Risk Management Strategy for England	Environmental Report was published in February 2011. The Strategy was adopted in 2011.
Marine Policy Statement – DEFRA	Environmental Report. Final version of MPS was published in 2011.
Marine Plan for Northern Ireland	Scoping report published in August 2014
Rural	
Scotland Rural Development Programme (SRDP) 2014-2020	Environmental Report was published in June 2015. SRDP is currently in force.
Proposed LEADER Local Development Strategies under the Scottish Rural Development Programme 2014-2020 and the European Maritime and Fisheries Fund 2014-2020	Screening determination.
Proposed Modifications to the Lowland and Uplands Scotland ERDF Programme for Priority 4 (Rural Development)	Screening determination.
Forestry (Scotland) Bill	Pre-Screening.
Proposed Ban on Killing Wild Salmon Except Under Licence	Environmental Report was published in April 2015.
Forest Enterprise National Strategic Directions	The plan is unlikely to have significant environmental effects, and is therefore exempt from SEA.
VisitScotland – Tourism Development Plan for Scotland	Screening submitted to Gateway in October 2012, SEA not required.
Agri-Renewables Strategy	Screening Report submitted to Gateway in July 2013, SEA not required.
Forestry Commission Scotland Scottish Forestry Strategy Review	Scoping Report, June 2018

2.3 The issues covered by the Crown Estate Scotland Draft Investment Strategy were identified at Scoping as overlapping with the topic areas of a number of other strategic documents which provide a framework for activities which are also relevant to the Draft Investment Strategy. This relationship is relevant to the SEA process because it illustrates where actions in the Draft Investment Strategy complement the actions which are occurring as a result of other strategies and policy. It is important to note the role of the Draft Investment Strategy in facilitating these related activities, but not necessarily driving or consenting the activity itself. Highlighting other relevant SEA helps to indicate how the approach to the SEA reflects this differentiation.

SEA Stage A: Scoping

2.4 The scoping stage of the SEA involves understanding the environmental baseline for the area as well as the sustainability policy context and key environmental issues. It also presents an opportunity to set out how the potential impacts of the proposals and reasonable alternatives would be assessed. The breadth of issues covered by the Draft Investment Strategy means that all of the SEA topic areas were scoped in at this stage.

2.5 The SEA Scoping Report was issued to the SEA Gateway in June 2018 for consultation with the statutory consultation bodies as well as other stakeholders. The comments received in relation to the Scoping Report, and the response to these comments is included in Appendix 3.

SEA Stage B: Developing and refining options and assessing effects

2.6 Part 14(2) of the 2005 Act requires that:

"The report 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".

2.7 Therefore, the SEA must appraise not only the objectives/investment requirements/investment opportunities, but "reasonable alternatives" to these. This implies that alternatives that are not reasonable do not need to be subject to appraisal. It is important to note that when considering the scope of alternatives the 2005 Act does not specify whether this means considering an alternative plan, programme, or strategy, or different alternatives within the plan, programme, or strategy itself that should be assessed. Part (b) of Regulation 14(2) above notes that reasonable alternatives will take into account the objectives of the plan, as well as its geographical scope. Therefore, alternatives that do not meet the objectives of national policy are unlikely to be reasonable.

2.8 In relation to reasonable alternatives, the SEA should identify:

- What reasonable alternatives have been identified and on what basis;
- How they have been assessed and compared; and,
- What are the preferred options and why they are preferred over other alternatives.

2.9 Crown Estate Scotland identified that three alternatives to the proposed strategy were considered and were based on the scale of rebalancing assets:

- Ambitious rebalance of assets £30m (high option would have resulted in quicker disposal of low yielding assets and increased emphasis on acquiring higher yielding assets – shift from rural to urban with potential loss of environmental benefits associated with rural stewardship).
- Medium rebalance of assets £15m.
- Low rebalance of assets £5m (low option might have failed to bring in sufficient revenue to fund Crown Estate Scotland as an organisation or to allow other corporate objectives to be met).

2.10 All the alternatives were based around value and were not spatial. The proposed strategy is between the medium to low scenarios at £10m. The alternatives are referred to in the assessment as alternatives 1, 2 and 3, from highest value to lowest. The proposed rebalancing will decrease the value of the rural asset portfolio but will increase the coastal and marine asset portfolio.

2.11 The assessment of the reasonable alternatives has considered the relative scale of effect under the three scenarios, and the preferred option.

SEA Stage C: Preparing the Environmental Report

2.12 This Environmental Report describes the process that has been undertaken to date in carrying out the SEA of the reasonable alternatives. It sets out the findings of the assessment highlighting any significant effects (both positive and negative, and taking into account the likely secondary, cumulative, synergistic, short, medium and long-term, and permanent and temporary effects), making recommendations for improvements and clarifications that may help to mitigate negative effects.

SEA Stage D: Consultation on the Environmental Report and the Draft Investment Strategy

2.13 Consultation on the Environmental Report will take place for an eight week period between October and December 2018.

SEA Stage E: Monitoring the significant effects of implementing the Investment Strategy

2.14 A key part of the SEA process is the identification of mitigation for adverse effects and opportunities to enhance benefits, in addition to the development of proposals for monitoring post adoption. Where possible monitoring is recommended to be based on existing data sources and monitoring programmes. Monitoring focuses on exploring the potential for significant environmental effects identified over the course of the assessment and addressing data gaps identified in the SEA.

Appraisal methodology

2.15 The reasonable alternative options for the Draft Investment Strategy have been appraised against the objectives in the SEA framework (**see Table 2.2**), with scores being attributed to each option to indicate its likely sustainability effects on each objective.

2.16 The use of colour coding in the matrices allows for likely significant effects (both positive and negative) to be easily identified, as shown in the key below.

Figure 2.1 Key to SEA scores

++	The option is likely to have a **significant positive** effect on the SEA objective(s).
++/-	The option is likely to have a mixed effect (**significant positive** and **minor negative**) on the SEA objective(s).
+	The option is likely to have a **positive** effect on the SEA objective(s).
0	The option is likely to have a **negligible** or no effect on the SEA objective(s).
-	The option is likely to have a **minor negative** effect on the SEA objective(s).
--/+	The option is likely to have a mixed effect (**significant negative** and **minor positive**) on the SEA objective(s).
--	The option is likely to have a **significant negative** effect on the SEA objective(s).
?	It is **uncertain** what effect the option will have on the SEA objective(s), due to a lack of data.
+/- or ++/--	The option is likely to have a **mixture of minor positive and minor negative** effects or a **mixture of significant positive and significant negative** effects on the SEA objective(s).

2.17 Where a potential positive or negative effect is uncertain, a question mark has been added to the relevant score (e.g. +? or -?) and the score is colour coded as per the potential positive, negligible or negative effect (e.g. green, yellow, orange, etc.).

2.18 Scoring is relative to the scale of proposals under consideration and is determined by the significance of the effect. In order to determine significance, it is important to identify and differentiate between the levels of impact and to consider the following factors:

- The **magnitude** of the strategy's effects, including the degree to which the strategy sets a framework for projects, the degree to which it influences other plans and environmental problems relevant to the strategy.
- The **sensitivity** of the receiving environment, including the value and vulnerability of the area, exceeded environmental quality standards, and effects on designated areas or landscapes.
- The **effect characteristics**, including probability, duration, frequency, reversibility, cumulative effects, transboundary effects, risks to human health or the environment, and the magnitude and spatial extent of the effects.

2.19 The likely effects of objectives/investment requirements/investment opportunities need to be determined and their significance assessed, which inevitably requires a series of judgments to be made. The dividing line in making a decision about the significance of an effect is often quite small. Where either (++) or (--) will be used to distinguish significant effects from more minor effects (+ or -) this will be because the effect on the SEA objective in question is considered to be of such magnitude that it will have a noticeable and measurable effect taking into account other factors that may influence the achievement of that objective.

2.20 The SEA findings for the reasonable alternatives for the Draft Investment Strategy are summarised in **Chapter 4** and detailed appraisal matrices are presented in **Appendix 5**.

Use of the SEA framework

2.21 The SEA Framework for the Crown Estate Scotland Draft Investment Strategy is presented in **Table 2.2** which outlines the 20 SEA objectives relating to each of the nine SEA topics.

Table 2.2 SEA Framework for the Crown Estate Scotland Draft Investment Strategy

SEA Topic Area	SEA Objective
Biodiversity, flora and fauna	Protect and enhance terrestrial and aquatic habitats and species of international, national, regional or local importance.
	Maintain and expand wildlife corridors and minimise fragmentation of ecological areas and green spaces.
Population and human health	Avoid adverse effects on health and quality of life.
	Improve the health and living environment of people and communities.
	Retain and improve quality, quantity and connectivity of publicly accessible open space.
Soil	Protect valuable soil resources, including carbon soils and best and most versatile agricultural land.
	Reduce vacant and derelict land and buildings.
Water	Protect and enhance the quality and quantity of watercourses and waterbodies (surface water and groundwater) including coastal and estuarial waters.
	Avoid and reduce flood risk both presently and taking into account climate change.
Air	Minimise air pollution, particularly where air quality is a known issue through the designation of an AQMA.
	Improve air quality.
Climatic factors	Avoid increasing greenhouse gas emissions.

SEA Topic Area	SEA Objective
	Support actions which contribute to targets for reducing greenhouse gas emissions.
	Support climate change adaptation.
Cultural heritage and the historic environment	Conserve and, where appropriate, enhance those elements which contribute to the significance of terrestrial and marine designated and undesignated heritage assets in a manner appropriate to their significance, including World Heritage Sites, Conservation Areas, Listed Buildings, Historic Marine Protected Areas, archaeological remains, and areas of historical heritage and cultural value e.g. locally listed buildings.
	Improve the quality of the wider built environment.
Landscape and geodiversity	Protect and enhance landscape and seascape character and quality including National Scenic Areas, national parks, geoparks, wild land, open spaces, parks and gardens and their settings.
	Protect geological sites of national, regional or local importance.
Material assets	Avoid adversely impacting on material assets.
	Enhance material assets.

Assessing likely significant effects

2.22 Schedule 2 of the 2005 Act identifies criteria for determining the likely significance of effects on the environment (see **Table 2.3**).

Table 2.3 Criteria for assessing likely significant effects

SEA Assessment Criteria	Breakdown and Description
(a) the probability, duration, frequency and reversibility of the effects	Probability Low – Not likely to have an effect Medium High – Highly likely to have an effect Duration Short-term – 0-2 years Medium-term – 3-5 years Long-term – 5+ years Frequency Continual; defined by number of occurrences; or intermittent Reversibility Whether the effect can be reversed (i.e. can the receptor return to baseline condition) without significant intervention, or is irreversible.
(b) the cumulative nature of the effects	Where several options each have insignificant effects but together have a significant or combined effect. This includes synergistic effects, which is when effects interact to produce a total effect greater than the sum of the individual effects.
(c) the transboundary nature of the effects	Effects beyond Scotland's boundary.
(d) the risks to human health or the environment	Whether the impact of the effect would present a risk for people and the environment.

SEA Assessment Criteria	Breakdown and Description
(e) the magnitude and spatial extent of the effects (geographical area and size of the population likely to be affected)	Magnitude High – High proportion of the receptor affected Medium Low – Low proportion of the receptor affected Spatial extent Local/regional - Effects within Scotland National/Transboundary – Effects on Scotland or England International – Effects extending to the UK or beyond
(f) the value and vulnerability of the area likely to be affected due to: (i) special natural characteristics or cultural heritage (ii) exceeded environmental quality standards or limit values (iii) intensive land-use	Impact of the effect on the value or condition of the existing area.
(g) the effects on areas or landscapes which have a recognised national, Community or international protection status	Impacts on areas with national, community or international protection.

Use of the SEA Framework

2.23 The findings from the SEA of the Crown Estate Scotland Draft Investment Strategy are presented in SEA matrices which include a colour coded symbol showing the score for each objective/investment requirement/investment opportunity against each of the SEA objectives along with a concise justification for the score given. The SEA matrices are presented as an appendix to the Environmental Report. Summaries of the findings for each component of the Draft Investment Strategy are described in the main body of the Environmental Report.

2.24 The use of colour coding in the matrices allows for likely significant effects (both positive and negative) to be easily identified, as shown in the key below.

Natural capital and SEA

2.25 The approach to the SEA integrates consideration of Natural Capital to reflect Crown Estate Scotland's 'Value Project' workstream. The SEA identifies areas where implementation of the Draft Investment Strategy is likely to affect (positively or negatively) the stock of natural capital assets, or the range of benefits or ecosystem services that those assets provide. This is included in Section 4, following the main SEA findings.

Difficulties encountered and data limitations

2.26 The nature of the draft investment strategy is that it focusses on largely capital investment decisions relating to how Crown Estate Scotland will manage the assets as a portfolio – it does not prescribe specific projects at specific locations. Crown Estate Scotland is a landlord, and much of the activity carried out on the estate is undertaken by tenants. Therefore, the extent to which Crown Estate Scotland is involved in actions on the ground is limited. This presents challenges for the assessment process where the strategy has indirect effects on the environment.

3 Sustainability context

Introduction

3.1 The Crown Estate Scotland Draft Investment Strategy is not being prepared in isolation and is greatly influenced by other plans, programmes and strategies (PPS), and by broader environmental objectives. The Crown Estate Scotland Draft Investment Strategy needs to be consistent with international and national guidance and strategic planning policies, and should contribute to the goals of a wide range of other programmes and plans. It must also conform to environmental protection legislation and the environmental objectives established at the international, national and local level.

3.2 Schedule 3 of the 2005 Act requires:

- *(1) "An outline of the contents and main objectives of the plan or programme, and of its relationship (if any) with other qualifying plans and programmes*.
- *(5) The environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation"*.

3.3 Chapter 1 of this Environmental Report has outlined the contents and main objectives of the Investment Strategy.

3.4 In order to establish a clear scope for the SEA it is necessary to review and develop an understanding of the environmental objectives contained within international and national plans and programmes that are of relevance to the Crown Estate Scotland Draft Investment Strategy. The review is not, and cannot be exhaustive. **Appendix 1** identifies the relationship that the PPSs have with the development of the Crown Estate Scotland Draft Investment Strategy, and also shows how the environmental objectives have been taken into account during the preparation of the SEA Framework. The following sections of this chapter provide an overview by SEA topic area of the overarching objectives considered most relevant in the context of the preparation of the Crown Estate Scotland Draft Investment Strategy.

Review of relevant plans, programmes and strategies and environmental protection objectives

Biodiversity, flora and fauna

3.5 *The Convention on Biological Diversity*[17] was signed by 150 government leaders at the 1992 Rio Earth Summit and is dedicated to promoting sustainable development. In 2011, a revised and updated *Strategic Plan for Biodiversity 2011-2020*[18], including the Aichi Biodiversity Targets, was adopted. The twenty Aichi Targets relate to various aspects of biodiversity conservation, such as reducing direct pressures on biodiversity assets and raising awareness of key drivers behind biodiversity loss. In addition, they underpin the *Strategic Plan for Biodiversity 2011-2020*[19] which provides an international overarching framework on biodiversity. Parties agreed to translate this overarching framework into updated national biodiversity strategies and action plans.

[17] The Convention on Biological Diversity of 5 June 1992 (1760 U.N.T.S. 69)

[18] Convention on Biological Diversity, 2011. *Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets*. Available at: https://www.cbd.int/doc/strategic-plan/2011-2020/Aichi-Targets-EN.pdf

[19] Ibid.

3.6 The *EU Biodiversity Strategy to 2020*[20] was launched to adopt the Strategic Plan for Biodiversity 2011-2020, including the twenty Aichi Targets. The current Environment Action Programme[21], the seventh of its kind, was adopted in 2013 and covers the period up to 2020. The *EU Seventh Environmental Action Plan to 2020* is guided by the long-term vision: "*In 2050, we live well, within the planet's ecological limits. Our prosperity and healthy environment stem from an innovative, circular economy where nothing is wasted and where natural resources are managed sustainably, and biodiversity is protected, valued and restored in ways that enhance our society's resilience. Our low-carbon growth has long been decoupled from resource use, setting the pace for a safe and sustainable global society*".

3.7 There are additional European Directives in place to protect Europe's biodiversity and habitats. The Habitats Directive (92/43/EEC)[22] and the Birds Directive (2009/147/EC)[23] set out legislation to create protected areas and promote the conservation of outstanding natural habitats, wildlife and landscape features. Natura 2000[24] is a primary vehicle for achieving the collective aims of these Directives. It is an ecological network of protected areas developed under the Birds Directive and Habitats Directive – covering over 18% of the EU's land area and almost 6% of its marine territory. These Directives are transposed into UK law by *The Wildlife and Countryside Act 1981*[25] (as amended), *The Conservation (Natural Habitats, &c.) Regulations 1994*[26], *The Nature Conservation (Scotland) Act 2004*[27], *The Wildlife and Natural Environment (Scotland) Act 2011* (as amended)[28], and *The Conservation of Offshore Marine Habitats and Species Regulations 2017*[29].

3.8 At the national level, the *UK Post-2010 Biodiversity Framework*[30] was a response to the publication of the Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets, and the launch of the EU Biodiversity Strategy to 2020. The Scottish Government has also published a strategic document, *2020 Challenge for Scotland's Biodiversity*[31], which defines the measures needed to meet the international Aichi Biodiversity Targets[32]. It also supplements the 25 year strategy (until 2030) *Scotland's Biodiversity: It's in Your Hands*[33]. The two documents together comprise the Scottish Biodiversity Strategy. In 2015, the Scottish Government published *Scotland's Biodiversity Route Map to 2020*[34] which sets out the priority work needed to meet the targets of the *2020 Challenge for Scotland's Biodiversity*. Crown Estate Scotland produced a Biodiversity Statement[35] in 2018 which outlines how its role and targets to meet the Route Map's 'Six Big Steps for Nature'.

Population and human health

3.9 Public health is the subject of a variety of policies and statutes, either directly or indirectly and many of these cut across many other SEA topics, including air and water quality, management of

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[20] European Commission, 2011. *EU Biodiversity Strategy to 2020*. Available at: http://ec.europa.eu/environment/nature/biodiversity/strategy/index_en.htm

[21] European Commission, 2013. *Living well, within the limits of our planet. The 7th EAP – The new general Union Environment Action Programme to 2020.* Available at: http://ec.europa.eu/environment/pubs/pdf/factsheets/7eap/en.pdf

[22] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

[23] Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds.

[24] European Commission, 2018. *Natura 2000* [online]. Available at: http://ec.europa.eu/environment/nature/natura2000/index_en.htm

[25] The Wildlife and Countryside Act 1981 (as amended)

[26] The Conservation (Natural Habitats, &c.) Regulations 1994 (SI 1994 No. 2716)

[27] The Nature Conservation (Scotland) Act 2004

[28] The Wildlife and Natural Environment (Scotland) Act 2011

[29] The Conservation of Offshore Marine Habitats and Species Regulations 2017 (Statutory Instrument 2017 No. 1013)

[30] Joint Nature Conservation Committee, 2012. *UK Post-2010 Biodiversity Framework*. Available at: http://jncc.defra.gov.uk/pdf/UK_Post2010_Bio-Fwork.pdf

[31] Scottish Government, 2013. *2020 Challenge for Scotland's Biodiversity*. Available at: http://www.gov.scot/Resource/0042/00425276.pdf

[32] Convention on Biological Diversity, 2011. *Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets*. Available at: https://www.cbd.int/doc/strategic-plan/2011-2020/Aichi-Targets-EN.pdf

[33] Scottish Government, 2004. *Scotland's Biodiversity Strategy: It's in Your Hands – A strategy for the conservation and enhancement of biodiversity in Scotland.* Available at: http://www.gov.scot/Resource/Doc/25954/0014583.pdf

[34] Scottish Government, 2015. *Scotland's Biodiversity: A Route Map to 2020*. Available at: http://www.gov.scot/Resource/0048/00480289.pdf

[35] Crown Estate Scotland, 2018. *SBS 2020 Challenge: Crown Estate Scotland Delivery Statement*. Available at: http://www.crownestatescotland.com/maps-and-publications

flood risk and climate change. Physical activity and access to open space is also a key area which supports health.

3.10 Many of the policies and statutes focus on preventing or limiting exposure to air pollutants. At the European level are various directives that address air quality issues. The *Ambient Air Quality Directive* (2008/50/EC)[36] sets legally binding limits for concentrations of major air pollutants. The Ambient Air Quality Directive is transposed into Scots law through the *Air Quality Standards (Scotland) Regulations 2010*[37]. Other relevant legislation includes the *Environment Act 1995*[38]. Under Section 83(1) of the *Environment Act 1995*, local authorities have a duty to declare Air Quality Management Areas (AQMAs) at locations in which air quality objectives are not being met or are unlikely to be met.

3.11 Other policies and statutes aim to minimise the potential impacts of environmental nuisances such as noise pollution, light pollution and disturbance from vibration. Furthermore, the *Public Health etc. (Scotland) Act 2008*[39] also makes provision for law on statutory nuisances such as artificial light nuisances.

3.12 There is also legislation in place to prevent and control any adverse health effects arising from the contamination of water resources. At the European level, these are entrenched in both the *Bathing Water Quality Directive* (2006/7/EC)[40] and *the Drinking Water Directive* (98/83/EC)[41] at the European level. The Bathing Water Quality Directive has been transposed through the *Bathing Waters (Scotland) Regulations 2008 (as amended)*[42] and the *Bathing Waters (Sampling & Analysis) (Scotland) Directions 2008*[43]. The *Public Water Supplies (Scotland) Regulations 2014* [44] regulations transpose the Drinking Water Directive.

3.13 At a national level physical activity is promoted through the National Planning Framework 3 (2014)[45] which supports physical activity, active travel and access to greenspace with associated health benefits. These aims are also supported through *Let's make Scotland more active A Strategy for Physical Activity*[46] and the *Cycling Action Plan for Scotland*[47].

Soil

3.14 At the European level, the importance of protecting soil quality has been recognised through the European Commission's *Thematic Strategy for Soil Protection*[48]. The Strategy aims to establish common principles for the protection and sustainable use of soils by promoting responsible management practices and the restoration of degraded soils. Many of these aims are reflected in *The Scottish Soil Framework*[49] which was launched in 2009. The Framework sets out a vision for the enhancement and protection of soils within the context of the economic, social and environmental needs of Scotland.

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[36] European Commission, 2008. *Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe.* Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0050

[37] Air Quality Standards (Scotland) Regulations 2010 (Scottish Statutory Instrument 2010/204)

[38] Environment Act 1995 (c 25)

[39] Public Health etc. (Scotland) Act 2008 (Scottish Statutory Instrument 2008/asp 5)

[40] European Commission, 2006. *Directive 2006/7/EC of the European Parliament and of the Council of 15 February 2006 concerning the management of bathing water quality and repealing Directive 76/160/EEC*. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32006L0007

[41] European Commission, 1998. *Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption*. Available at: http://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A31998L0083

[42] The Bathing Waters (Scotland) Regulations 2008 (Scottish Statutory Instrument 2008/170)

[43] Scottish Government, 2008. *The Bathing Waters (Sampling and Analysis) (Scotland) Directions 2008.* Available at: http://www.gov.scot/Resource/Doc/1057/0072275.pdf

[44] The Public Water Supplies (Scotland) Regulations 2014 (Scottish Statutory Instrument 2014 No. 364)

[45] Scottish Government (2014) National Planning Framework 3. Available at: https://beta.gov.scot/publications/national-planning-framework-3/

[46] Physical Activity Task Force (2003) *Let's make Scotland more active A Strategy for Physical Activity.* Available at: http://www.gov.scot/Publications/2003/02/16324/17895

[47] Scottish Government, (2010) *Cycling Action Plan for Scotland More people cycling more often*. Available at: http://www.gov.scot/resource/doc/316212/0100657.pdf

[48] European Commission, 2006. *Thematic Strategy for Soil Protection*. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52006DC0231

[49] Scottish Government, 2009. *The Scottish Soil Framework*. Available at: http://www.gov.scot/Publications/2009/05/20145602/0

3.15 At the national level, there is specific legislation in place to promote the remediation of contaminated land. These include the *Environmental Protection Act 1990*[50] and the *Contaminated Land (Scotland) Regulations 2000*[51].

3.16 Peatland soils have been given special attention through *Scotland's National Peatland Plan*[52] which sets out a number of targets regarding the improvement and restoration of Scotland's peatlands. The Scottish Government's *Draft Peatland and Energy Policy Statement*[53] seeks to align peatland and energy policy in order to maximise greenhouse gas emission abatement in a way that delivers multiple benefits.

Water

3.17 The importance of protecting water quality has been recognised through the EU's *Water Framework Directive* (2000/60/EC)[54] which sets out a comprehensive approach to protect Europe's inland surface waters, transitional waters, coastal waters and ground waters. The Water Framework Directive includes a requirement for an assessment of both chemical and ecological states, alongside additional requirements to consider the status of biodiversity as an indicator in determining overall water quality. The European Commission's '*A Blueprint to Safeguard Europe's Resources*'[55] sets out measures to better implement current water legislation, integration of water policy into other policies, and safeguarding water quantity and efficiency in Europe.

3.18 Scotland fulfils the obligations as set out in the Water Framework through the *Water Environment and Water Services (Scotland) Act 2003*[56] which guides the establishment of River Basin Management Plans (RBMPs), and the *Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended)*[57] which provides a regulatory framework for controlling activities, known as 'CAR', that could have negative effects on Scotland's water environment. Examples of CAR activities include water abstraction for irrigation, discharges of wastewater, impoundments, hydropower and surface water drainage. Other relevant legislation includes the *Pollution Prevention and Control (Scotland) Regulations 2012*[58] which aims to specifically control pollution relating to industry discharges.

3.19 Other policies focus on avoiding or limiting the impacts of flood risk. At the European level is the *Floods Directive* (2007/60/EC)[59] which establishes a framework for the reduction of the adverse consequences of flood for human health, the environment, cultural heritage and economic activity. The Floods Directive has been made into national law through the *Flood Risk Management (Scotland) Act 2009*[60] which mandates the creation of Flood Risk Management Strategies and Local Flood Risk Management Plans.

3.20 The assets managed by Crown Estate Scotland also include coastal and marine assets. Marine waters are considered through the EU's *Marine Strategy Framework Directive* (2008/56/EC)[61], which sets out a comprehensive approach to protect and preserve Europe's marine environment, prevent its deterioration or, where practicable, restore marine ecosystems in areas where they have been adversely affected, as well as prevent and reduce inputs in the marine environment, with a view to phasing out pollution, so as to ensure that there are no significant impacts on or

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[50] Environmental Protection Act 1990

[51] The Contaminated Land (Scotland) Regulations 2000 (Scottish Statutory Instrument 2000/178)

[52] Scottish Natural Heritage, 2015. *Scotland's National Peatland Plan: Working for our future*. Available at: https://www.nature.scot/sites/default/files/2017-07/A1697542%20-%20150730%20-%20peatland_plan.pdf

[53] Scottish Government, 2016. *Draft Peatland and Energy Policy Statement*. Available at: http://www.gov.scot/Topics/Business-Industry/Energy/Energy-sources/19185/Draft-Peatland-Policy

[54] European Commission, 2000. *Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy*. Available at: http://eur-lex.europa.eu/resource.html?uri=cellar:5c835afb-2ec6-4577-bdf8-756d3d694eeb.0004.02/DOC_1&format=PDF

[55] European Commission, 2012. *A Blueprint to Safeguard Europe's Water Resources.* Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52012DC0673

[56] Water Environment and Water Services (Scotland) Act 2003 (Scottish Statutory Instrument 2003/asp 3)

[57] Water Environment (Controlled Activities) (Scotland) Regulations 2012 (Scottish Statutory Instrument 2011/209)

[58] The Pollution Prevention and Control (Scotland) Regulations 2012 (Scottish Statutory Instrument 2012/360)

[59] European Commission, 2007. *Directive 2007/60/EC of the European Parliament and of the Council of 2007 on the assessment and management of flood risks*. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32007L0060

[60] Flood Risk Management (Scotland) Act 2009 (Scottish Statutory Instrument 2009/asp 6)

[61] European Commission, 2008. *Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)*. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0056

risks to marine biodiversity, marine ecosystems, human health or legitimate uses of the sea. The Marine Strategy Framework includes the requirement for the development of marine strategies for each marine region or sub region. In addition to this Framework Directive, the EU *Bathing Water Directive* (2006/7/EC)[62] sets out a comprehensive approach to the monitoring and classification of bathing water quality, the management of bathing water quality, and the provision of information to the public on bathing water quality.

3.21 The *Marine (Scotland) Act 2010*[63] provides a framework to help balance competing demands on Scotland's seas. It includes a duty to protect and enhance the marine environment and includes measures to help boost economic investment and growth in areas such as marine renewables. Following this, *Scotland's National Marine Plan 2015*[64] was produced, which provides a framework for managing all developments, activities and interests in or affecting Scotland's marine area (territorial and offshore waters). The National Marine Plan sets out high-level objectives, general policies and sectoral policies. These includes general policies to prevent adverse impacts on coastal processes and flooding, to reduce marine litter, and to maintain marine water quality, as well as specific policies regarding industrial sectors, including those which Crown Estate Scotland operates within, such as sea fisheries, aquaculture and offshore renewable energy.

3.22 There is potential for up to 11 regional Marine Planning Partnerships and associated Marine Plans, following the *Marine (Scotland) Act 2010*, and which will allow more local ownership and decision making about specific issues within their areas[65]. To date, work on regional marine plans is underway for the Clyde and Shetland Isles Marine Regions.

3.23 There is also legislation relating to managing several types of fisheries in Scotland, including the estimated 750 sites that Crown Estate Scotland lease to fish farm operators. The *Aquaculture and Fisheries (Scotland) Act 2013*[66] sets out regulations to ensure that farmed and wild fisheries – and their interactions with each other – continue to be managed effectively. The *Salmon and Freshwater Fisheries (Consolidation) Act 2003*[67] consolidates legislation relating to salmon and freshwater fisheries in Scotland. The Act sets out regulation with regard to the methods of fishing for salmon and freshwater fish.

Air

3.24 European legislation addresses the issues associated with air pollution. *The Ambient Air Quality Directive* (2008/50/EC)[68] sets targets for key pollutants such as SO_2, NO_x, particulates, lead, benzene and ground-level ozone. Moreover, the *National Emission Ceilings Directive* (2016/2284/EU)[69] sets targets for reducing emissions of five important air pollutants including nitrogen oxides (NO_x), non-methane volatile organic compounds (NMVOCs), sulphur dioxide (SO_2), ammonia (NH_3) and fine particulate matter ($PM_{2.5}$) as well as carbon monoxide (CO).

3.25 Directive 2016/2284/EU was subsequently made into law as *The National Emissions Ceilings Regulations 2018*[70]. Air quality is a devolved matter in the UK – administrations in Scotland (SEPA), Wales (NRW) and Northern Ireland (Northern Ireland Air) are required to produce their

[62] European Commission, 2006. *Directive 2006/7/ES of the European Parliament and of the Council of 15 February 2006 concerning the management of bathing water quality and repealing Directive 76/160/EEC*. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006L0007

[63] Scottish Government, 2010. *Marine (Scotland) Act 2010*. Available at: http://www.gov.scot/Topics/marine/seamanagement/marineact

[64] Scottish Government, 2015. *Scotland's National Marine Plan*. Available at: http://www.gov.scot/Publications/2015/03/6517

[65] Scottish Government, 2017. *Regional Planning*. Available at: http://www.gov.scot/Topics/marine/seamanagement/regional

[66] Aquaculture and Fisheries Act 2013 (Scottish Statutory Instrument 2013 asp 7)

[67] Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003 (Scottish Statutory Instrument 2003 asp 15)

[68] European Commission, 2008. *Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe*. Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:152:0001:0044:en:PDF

[69] European Commission, 2016. *Directive 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC.* Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2016.344.01.0001.01.ENG

[70] The National Emission Ceilings Regulations 2018 (SI 2018/129)

own air quality policy and legislation[71]. As a result, the Ambient Air Quality Directive has been transposed into Scots law through the *Air Quality Standards (Scotland) Regulations 2010*[72].

3.26 Other relevant legislation includes Part IV of the *Environment Act 1995*[73] which sets out provisions for protecting air quality throughout the UK. Under Section 83(1) of the *Environment Act 1995*, local authorities are required to declare Air Quality Management Areas (AQMAs) at locations in which air quality objectives are not being met or are unlikely to be met. Local authorities have a duty to develop and implement Air Quality Action Plans in these locations in order to improve air quality to an acceptable level[74].

3.27 The Scottish Government's *Cleaner Air for Scotland – The Road to a Healthier Future*[75] proposes a national strategy for improving Scotland's air quality with a vision of making it the "best in Europe". Among its specific goals are full compliance with EU air quality legislation and significant progress towards rescinding all existing Air Quality Management Zones in Scotland by 2020.

Climatic factors

3.28 The impacts of climate change have been addressed through numerous international agreements, most notably the *Kyoto Protocol*[76] and the *UN Paris Agreement*[77].

3.29 The Kyoto Protocol is a legally binding treaty to reduce greenhouse gas emissions. It was adopted in 1997 and came into force in 2005. 192 countries have adopted the Kyoto Protocol. The Kyoto Protocol requires participating countries to cut their emissions by an average of 5% below 1990 levels over the five-year period between 2008 and 2012. The EU, some other European countries and Australia have agreed to make further emission cuts, with EU countries having agreed to meet a joint 20% reduction target for 2020 compared to 1990 levels[78].

3.30 The Paris Agreement aims to keep global temperature rise below 2°C above pre-industrial levels. It came into force in 2016 after being adopted by 195 countries. The Paris Agreement covers a wide range of related issues such as mitigation measures and adaptation[79].

3.31 These international climate change targets have been translated into specific policies and statutes at the European level. For instance, the EU Emissions Trading System (EU ETS) is a cornerstone of the EU's strategy to tackle climate change and operates in 31 countries (all EU countries plus Iceland, Liechtenstein and Norway).

3.32 At the European level there is also the European Commission's *2030 Climate and Energy Framework*[80] which sets key targets related to tackling climate change: 40% cuts in greenhouse gas emissions (from 1990 levels), 27% increases in the share of renewable energy and a 27% improvement in energy efficiency for 2030. The 2030 Climate and Energy Framework is in line with the longer term perspective set out in the European Commission's *Roadmap for moving to a competitive low carbon economy in 2050*[81], the *Energy Roadmap 2050*[82] and the European

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[71] CIEEM, 2015. *UK Environmental Legislation and UK Implementation*. Available at: https://www.cieem.net/data/files/Resource_Library/Policy/Policy_work/CIEEM_EU_Directive_Summaries.pdf

[72] The Air Quality Standards (Scotland) Regulations 2010 (Scottish Statutory Instrument 2010/204)

[73] Environment Act 1995

[74] Scottish Government, 2005. *Part IV of the Environment Act 1995 – Local Air Quality Management Revised Policy Guidance*. Available at: http://www.gov.scot/Publications/2003/02/16265/17537

[75] Scottish Government, 2015. *Cleaner Air for Scotland – the Road to a Healthier Future*. Available at: http://www.gov.scot/Resource/0048/00488493.pdf

[76] United Nations, 1998. *Kyoto Protocol to the United Nations Framework Convention on Climate Change*. Available at: https://unfccc.int/sites/default/files/kpeng.pdf

[77] United Nations, 2015. *Paris Agreement.* Available at: https://unfccc.int/sites/default/files/english_paris_agreement.pdf

[78] European Commission, 2018. *Climate Action – Kyoto 1st commitment period (2008-12).* Available at: https://ec.europa.eu/clima/policies/strategies/progress/kyoto_1_en

[79] European Commission, 2016. *Climate Action – Paris Agreement*. Available at: https://ec.europa.eu/clima/policies/international/negotiations/paris_en

[80] European Commission, 2014. *2030 Climate & Energy Framework*. Available at: https://ec.europa.eu/clima/policies/strategies/2030_en

[81] European Commission, 2011. *The roadmap for moving to a competitive low-carbon economy in 2050*. Available at: https://ec.europa.eu/clima/sites/clima/files/2050_roadmap_en.pdf

[82] European Commission, 2012. *Energy Roadmap 2050*. Available at: https://ec.europa.eu/energy/sites/ener/files/documents/2012_energy_roadmap_2050_en_0.pdf

Commission's *Transport White Paper*[83]. Other relevant EC statutes include the *Renewable Energy Directive* (2009/28/EC)[84] and the *Energy Efficiency Directive* (2012/27/EU)[85]. The Renewable Energy Directive sets targets for renewable energy use within the EU, and requires that 20% of the energy consumed within the EU is renewable. The Energy Efficiency Directive establishes a set of binding targets to help the EU to reach its 20% energy efficiency target by 2020.

3.33 Scotland has set ambitious climate change targets under the *Climate Change (Scotland) Act 2009*[86], which was developed to deliver the statutory emissions reduction targets set out in the Kyoto Protocol and European legislation. The Climate Change (Scotland) Act sets statutory targets for the reduction of greenhouse gas emissions by setting an interim 42% reduction target by 2020 and an 80% reduction target from baseline levels (1990) for 2050. The Act makes further provisions for energy efficiency and the reduction and recycling of waste. Part 5 of the Act also includes secondary legislation in relation to the energy performance of buildings and the functions of forestry commissioners. In addition, the Scottish Government recently published the *Climate Change Plan*[87] and the *Scottish Energy Strategy*[88]. The documents sit alongside one another, as they both set out policies to meet the Scottish Government's emission reduction targets over the period 2017-2032.

3.34 Under the *Climate Change Act 2008*[89], the UK Government is required to publish a UK-wide Climate Change Risk Assessment (CCRA)[90] every 5 years which defines the impacts from climate change. CCRA reports to date include *the 2012 UK Climate Change Risk Assessment (CCRA)*[91] and the *2017 UK Climate Change Risk Assessment (CCRA2)*[92]. Under section 53 of the *Climate Change (Scotland) Act 2009*, Scotland published its first statutory *Scottish Climate Change Adaptation Programme*[93] in 2014, which is also a means to address the climate change impacts identified for Scotland in the UK Climate Change Risk Assessment.

3.35 The *Climate Change (Scotland) Act 2009* also requires that, as soon as reasonably practicable after setting annual targets, Ministers publish a report setting out policies and proposals for meeting those targets. The Climate Change Plan is the Scottish Government's report on proposals and policies for meeting its climate change targets. It sets out how Scotland can deliver its target of 66% emissions reductions, relative to the baseline, for the period 2018–2032.

3.36 In 2018, the UK Government published '*A Green Future: Our 25 Year Plan to Improve the Environment*'[94] which sets out a comprehensive and long-term approach to improve the UK's natural environment, including guidance to tackle the effects of climate change.

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[83] European Commission, 2011. *WHITE PAPER Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system*. Available at: http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A52011DC0144

[84] European Commission, 2009. *Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC*. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32009L0028

[85] European Commission, 2012. *Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC.* Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012L0027

[86] Climate Change (Scotland) Act 2009 (Scottish Statutory Instrument 2009/asp 12)

[87] The Scottish Government, 2018. *Climate Change Plan – the Third Report on Proposals and Policies 2018-2032*. Available at: http://www.gov.scot/Resource/0053/00532096.pdf

[88] The Scottish Government, 2017. *Scottish Energy Strategy: The future of energy in Scotland*. Available at: http://www.gov.scot/Resource/0052/00529523.pdf

[89] Climate Change Act 2008

[90] Committee on Climate Change, 2017. *UK Climate Change Risk Assessment 2017 Evidence Report – Introduction to the CCRA*. Available at: https://www.theccc.org.uk/tackling-climate-change/preparing-for-climate-change/uk-climate-change-risk-assessment-2017/introduction-to-the-ccra/

[91] UK Government, 2012. *UK Climate Change Risk Assessment: Government Report*. Available at: https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-government-report

[92] UK Government, 2017. *UK Climate Change Risk Assessment 2017*. Available at: https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-2017

[93] Scottish Government, 2014. *Climate Ready Scotland: Scottish Climate Change Adaptation Programme*. Available at: http://www.gov.scot/Publications/2014/05/4669

[94] HM Government, 2018. *A Green Future: Our 25 Year Plan to Improve the Environment*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf

Cultural heritage and the historic environment

3.37 The importance of protecting cultural heritage assets is acknowledged through the *European Convention on the Protection of the Archaeological Heritage*[95]. The primary aim of the Convention is to protect archaeological heritage, including any physical evidence of the human past that can be investigated archaeologically both on land and underwater. The Convention also makes a provision for the creation of archaeological reserves and the conservation of excavated sites.

3.38 In Scotland, cultural heritage objectives are set out under the *Historic Environment Scotland Act 2014*[96]. This builds upon existing legislation pertaining to ancient monuments and listed buildings as well as providing for the creation of inventories of gardens and designed landscapes, as well as of battlefields. Specifically, the Act amends the *Ancient Monuments and Archaeological Areas Act 1979*[97], the *Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997*[98] the *Environmental Assessment (Scotland) Act 2005*[99] and the *Marine (Scotland) Act 2010*[100].

3.39 *Our Place in Time – The Historic Environment Strategy for Scotland*[101], published in 2014, sets out a 10 year vision for protecting the cultural, social, environmental and economic value of Scotland's heritage assets. The vision is underpinned by three fundamental aims of understanding, recording and protecting Scotland's historic environment.

3.40 The 2014 Strategy and the *Historic Environment Scotland Policy Statement 2016*[102] set out an overarching framework for historic environment policy in Scotland. Other relevant policies include the *National Planning Framework*[103], *Scottish Planning Policy*[104], *Historic Environment Circular 1*[105], *The Town and Country Planning (Historic Environment Scotland) Amendment Regulations 2015*[106] and *Historic Environment Scotland's Managing Change in the Historic Environment*[107] guidance note series. These documents provide guidance for local planning authorities pertaining to applications for conservation area and listed building consents, as well as the consideration of more general planning applications.

3.41 The *Marine (Scotland) Act 2010*[108] provides for the designation of historic marine protected areas (historic MPAs) to protect marine historic assets of national importance in the seas around Scotland. Moreover, the Act outlines that, when applying for a marine licence, consideration must be made regarding the protection of the environment, including any site of historical or archaeological interest. General Planning Principle 6 in *Scotland's National Marine Plan*[109] states that development and use of the marine environment should protect, and where appropriate, enhance heritage assets in a manner proportionate to their significance.

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[95] Council of Europe, 1992. *European Convention on the Protection of the Archaeological Heritage (Revised).* Available at: https://rm.coe.int/168007bd25

[96] Historic Environment Scotland Act 2014 (Scottish Statutory Instrument 2014/asp 19)

[97] Ancient Monuments and Archaeological Areas Act 1979 (Chapter 46)

[98] Planning (Listed Buildings and Conservation) (Scotland) Act 1997 (Chapter 9)

[99] Environmental Assessment (Scotland) Act 2005 (Scottish Statutory Instrument 2005 asp 15)

[100] Marine (Scotland) Act 2010 (Scottish Statutory Instrument 2010 asp 5)

[101] Historic Scotland, 2014. *Our Place in Time – the Historic Environment Strategy for Scotland*. Available at: http://www.gov.scot/Resource/0044/00445046.pdf

[102] Historic Environment Scotland, 2016. *Historic Environment Scotland Policy Statement June 2016* [online]. Available at: https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/legislation-and-guidance/historic-environment-scotland-policy-statement/

[103] Scottish Government, 2014. *National Planning Framework 3*. Available at: http://www.gov.scot/Topics/Built-Environment/planning/National-Planning-Framework

[104] Scottish Government, 2014. *Scottish Planning Policy*. Available at: http://www.gov.scot/Topics/Built-Environment/planning/Policy

[105] Historic Environment Scotland, 2016. *Historic Environment Circular 1*. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=ec209755-9bf8-4840-a1d8-a61800a9230d

[106] The Town and Country Planning (Historic Environment Scotland) Amendment Regulations (Scottish Statutory Instrument 2015/237)

[107] Historic Environment Scotland, undated. *Managing Change in the Historic Environment.* Available at: https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/legislation-and-guidance/managing-change-in-the-historic-environment-guidance-notes/

[108] Marine (Scotland) Act 2010 (Scottish Statutory Instrument 2010 asp 5)

[109] The Scottish Government, 2015. *Scotland's National Marine Plan* [pdf]. Available at: http://www.gov.scot/Resource/0047/00475466.pdf

Landscape and geodiversity

3.42 Landscape protection is acknowledged through a variety of policies and legislation. *The European Landscape Convention*[110], also known as the 'Florence Convention', strives to promote landscape protection, management and planning and to organise European co-operation on landscape issues. The Florence Convention introduces a national landscape policy that is not only restricted to internationally protected landscapes, but also takes account of less remarkable or even degraded landscapes. The Convention encompasses all kinds of environments including rural, urban and peri-urban landscapes across terrestrial, marine and coastal environments.

3.43 The National Scenic Areas (NSAs) Programme[111] identifies Scottish landscapes of outstanding scenic quality. In this context, 'special qualities' are defined as the characteristics that comprise an area's outstanding scenery – both individually and combined. Section 263(A) of the *Town and Country Planning (Scotland) Act 1997*[112] requires planning authorities to take notice of the scenic characteristics of an NSA when exercising any powers under that Act to any land within that NSA[113].

3.44 Further policies have been implemented at the national level to protect Scotland's landscapes. *Scottish Planning Policy*[114] aims to protect and enhance Scotland's natural heritage and landscapes. *The National Planning Framework 3*[115] acknowledges wild land areas as a nationally important asset. SNH's *Landscape Policy Framework*[116] strives to protect the natural and aesthetic qualities of Scotland's landscapes. In this context, the Landscape Policy Framework identifies a number of key landscape types including distinctive settlements, crofting landscapes, forests and woodland, upland hills, moorland landscapes and coastal landscapes.

3.45 Local landscape designations occur across Scotland and help to protect landscape from inappropriate development. Local development plans show their location and associated policy.

3.46 There is no national seascape assessment for Scotland, however an individual seascape assessment for has been produced for the Firth of Clyde. This takes into account the experience of both the coast and the sea, as well as assesses the key characteristics of each stretch of sea/coast in terms of their sensitivity to built structures, both off and on shore, and land management of the coast[117]. Coastal Character Assessment identifies, describes and maps Scotland's coasts. This information underpins marine plans, development plans and specific development proposals. Coastal Character Assessment complements Scotland's Landscape Character Assessments, which focus on the terrestrial landscape. A national coastal character map has been produced which describes 13 coastal character types.

Material assets

3.47 The SEA topic 'material assets' encompasses a wide variety of topics, and, as such, can be interpreted in a number of different ways[118]. In the context of this report, this SEA topic refers to the potential impacts of the Crown Estate Scotland assets on the environment.

3.48 Key built assets associated with the Crown Estate Scotland include:

- Infrastructure relating to energy generation and distribution, such as sub-sea energy cable and offshore wind farms

[110] Council of Europe, 2000. *The European Landscape Convention*. Available at: https://rm.coe.int/1680080621

[111] The Scottish Government, 2017. *Countryside and Landscape in Scotland – National Scenic Areas*. Available at: http://www.gov.scot/Topics/Environment/Countryside/Heritage/Areas

[112] The Town and Country Planning (Scotland) Act 1997 (Scottish Statutory Instrument c.8)

[113] Scottish Government, 2017. *Countryside and Landscape in Scotland – National Scenic Areas*. Available at: http://www.gov.scot/Topics/Environment/Countryside/Heritage/Areas

[114] Scottish Government, 2014. *Scottish Planning Policy*. Available at: https://beta.gov.scot/publications/scottish-planning-policy/documents/00453827.pdf

[115] Scottish Government, 2014. *National Planning Framework 3*. Available at: http://www.gov.scot/Topics/Built-Environment/planning/National-Planning-Framework

[116] Scottish Natural Heritage, 2005. *SNH Landscape Policy Framework*. Available at: https://www.nature.scot/professional-advice/landscape-change/framework-landscape-policy/snh-landscape-policy-framework

[117] Scottish Natural Heritage on behalf of the Firth of Clyde Forum, 2013. *Seascape/Landscape Assessment of the Firth of Clyde*. Available at: http://www.clydemarineplan.scot/marine-planning/marine-planning-projects/#seascape

[118] Scottish Environment Protection Agency, 2016. *Guidance on consideration of material assets in Strategic Environmental Assessment*. Available at: https://www.sepa.org.uk/media/219432/lups-sea-gu4-consideration-of-material-assets-in-sea.pdf

- Flood protection, relating to foreshore and coastal defence
- Water supply, which is important for operations including whisky production, such as the Glen Livet distillery that is reliant on quality water supply
- Transport network, particularly shipping routes and ports

3.49 Key natural assets associated with the Crown Estate Scotland include:

- The foreshore and the seabed;
- Minerals, including sand, gravel, rock, and slate, as well as peat;
- Natural flood management processes, as the management of particularly the upland estates is important for maintaining these processes;
- Forestry and woodlands, which are notably influenced by the forestry operations of Crown Estate Scotland;
- Agricultural land, as the operations of the Crown Estate Scotland can affect the productivity of the land and the use of the land.

Marine infrastructure for energy generation and distribution

3.50 Crown Estate Scotland manages leasing of virtually all seabed out to the 12 nautical mile territorial limit[119]. The rights to explore and utilise the natural resources for the UK continental shelf are granted under the *Continental Shelf Act 1964*[120]. For marine-based electricity generating stations in excess of 1 MW out to 12 nautical miles and in excess of 50 MW from 12-200 nautical miles, marine infrastructure developers must obtain a Section 36 consent in accordance with the *Electricity Act 1989*[121]. In both cases, the Scottish Ministers are the licencing authority.

3.51 For certain activities carried out in the marine environment developers are required to carry out a public pre-application consultation. The *Marine Licencing (Pre-Application Consultation) (Scotland) Regulations 2013*[122] require applicants to carry out consultation for the following activities:

- Submarine cables over 1853 metres in length and where the inter-tidal boundary is crossed
- Reclaiming land, where the area exceed 10,000 square metres
- Any bridge, causeway or walkway, including pontoons, over 50 metres in length
- Construction works or alterations (other than for a renewable energy structure or fish farms) exceeding 1000 square metres
- Renewable energy structure, or alteration or improvement, where the total area in which the structure is to be located exceeds 10,000 square metres.

3.52 The *Energy Act 2004*[123] grants the Crown Estate the rights to generate electricity from wind, waves and the tides on the continental shelf and out to 200 nautical miles. Under the *Energy Act 2008*[124], the Crown Estate also has the rights to the transportation and storage of natural gas and carbon dioxide on the continental shelf.

3.53 In 2018, the Scottish Government published the new *Energy Strategy*[125] which sets out a long-term vision for the energy system in Scotland. The Energy Strategy builds on a well-established framework for sustainable energy policy in Scotland, including the *Scottish Government's 2020*

[119] The Crown Estate, 2017. *The Crown Estate: Energy Minerals and Infrastructure Portfolio – The Crown Estate's role in the development of Offshore Renewable Energy*. Available at: https://www.thecrownestate.co.uk/media/1097916/tce-role-and-responsibility-in-offshore-developments_final_may-2017.pdf

[120] Continental Shelf Act 1964 (c.29)

[121] Electricity Act 1989 (c. 29)

[122] Marine Licencing (Pre-Application Consultation) (Scotland) Regulations 2013 (Scottish Statutory Instrument 2013 No. 286)

[123] Energy Act 2004 (c. 20)

[124] Energy Act 2008 (c. 32)

[125] The Scottish Government, 2017. *Scottish Energy Strategy: The future of energy in Scotland.* Available at: http://www.gov.scot/Resource/0052/00529523.pdf

Routemap for Renewable Energy[126], the *Electricity Generation Policy Statement*[127], the *Heat Policy Statement: Towards Decarbonising Heat – Maximising the Opportunities for Scotland*[128] and the *Community Energy Policy Statement*[129].

3.54 In November 2017, Crown Estate Scotland announced their intention to run a further leasing round for commercial scale offshore wind energy projects in Scottish Waters in line with the Scottish Energy Strategy. Marine Scotland is currently undertaking an exercise to inform the spatial development of the intended leasing round, including identifying 'Areas of Search' and undertaking a Sustainability Appraisal.[130]

3.55 The process of identifying areas of search will include a review of the Plan Options for offshore wind development previously contained in the Draft Sectoral Plan for Offshore Wind Energy in Scottish Waters published in 2013. Together, these outputs will form the basis of a new Draft Sectoral Marine Plan for Offshore Wind Encompassing Deep Water Options (the 'Draft Plan') which will provide a strategic framework for the large scale deployment of both conventional and deep water wind technologies in Scottish waters.[131]

Water supply

3.56 At the national level, several statutes are in place to safeguard the quality of water supply. These include the *Water Industry (Scotland) Act 2002*[132] as amended by the *Water Services etc. (Scotland) Act 2005*[133], the *Private and Public Water Supplies (Miscellaneous Amendments) (Scotland) Regulations 2015*[134], the *Public Water Supplies (Scotland) Regulations 2014*[135] , the *Water Quality (Scotland) Regulations 2010*[136], the *Private Water Supplies (Scotland) Regulations 2006*[137], the *Public Water Supplies (Scotland) Amendment Regulations 2017*[138].

3.57 In addition, the *Water Resources (Scotland) Act 2013*[139] requires Scottish Ministers to take measures for the purpose of ensuring the development of Scotland's water resources. The whisky industry is not exempted from the Act, which brings large-scale water abstraction under ministerial control.

Transport

3.58 *Scotland's National Transport Strategy*[140] sets out the long-term framework for sustainable transport in Scotland, including efficient and sustainable freight.

3.59 *Scotland's National Marine Plan*[141] acknowledges that shipping, ports and harbours provide infrastructure for other sectors of both regional and national importance, including vital support to industries such as fishing, oil and gas, aggregates, aquaculture and the developing marine renewable energy industry.

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[126] The Scottish Government, 2011. *2020 Routemap for Renewable Energy in Scotland*. Available at: http://www.gov.scot/Publications/2011/08/04110353/0

[127] The Scottish Government, 2014. *The Electricity Generation Policy Statement – 2013*. Available at: http://www.gov.scot/Topics/Business-Industry/Energy/EGPSMain

[128] The Scottish Government, 2015. *The Heat Policy Statement: Towards Decarbonising Heat: Maximising the Opportunities for Scotland*. Available at: http://www.gov.scot/Publications/2015/06/6679

[129] The Scottish Government, 2015. *Scottish Government Community Energy Policy Statement – September 2015*. Available at: http://www.gov.scot/Topics/Business-Industry/Energy/CEPS2015

[130] https://consult.gov.scot/marine-scotland/offshore-wind-scoping/

[131] Scottish Government (2018) Sectoral Marine Plan for Offshore Wind Encompassing Deep Water Options Strategic Environmental Assessment Screening and Scoping Report http://www.gov.scot/Resource/0053/00536651.pdf

[132] Water Industry (Scotland) Act 2002 (Scottish Statutory Instrument 2002 asp 3)

[133] Water Services etc. (Scotland) Act 2005 (Scottish Statutory Instrument 2005 asp 3)

[134] The Private and Public Water Supplies (Miscellaneous Amendments) (Scotland) Regulations 2015 (Scottish Statutory Instrument 2015 No. 346)

[135] The Public Water Supplies (Scotland) Regulations 2014 (Scottish Statutory Instrument 2014 No. 364)

[136] The Water Quality (Scotland) Regulations 2010 (Scottish Statutory Instrument 2010 No. 95)

[137] The Private Water Supplies (Scotland) Regulations 2006 (Scottish Statutory Instrument 2006 No. 209)

[138] The Public Water Supplies (Scotland) Amendment Regulations 2017 (Scottish Statutory Instrument 2017 No. 281)

[139] Water Resources (Scotland) Act 2013 (Water Resources (Scotland) Act 2013 (Scottish Statutory Instrument 2013 asp 5)

[140] Transport Scotland, 2016. *National Transport Strategy*. Available at: https://www.transport.gov.scot/publication/national-transport-strategy-nts/

[141] The Scottish Government, 2015. *Scotland's National Marine Plan.* Available at: http://www.gov.scot/Resource/0047/00475466.pdf

3.60 In addition, Transport Scotland has produced a series of freight best practice guides and case studies for reducing emissions and increasing safety[142].

Minerals

3.61 At the European level, the *EU Management of Waste from Extractive Industries* (2006/21/EC)[143] sets out legislation to manage waste from extraction and the processing of mineral resources. This involves materials that must be removed to gain access to the mineral resource, such as topsoil, overburden and waste rock, as well as tailings remaining after the minerals have been extracted. The Directive has been transposed into Scots law through the *Management of Extractive Waste (Scotland) 2010 Regulations*[144].

3.62 In 2003, the Scottish Government published the *Planning Advice Note (PAN) 64 – Reclamation of Surface Mineral Workings*[145], which provides guidance on reclamation procedures for minerals. Reclamation of surface mineral workings has the potential to enhance derelict and degraded areas, remove ground instability caused by old mineral workings, create habitats, improve countryside access and provide community facilities and geological sites of interest.

Forestry

3.63 The *Forestry and Land Management (Scotland) Bill 2017*[146] provides the legislative framework for the forestry sector's contribution to the economic, environmental and social ambitions set by Scottish Ministers. In this context, the key policy objectives of the Bill are[147]:

- Improve accountability, transparency and policy alignment by transferring powers and duties of the Forestry Commissioners to make Scottish Ministers fully accountable for Forestry in Scotland.
- Introduce a new legislative framework to support and regulate forestry, replacing the outdated Forestry Act 1967 in Scotland.
- Make more effective use of Scotland's public land, including greater flexibility in the use of the National Forest Estate.

3.64 In addition, the *Scottish Forestry Strategy*[148] provides a vision for a diverse and sustainable forestry sector in Scotland. The Strategy sets out seven key themes to help achieve this vision: climate change, timber, business development, community development, access and health, environmental quality and biodiversity.

Agriculture

3.65 The following legislation provides the basis for a legal framework for the tenant farming and agricultural holdings in Scotland[149]: the *Agricultural Holdings (Amendment) (Scotland) Act 2012*[150], the *Public Services Reform (Agricultural Holdings) (Scotland) Order 2011*[151] along with the *Agricultural Holdings (Scotland) Act 2003*[152] and the *Agricultural Holdings (Scotland) Act*

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[142] Transport Scotland, undated. *Freight transport*. Available at: https://www.transport.gov.scot/our-approach/industry-guidance/freight-transport/#42445

[143] The European Commission, 2006. *Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries and amending Directive 2004/35/EC*. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32006L0021

[144] Management of Extractive Waste (Scotland) 2010 Regulations (Scottish Statutory Instrument 2010 No. 60)

[145] The Scottish Government, 2003. *PAN 64: Reclamation of Surface Mineral Workings*. Available at: http://www.gov.scot/Publications/2003/01/16122/16257

[146] The Scottish Parliament, 2017. *Forestry and Land Management (Scotland) Bill 2017*. Available at: http://www.parliament.scot/parliamentarybusiness/Bills/104491.aspx

[147] The Scottish Government, 2017. *Forestry and Land Management (Scotland) Bill*. Available at: http://www.gov.scot/Topics/farmingrural/Forestry/completingdevolution/forestrylandmanagementbill

[148] Forestry Commission, 2006. *The Scottish Forestry Strategy*. Available at: https://scotland.forestry.gov.uk/supporting/strategy-policy-guidance/forestry-strategy

[149] The Scottish Government, 2017. *Rural Land in Scotland – Agricultural Holdings Legislation*. Available at: http://www.gov.scot/Topics/farmingrural/Agriculture/agricultural-holdings/legislation

[150] Agricultural Holdings (Amendment) (Scotland) Act 2012 (Scottish Statutory Instrument 2012 asp 6)

[151] Public Services Reform (Agricultural Holdings) (Scotland) Order 2011 (Scottish Statutory Instrument 2011 No. 232)

[152] Agricultural Holdings (Scotland) Act 2003 (Scottish Statutory Instrument 2003 asp 11)

1991[153]. In addition, the *Land Reform (Scotland) Act 2016*[154] sets out legislation for property and regulatory law, and amends the current agricultural holdings legislation.

3.66 The *Deer (Scotland) Act 1996*[155] provides the basic framework for the conservation, control and sustainable management of wild red deer in Scotland, also in relation to the relationship between agriculture and the management of red deer for sport.

3.67 '*Getting the Best From Our Land: A Land Use Strategy for Scotland 2016-2021*'[156] sets a long-term framework for sustainable land use for a range of sectors, including agriculture and forestry. Publications such as '*Farming for a Better Climate*'[157] and '*The Future of Scottish Agriculture: A Discussion Document*'[158] set out actions to help farmers tackle climate change and promote good practice.

[153] Agricultural Holdings (Scotland) Act 1991 (Scottish Statutory Instrument Chapter 55)
[154] The Land Reform (Scotland) Act 2016 (Scottish Statutory Instrument 2016 asp 18)
[155] The Deer (Scotland) Act 1996 (Scottish Statutory Instrument Chapter 58)
[156] The Scottish Government, 2011. *Getting the Best From Our Land: A Land Use Strategy for Scotland 2016-2021*. Available at: http://www.gov.scot/Topics/Environment/Countryside/Landusestrategy
[157] SAC Consulting, undated. *Farming for a Better Climate*. Available at: https://www.sruc.ac.uk/info/120175/farming_for_a_better_climate
[158] The Scottish Government, 2015. *The Future of Scottish Agriculture: A Discussion Document*. Available at: http://www.gov.scot/Publications/2015/06/6695

Baseline information

3.68 Schedule 3 of the 2005 Act requires information to be provided on:

- *(2) The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.*
- *(3) The environmental characteristics of areas likely to be significantly affected.*
- *(4) Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directives 79/409/EEC on the conservation of wild birds and Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna (as last amended by Council Directive 97/62/EC).*

3.69 The baseline information is presented for the whole of Scotland, reflecting the breadth of the Crown Estate Scotland portfolio, and draws out specifics in relation to the assets managed by Crown Estate Scotland. The national level focus of the baseline allows the SEA to reflect wider environmental trends, the interaction of the Scottish Crown Estate with these, and the potential for the Crown Estate Scotland holdings to change over time.

Biodiversity, flora and fauna

Current state

3.70 Scottish Crown Estate assets are present within Scotland's urban, rural and coastal environments, as well as the wider marine environment. The coastal and marine environment are the most extensive assets. The rural assets include 37,000 hectares of rural land and forestry on four rural estates (Glenlivet, Fochabers, Applegirth and Whitehill) which are in predominantly upland environments.

3.71 The natural environment across Scotland is diverse which is reflected in the number and variety of designated biodiversity areas located across Scotland. There are 252 Special Areas of Conservation (SACs), 153 Special Protection Areas (SPAs) and 51 Ramsar sites in Scotland[159]. Scotland also contains 1,423 Sites of Special Scientific Interest (SSSIs), covering 1,022,000 hectares which amounts to about 13% of Scotland's land area. The sites range in size from the very small, such as Bo'mains Meadow SSSI at just under one hectare, to the vast Cairngorms SSSI which extends to more than 29,000 hectares. By the end of March 2017, 80.3% of natural features on Natura 2000 sites and SSSIs were assessed as being in a favourable condition. This compares to 80.4% at the end of March 2016[160]. There are also 43 National Nature Reserves covering less than 1.5% of Scotland's land area and 75 Local Nature Reserves[161]. Crown Estate Scotland activities interact with some of these designated sites. For example, a number of offshore wind farms are located within the Firth of Forth Banks Marine Protected Area and a marine commercial development lease was granted in the Tentsmuir National Nature Reserve.

3.72 In addition, Scotland's rivers, lochs and wetlands support many important habitats and species. Scotland has more than 30,000 freshwater lochs, ranging from small lochs to the likes of Loch Ness. The conditions in Scotland's lochs greatly vary from soft, relatively acidic water to hard waters with higher alkaline and nutrient concentrations – providing a wide variety of aquatic habitats[162].

3.73 As well as inland sites, the coastal and marine environments surrounding Scotland and beyond also support many habitats and species. There are 11 offshore SACs covering a total area of 3,095,000 ha around Scotland and 30 nature conservation Marine Protected Areas that have been

[159] Scottish Government, 2017. High Level Summary of Statistics [pdf]. Available at: http://www.gov.scot/Resource/0052/00525561.pdf
[160] Scottish Government, 2017. High Level Summary of Statistics [pdf]. Available at: http://www.gov.scot/Resource/0052/00525561.pdf
[161] Scottish Natural Heritage, undated. *Sitelink* [online]. Available at: http://gateway.snh.gov.uk/sitelink/index.jsp [Accessed 01 May 2018]
[162] Scottish Natural Heritage, 2017. *Lochs, rivers and wetlands* [online]. Available at: https://www.nature.scot/habitats-and-ecosystems/habitat-types/lochs-rivers-and-wetlands

designated to protect marine wildlife and habitats, covering an area of 6,140,000 ha[163]. There are 7 inshore MPAs and 22 inshore Special Areas of Conservation (SACs). Crown Estate Scotland manage assets within these designations, for example, the award and management of sub-sea cabling leases[164].

3.74 At the European Level, the Marine Strategy Framework Directive (MSFD) outlines a legislative framework for an ecosystem-based approach to the management of human activities. The aim of the directive is to achieve 'Good Environmental Status' (GES) by 2020 across Europe's marine environment. To achieve GES in a coherent and strategic manner, the MSFD established four European Marine Regions, based on geographical and environmental criteria. Each EU Member State is required to develop a marine strategy for their waters, in coordination with other countries within the same marine region or sub region. This coordination is being achieved through the Regional Seas Conventions, which for the UK is the OSPAR Convention[165].

3.75 Following from the above, the key characteristics of Scotland's natural environment are listed below.

- Scotland's coastal environment provides vast and diverse habitats for internationally important seabirds and shorebirds[166].
- It is estimated that Scotland's seas are among the most biologically productive in the world, supporting an estimated 6,500 species of animals and plants. Many of these are of significant regional or international importance for biodiversity conservation.[167]
- Key terrestrial habitats present in Scotland include upland areas stretching over 50% of Scotland's land area[168], followed by blanket bog covering another 23%. Blanket bog has been classified as globally rare and endemic to Scotland[169].
- Although forests cover about 17% of Scotland's land area, they support a high share of Scotland's biodiversity[170] – particularly native, ancient and semi-natural woodlands which are likely to have a higher biodiversity value than more uniform planted woods[171].

3.76 According to Scotland's Marine Atlas, there have been considerable changes to Scotland's seas. For instance, in recent years there has been a marked increase in the concentration of carbon dioxide (CO_2) in the atmosphere. At the same time, sea surface temperature has risen as have sea levels. As a result, changes in the biological components of seas have been observed including earlier plankton blooms, impacts of increasingly acidic conditions on calcareous organisms in particular, a northward movement of some species and a reduction in seabird populations.

3.77 Scotland's seas are mainly clean and safe, although there are some localised areas where there is contamination or hazards to human health. For example, sediments in several harbours and estuaries remain contaminated with hazardous substances, a legacy of past industrial discharges. Water quality in the Forth and Clyde estuaries is compromised by discharges of industrial effluent

[163] Scottish Government, 2017. High Level Summary of Statistics [pdf]. Available at: http://www.gov.scot/Resource/0052/00525561.pdf
[164] Crown Estate Scotland, 2018. *The assets map* [online]. Available at: http://www.crownestatescotland.com/the-assets/map
[165] Joint Nature Conservation Committee, 2015. *EU Marine Strategy Framework Directive*. Available at: http://jncc.defra.gov.uk/page-5193
[166] Scottish Natural Heritage, 2015. *Seabirds and shorebirds.* Available at: https://www.nature.scot/plants-and-animals/birds/seabirds-and-shorebirds
[167] Climatexchange Marine and Coastal Change Indicators and Trends. Available at: https://www.climatexchange.org.uk/research/indicators-and-trends/natural-environment/marine-and-coastal-change/
[168] Scottish Natural Heritage, 2017. *Upland and moorland* [online]. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-land/upland-and-moorland
[169] Scottish Natural Heritage, 2017. *Blanket bog* [online]. Available at: https://www.nature.scot/landscapes-habitats-and-ecosystems/habitat-types/mountains-heaths-and-bogs/blanket-bog
[170] Forestry Commission Scotland, 2012. *Biodiversity* [online]. Available at: http://scotland.forestry.gov.uk/supporting/strategy-policy-guidance/biodiversity
[171] Forestry Commission Scotland, 2014. *Native Woodland Survey of Scotland – Ancient Woodland information* [online]. Available at: http://scotland.forestry.gov.uk/supporting/strategy-policy-guidance/native-woodland-survey-of-scotland-nwss/scotlands-native-woodlands

and treated sewage, although effluent treatment has improved resulting in returning populations of residential and migratory fish[172].

Existing pressures

3.78 *Scotland's Biodiversity: A Route Map to 2020*[173] identifies the following seven key pressures on biodiversity:

- Land use intensification and modification
- Pollution (freshwater, marine and on land)
- The spread of invasive species and wildlife disease
- A lack of recognition of the value of nature
- A disconnection with nature
- Climate change
- Marine exploitation.

These will be discussed in the sections below.

Land use intensification and modification

3.79 Land-use change and intensive land use are key drivers of biodiversity loss and ecosystem degradation.

3.80 New development has the potential to adversely impact upon local biodiversity through habitat damage, habitat loss, disturbance to species[174], water pollution[175] (including freshwater and marine pollution), increased recreation pressures[176], changes to hydrological regimes that are of particular relevance to wetlands, among other negative impacts.

3.81 The conversion of semi-natural habitats has had adverse impacts on biodiversity and ecosystems. Bogs significantly decreased over the period between 1947 and 1988 – with a decrease of around 21% in blanket bog and a decrease of around 44% in lowland bog. Semi-natural woodlands decreased by 28%, followed by heather moorland which saw a decrease in 23% over that period. Moreover, just over half of Scotland's hedgerows (equalling to about 40,000 kilometres) were lost over the same period. The rate of habitat change has slowed over the last 30 years, but the pressures from land use change are still causing biodiversity loss and ecosystem degradation across Scotland[177].

3.82 Agricultural development is a key driver in habitat loss and habitat degradation. Farming constitutes major land-use in Scotland with about 75% of the land area devoted to agriculture. However, each type of farming has different effects on biodiversity. For example, hill farming is known to benefit biodiversity whilst dairy and meat production is linked to negative impacts on biodiversity[178]. Nevertheless, farming can also potentially benefit biodiversity as hedgerows support habitat corridors, connect habitats and promote species mobility[179].

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[172] The Scottish Government, 2011. *Scotland's Marine Atlas – Information for the National Marine Plan*. Available at: http://marine.gov.scot/datafiles/misc/MarineAtlas-Complete.pdf

[173] Scottish Government, 2015. *Scotland's Biodiversity: A Route Map to 2020* [pdf]. Available at: http://www.gov.scot/Resource/0048/00480289.pdf

[174] Scottish Natural Heritage, 2017. *Habitat Fragmentation* [online]. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-land/habitat-networks/habitat-fragmentation

[175] Scottish Natural Heritage, 2017. *Water pollution* [online]. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-freshwater/water-pollution

[176] Scottish Natural Heritage, 2017. *Managing access and recreation* [online]. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-access-and-recreation

[177] Biodiversity Scotland, 2017. *Habitat Change* [online]. Available at: http://www.biodiversityscotland.gov.uk/biodiversity/pressures/habitat-change/

[178] Scottish Natural Heritage, 2017. *Farming and crofting* [online]. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-land/farming-and-crofting

[179] Scottish Natural Heritage, 2015. *Field margins and hedgerows* [online]. Available at: https://www.nature.scot/landscapes-habitats-and-ecosystems/habitat-types/farmland-and-croftland/hedgerows-and-field-margins

Pollution

3.83 Water pollution from point sources, including sewage treatment works, factories and input from fish farms, and diffuse source pollution, including run-off of soil, nutrients and pesticides from farming and forestry, contaminated run-off from towns and cities and deposition of acid pollutants from the air, can cause the loss of biodiversity, as well as the silting of fish spawning grounds. In additional, airborne pollutants also pose a great risk to freshwater habitats[180].

3.84 Marine pollution can be caused due to the construction of new developments and operational discharges from new developments, affecting marine habitats and species[181].

3.85 Pollution on land can be cause by farming, with dairy and meat production associated with higher pollution risks, including greenhouse gas emissions, leaching of nitrates into the environment and erosion from winter grazing[182].

The spread of invasive species and wildlife disease

3.86 Invasive non-native species can damage the environment and the threat of such species is increasing with the growth of international trade and travel[183]. Invasive non-native plants can invade habitats, spread quickly and outcompete native vegetation. Some species can be destructive, causing riverbanks, built structures and surfaces to destabilise, whilst a few can adversely affect human and animal health[184].

3.87 The four invasive plant species that cause the most damage in Scotland are[185]:

- rhododendron *(Rhododendron ponticum)*
- Japanese knotweed *(Fallopia japonica)*
- giant hogweed *(Heracleum mantegazzianum)*
- Himalayan balsam *(Impatiens glandulifera)*

3.88 Wildlife disease can impact Scotland's biodiversity and the deer within the country can be affected by several diseases. These include bovine tuberculosis (TB) and foot and mouth disease (although the UK is currently 'disease free'), and in the future may also include chronic wasting disease should it enter the UK. Bluetongue is a viral disease spread by midges and although deer are usually only mildly affected, wild deer can act as a reservoir for the disease for domestic livestock[186].

3.89 Furthermore, invasive species can have significant impacts on marine biodiversity. This is because invasive species are often able to grow very large and very quickly. As such, invasive species can have impacts on Scotland's marine industries, for example:

- Seaweeds can grow on structures such as piers, slipways, fish farm cages and boat hulls or get tangled in boat propellers
- by killing or competing with marine aquaculture species
- by spreading disease

3.90 Marine invasive non-native species that are now widespread and well established in Scotland include:

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[180] Scottish Natural Heritage, 2018. *Water Pollution* [online]. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-freshwater/water-pollution

[181] Scottish Natural Heritage, 2018. *Coastal development and marine pollution* [online]. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-coasts-and-seas/coastal-development-and-marine-pollution

[182] Scottish Natural Heritage, 2018. *Lowland livestock and dairy farming* [online]. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-land/farming-and-crofting/types-farming/lowland-livestock-and-dairy-farming

[183] Scottish Natural Heritage, 2018. *Invasive non-native species* [online]. Available at: https://www.nature.scot/professional-advice/safeguarding-protected-areas-and-species/protected-species/invasive-non-native-species

[184] Scottish Natural Heritage, 2018. *Invasive non-native plants* [online]. Available at: https://www.nature.scot/professional-advice/safeguarding-protected-areas-and-species/protected-species/invasive-non-native-species/invasive-non-native-plants

[185] Scottish Natural Heritage, 2018. *Invasive non-native plants* [online]. Available at: https://www.nature.scot/professional-advice/safeguarding-protected-areas-and-species/protected-species/invasive-non-native-species/invasive-non-native-plants

[186] Scottish Natural Heritage, 2018. *Managing diseases of deer* [online]. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-wildlife/managing-deer/managing-diseases-deer

- Wireweed *(Sargassum muticum)*
- Green sea-fingers *(Codium fragile subsp. Tomentosoides)*
- Common cordgrass *(Spartina anglica)*
- Red alga *(Heterosiphonia japonica)*
- Acorn barnacle *(Austrominius modestus)*
- Japanese skeleton shrimp *(Caprella mutica)*
- Leathery sea squirt *(Styela clava)*

3.91 Invasive species found only in patchy locations within Scotland include:

- Carpet sea-squirt *(Didemnum vexillum)*
- Pacific oyster *(Crassostrea gigas)*

3.92 The species listed above, and marine non-native species, are generally moved by activities such as shipping, transport of fish and shellfish, scientific research. In some instances, non-native species are released on purpose[187].

A lack of recognition of the value of nature

3.93 *Scotland's Biodiversity: A Route Map to 2020*[188] highlights that the vital benefits that healthy stocks of nature, or 'natural capital', provide to society are not fully recognised or appreciated, and therefore are not sufficiently considered in decision making. Natural capital supports the food and drink, marine aquaculture and tourism industries in Scotland[189], industries that many of the Scottish Crown Estate's assets also cover[190]. The Natural Capital Asset Index notes that woodland, inland surface waters, coastal, grasslands, mires, fens and bogs, heathland, and agriculture and cultivated habitats provide the following services[191]:

- **Provisioning services**, such as the provisioning of water, crops and materials from animals.
- **Regulating services**, such as the mediation of waste and erosion, the control of pests and disease, the dispersal of pollen and seeds, and the regulation of climate.
- **Cultural services**, such as the interactions of nature with heritage, education, religion and entertainment.

3.94 Crown Estate Scotland has been piloting a natural capital approach across the Glenlivet estate and two farms, to inform land management decision making. The Natural Capital Protocol helps businesses identify how natural resources contribute to their long-term profitably and how their activities impact those resources. Using the protocol enables businesses to make more sustainable decisions and account for the elements of nature that provide important 'services' to people.

A disconnection with nature

3.95 *Scotland's Biodiversity: A Route Map to 2020*[192] highlights that many people in society are disconnected with nature and therefore undervalue its contribution to their well-being and prosperity, and to wider society. There are, however, many opportunities present across Scotland

[187] Scottish Natural Heritage, 2018. *Marine non-native species* [online]. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-coasts-and-seas/marine-non-native-species
[188] Scottish Government, 2015. *Scotland's Biodiversity: A Route Map to 2020* [pdf]. Available at: http://www.gov.scot/Resource/0048/00480289.pdf
[189] Scottish Natural Heritage, 2018. *Industries reliant on nature* [online]. Available at: https://www.nature.scot/professional-advice/planning-and-development/industries-reliant-nature
[190] Crown Estate Scotland, 2018. *The assets* [online]. Available at: http://www.crownestatescotland.com/the-assets
[191] Scottish Natural Heritage, 2018. *Natural Capital Asset Index* [online]. Available at: https://www.nature.scot/professional-advice/planning-and-development/valuing-our-environment/natural-capital-asset-index
[192] Scottish Government, 2015. *Scotland's Biodiversity: A Route Map to 2020* [pdf]. Available at: http://www.gov.scot/Resource/0048/00480289.pdf

and Scottish Crown Estate assets that provide access to nature and biodiversity, such as walking and cycling routes, National Parks and nature reserves[193].

Climate change

3.96 Climate change is likely to result in Scotland experiencing more extreme weather events, more long heat spells, higher maximum temperatures, fewer days of snow and frost, longer periods of summer dry weather and heavier rain on the wettest days of the year[194]. This will result in various impacts upon species and habitats[195]:

- Movement of sand dune habitats inland.
- Increasing flooding of rivers due to altered rainfall patterns.
- Migration of artic heath northwards and to higher altitudes.
- Drying out and erosion of peat soils and bogs due to rising temperatures and altered rainfall patterns.
- Loss of coastal habitats where coastal defences limit their inward migration.
- Ocean acidification impacts upon corals, molluscs, crustaceans, starfish, sea urchins, and species important to food chains including some algae and many plankton species.
- Loss of species due to warming conditions, such as Arctic charr.
- Expansion of species due to warmer climate, such as species planted in parks and gardens, which may outcompete existing species and could spread pests and disease (see invasive species and wildlife disease above).
- Rising sea levels, greater ocean stratification, less polar sea ice, altered patterns of ocean circulation, precipitation and freshwater input, all of which will impact existing ecosystems.

Marine exploitation

3.97 *Scotland's Biodiversity: A Route Map to 2020*[196] highlights that marine exploitation, mainly in the form of some commercial fisheries and fishing, has profoundly changed the abundance and resilience of some species, such as cod, and altered marine habitats. The 2011 Scotland's Marine Atlas[197] highlights how different types of fishing each exert different pressures on the marine environment. Bottom trawlers and scallop dredgers drag their gear across the seabed and so potentially damage it, in addition to the removal of marine species. Pelagic trawlers and long liners fish in the water column, and their gear does not normally touch the seabed. Static nets, pots and creels are lowered onto the seabed and recovered later, although they can drag and damage fragile habitats and species.

Population and human health

Current state

3.98 Crown Estate Scotland manages assets across the length and breadth of mainland Scotland, as well as on many of its surrounding isles[198]. These assets include many resources which provide homes, livelihoods and places for recreation and enjoyment within the upland, coastal and marine environment. In addition, Crown Estate Scotland is responsible for managing retail and office units at 39-41 George Street Edinburgh[199].

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[193] Scottish Natural Heritage, 2018. *Enjoying the outdoors* [online]. Available at: https://www.nature.scot/enjoying-outdoors

[194] Scottish Natural Heritage, 2018. *Our changing climate* [online]. Available at: https://www.nature.scot/climate-change/our-changing-climate

[195] Scottish Natural Heritage, 2018. *Climate change impacts in Scotland* [online]. Available at: https://www.nature.scot/climate-change/climate-change-impacts-scotland

[196] Scottish Government, 2015. *Scotland's Biodiversity: A Route Map to 2020* [pdf]. Available at: http://www.gov.scot/Resource/0048/00480289.pdf

[197] Scottish Government, 2011. *Scotland's Marine Atlas: Information for the National Marine Plan* [online]. Available at: http://www.gov.scot/Publications/2011/03/16182005/0

[198] Crown Estate Scotland, 2018. *The assets map* [online]. Available at: http://www.crownestatescotland.com/the-assets/map

[199] Crown Estate Scotland, 2018. *The Assets.* Available at: http://www.crownestatescotland.com/what-we-do

3.99 According to the 2011 Census, the population in Scotland was estimated to be 5,295,000 people, of whom 2,728,000 (51.5%) are women and 2,567,000 (48.5%) men. This was a 4.6% rise compared to 2001, and the highest population recorded for the country since records began[200].

3.100 The mid-2016 population estimates[201] suggest that Scotland's population is continuing to grow, with 5,404,700 residents recorded in the country as of June 2016. This was an increase of 0.6% compared to 2015. Although there has been a general trend for growth in Scotland as a whole, growth in population has been variable across different areas of the country over the report period. The cities of Edinburgh and Glasgow have seen the highest levels of population growth at 1.68% and 1.44%, respectively. Conversely, Inverclyde and Na h-Eileanan an Iar displayed losses of population equating to 0.63% and 0.43% over the same time, respectively.

3.101 In addition, there is a recent trend for an overall increase in the proportion of older people. Between 1996 and 2016, the age group which reported the highest percentage of growth was those aged 75 and over, with a reported increase of 31% over that period. Over the same period, the number of people aged 45-64 and aged 64-74 grew by 26% and 24%, respectively[202]. The number of people aged 75 and over is projected to increase by 27% over the next 10 years and by 79% over the next 25 years[203].

3.102 The crucial role of environmental quality in maintaining human health is well-documented, particularly in relation to protecting water quality and air quality.

3.103 Air pollution represents a significant threat to public health. Poor air quality is associated with a number of diseases and health problems such as lung cancer, strokes, asthma, dementia and cardiovascular disease. Across the UK, air pollution is estimated to cause 40,000 deaths per year. The high-risk groups most prone to the effects of poor air quality include infants, young children, the elderly and those with existing heart and lung conditions. Pregnant women are also considered to be a vulnerable group given that harmful particulates could potentially infiltrate the placenta via the bloodstream[204].

3.104 The main pollutants of current concern in Scotland are oxides of nitrogen (NO_x), particulate matter (PM_{10} and $PM_{2.5}$), sulphur dioxide (SO_2), non-methane volatile organic compounds (NMVOCs), ground level ozone (O_3) and ammonia (NH_3)[205]. For instance, fine particular matter was associated with 2,000 premature deaths and around 22,500 lost life-years across the population in Scotland in 2010[206].

3.105 Densely populated areas have relatively high elevated air pollution levels. There are currently 37 AQMAs declared across 15 local authorities in Scotland, many of which are located in the densely populated Midland Valley (City of Edinburgh, East Dunbartonshire, East Lothian, Falkirk, Fife, Glasgow, Midlothian, North Lanarkshire, South Lanarkshire and West Lothian)[207]. This is reflected in premature death rates across Scotland. For example, large Scottish cities have the highest proportion of total death associated with particulate (PM) pollution in Scotland, with 4.9% and 4.7% of deaths linked to particulate pollution in Edinburgh and Glasgow, respectively[208].

3.106 Scotland's water resources are important for commercial water supplies, including drinking water. According to the latest annual report (2016) by the Drinking Water Quality Regulator (DWQR),

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[200] Scottish Government, 2012. *Scotland's Census – Census 2011: Population Estimates for Scotland*. Available at: http://www.scotlandscensus.gov.uk/news/first-results-scotlands-census-now-available

[201] National Records of Scotland, 2017. *Mid-Year Population Estimates for Scotland, Mid-2016 – Population estimates by sex, age and area.* Available at: https://www.nrscotland.gov.uk/files/statistics/population-estimates/mid-year-2016/16mype-cahb.pdf

[202] National Records of Scotland, 2017. *Mid-Year Population Estimates for Scotland, Mid-2016 – Population estimates by sex, age and area.* Available at: https://www.nrscotland.gov.uk/files/statistics/population-estimates/mid-year-2016/16mype-cahb.pdf

[203] Office of National Statistics, 2017. *Projected Population of Scotland (2016-based)*. Available at: https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-projections/population-projections-scotland/2016-based

[204] The Scottish Government, 2016. *SPICe Briefing – Air Quality in Scotland.* Available at: http://www.parliament.scot/ResearchBriefingsAndFactsheets/S5/SB_16-35_Air_Quality_in_Scotland.pdf

[205] Transport Scotland, 2017. *Scottish Transport Statistics No 35: 2016 Edition*. Available at: https://www.transport.gov.scot/media/33814/sct01171871341.pdf

[206] The Scottish Government, 2015. *Cleaner Air for Scotland – The Road to a Healthier Future*. Available at: http://www.gov.scot/Resource/0048/00488493.pdf

[207] Air Quality in Scotland, 2017. *Air Quality Management Areas.* Available at: http://www.scottishairquality.co.uk/laqm/aqma

[208] The Scottish Government, 2016. *SPICe Briefing – Air Quality in Scotland.* Available at: http://www.parliament.scot/ResearchBriefingsAndFactsheets/S5/SB_16-35_Air_Quality_in_Scotland.pdf

Scottish Water's compliance with the stringent standards for drinking water is extremely high at 99.91%[209].

3.107 There has been a steady improvement in the water quality of Scotland's designated bathing sites since SEPA's regulation and monitoring of EU bathing water compliance began in 1988. In 2016, about 80% of Scotland's designated bathing waters met the sufficient or better classification. The remaining bathing sites (20%) were considered to have poor water quality[210].

3.108 In terms of physical activity, the proportion of adults who regularly meet the guidelines for Moderate or Vigorous Physical Activity in 2016 was recorded to be similar to the 2012 figure of 62-64%. There continues to be a significant divide in Scotland between the proportion of men (69%) and women (59%) who are likely to meet Moderate or Vigorous Physical Activity guidelines. This divide is also present amongst children with 72% of girls physically active to meet guideline levels and 79% of boys meeting the guidelines. It is also noted that younger children were recorded as being more likely than older children to meet the physical activity guidelines.[211]

Existing pressures

3.109 Impacts on air and water quality are primarily caused by increases in environmental pollutants arising from new development and industrial activities.

3.110 Air pollution remains a chronic issue in many areas, particularly urban locations that experience high volumes of traffic[212]. Road transport and industrial emissions account for a large share of air pollutant emissions[213].

3.111 Key pressures on the surface water environment originate from human activity, particularly urbanisation and intensive agriculture and aquaculture[214].

3.112 Key pressures on water bodies in general include rural diffuse pollution, wastewater and hydropower generation. Low standards of water bodies may affect drinking water quality in Scotland, due to the presence of certain bacteria that can pose a potential risk to public health[215].

3.113 In Scotland, the primary causes of poor bathing water quality are short episodes of pollution induced by heavy rainfall which affects the operation of sewerage assets, surface drains, field run-off and agricultural activity[216].

3.114 Lack of access to resources that support physical activity means that the creation and adaption of environments that encourage and support physical activity offers the greatest potential to get the nation active[217].

Soil

Current state

3.115 Scotland's soils are diverse and differ markedly from those in the rest of the UK. The majority have acidic and organic-rich surface layers. Such soils are often not managed intensively. As a

[209] Drinking Water Quality Regulator for Scotland, 2016. *Drinking Water Quality in Scotland 2016 – Public water supply*. Available at: http://dwqr.scot/media/34946/drinking-water-quality-in-scotland-in-2016-dwqr-annual-report.pdf
[210] Scottish Environment Protection Agency, 2016. *Scottish Bathing Waters 2016*. Available at: https://www.sepa.org.uk/media/219168/1282_sepa_bathing_waters_2016_web.pdf
[211] The Scottish Government (2016) The Scottish Health Survey 2016 edition Volume 1 Main Report http://www.gov.scot/Resource/0052/00525472.pdf
[212] Scotland's Environment, 2014. *Get Informed – Air – Air Quality*. Available at: https://www.environment.gov.scot/get-informed/air/air-quality/
[213] Scottish Government, 2015. *Cleaner Air for Scotland – The Road to a Healthier Future*. Available at: http://www.gov.scot/Resource/0048/00488493.pdf
[214] Scottish Government, 2017. *Air Departure Tax (ADT) – Consultations on an overall 50% reduction policy plan and an Environmental Report*. Available at: http://www.gov.scot/Publications/2017/06/6503/15
[215] Scottish Government, 2016. *Key Scottish Environment Statistics 2016*. Available at: http://www.gov.scot/Publications/2016/10/7565/334167
[216] Scottish Environment Protection Agency, 2016. *Scottish Bathing Waters 2016*. Available at: https://www.sepa.org.uk/media/219168/1282_sepa_bathing_waters_2016_web.pdf
[217] Health Scotland (2009) Five-year review of Let's Make Scotland More Active. Available at: http://www.healthscotland.com/uploads/documents/1150-HS%20PA%205yr%20Review%20Final.pdf

result, they generally have a high biodiversity and landscape value. Soils suitable for arable cropping are largely limited to eastern Scotland[218].

3.116 The state and functionality of Scotland's soils is well-documented, particularly in relation to peat soils.

3.117 Several Scottish Crown Estate assets include areas of peatland soil[219]. Blanket bog is the most widespread and semi-natural peatland type in Scotland – extending to over 1.5 million hectares, which equates to about 20% of Scotland's land area of 7.8 million hectares. Scotland supports around 15% of the world's peatland habitats given its considerable rarity internationally. Other peatland types in Scotland include raised bogs and fens which are designated as UK priority habitats.

3.118 Within Scotland, many designated biodiversity sites also contain peatland habitats; 51 SACs and 106 SSSIs cover blanket bog; 26 SACs and 50 SSSIs are located on raised bogland; and 22 SACs are set around alkaline fen[220]. A large proportion of designated peatlands are in poor condition. According to reporting by Scottish Natural Heritage (SNH)[221], 72 out of 188 (38%) upland (blanket) bogs is in unfavourable condition. The same applies to 47 out of 111 (42%) lowland raised bogs, and 39% of upland fens, marshes and swamps.

3.119 Scotland's soils are an important carbon sink. It is estimated that Scotland's soils contain 3,000 million tonnes (Mt) of carbon, of which peatlands alone contain about 1,600 million tonnes (Mt) of carbon[222]. Other soils also act as a sink for greenhouse gases. Agricultural soils have the potential to hold an estimated 115 megatonnes, which would be the equivalent of 22% of total carbon dioxide (CO_2) emissions from Scotland's energy sector[223].

Existing pressures

3.120 The principal threats to soil functions are erosion and soil sealing, landslides, changes in soil biodiversity, loss of organic matter and land-use changes[224]. These are discussed in greater detail below.

3.121 Erosion and soil sealing (i.e. the process of compacting or covering soil with impervious material) have a profound effect on soil functions. Erosion can irretrievably disturb the soils' characteristics, and soil sealing interferes with the soils' ability to perform key functions such as water absorption and is effectively irreversible[225].

3.122 Landslides, which are closely linked to erosion, can pose additional pressures to Scottish soils[226].

3.123 Scotland's soils support a wide variety of habitats and biodiversity. Soil biodiversity is essential to most soil functions, including the physical and chemical characteristics of soil. For instance, soil organisms play a vital role in soil carbon and nitrogen turnover, and, subsequently, in the exchange of greenhouse gases. Soil organisms are also known to break down contaminants. Thus, changes in land management practices could affect the structure, physical and chemical characteristics of the soil[227].

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[218] Scottish Government, 2006. *Scotland's Soil Resource – Current State and Threats – Chapter 7: Soil Contamination*. Available at: http://www.gov.scot/Resource/Doc/149337/0039742.pdf

[219] Scotland's Soils, 2016. *Carbon and peatland 2016 map*. Available at: http://soils.environment.gov.scot/maps/carbon-and-peatland-2016-map/

[220] Scottish Government, 2010. *Executive Summary: Management of Carbon-Rich Soils – Overview and Discussion Paper*. Available at: http://www.gov.scot/Resource/Doc/921/0109512.pdf

[221] Scottish Natural Heritage, 2010. *Condition of Designated Sites*. Available at: http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/site-conditionmonitoring/favourable-condition-targets/

[222] Scottish Government, 2010. *Executive Summary: Management of Carbon-Rich Soils – Overview and Discussion Paper*. Available at: http://www.gov.scot/Resource/Doc/921/0109512.pdf

[223] Scottish Natural Heritage, 2017. *Managing nature for carbon capture*. Available at: https://www.nature.scot/climate-change/taking-action/carbon-management/managing-nature-carbon-capture

[224] Scottish Environment Protection Agency, 2011. *The State of Scotland's Soil*. Available at: https://www.sepa.org.uk/media/138741/state-of-soil-report-final.pdf

[225] Scottish Government, 2006. *Scotland's Soil Resource – Current State and Threats – Chapter 7: Soil Contamination*. Available at: http://www.gov.scot/Resource/Doc/149337/0039742.pdf

[226] Scottish Environment Protection Agency, 2017. *Guidance on consideration of soil in Strategic Environmental Assessment*. Available at: https://www.sepa.org.uk/media/162986/lups-sea-gu2-consideration-of-soil-in-sea.pdf

[227] Scottish Environment Protection Agency, 2017. *Guidance on consideration of soil in Strategic Environmental Assessment*. Available at: https://www.sepa.org.uk/media/162986/lups-sea-gu2-consideration-of-soil-in-sea.pdf

3.124 Loss of organic matter is a major threat to soil functions and is often the result of a number of environmental pressures, most notably land-use change and climate change[228].

3.125 Land-use changes could adversely impact upon the quality of peatland habitats and other carbon-rich soils. New development is very likely to lead to the excavation or drainage of peatland and other carbon-rich soils, which in turn could result in increased greenhouse gas emissions from these soils. Developments in the horticulture industry, fuel industry and the whisky industry may also have adverse impacts on peatland soils, but it is expected that the severity of these impacts greatly vary[229].

Water

Current state

3.126 The state of Scotland's water resources and the location of flood risk areas have been well-documented.

3.127 Scotland has large water resources compared to its total land area – both inland and along the coast. Scotland has an extensive coastline, stretching 19,000 kilometres which makes up 8% of Europe's coastline[230]. The marine waters surrounding this coastline out to 12 nautical miles are Scotland's territorial seas[231]. Scotland's offshore waters extend out to 200 nautical miles[232]. Together, Scotland's seas cover 460,000km^2, equating to six times the landmass of Scotland, and the majority of the Scottish Crown Estate's assets are within Scotland's territorial waters.

3.128 There are 30,000 freshwater lochs in Scotland, ranging from small lochs to the likes of Loch Ness[233]. Scotland's rivers, lochs, canals and ponds cover around 2% of Scotland's land area which equates to around 70% of the UK's surface water whilst equating to 90% of the volume of freshwater in the UK[234].

3.129 In recent decades, significant improvements in water quality have been observed in many rivers, canals and estuaries due to decreases in the releases of environmental pollutants. Just under half of Scotland's rivers are now of good or high status[235]. Nearly 80% of groundwater bodies in Scotland are in good condition[236]. With regards to Scotland's seas, the Scottish Bathing Waters 2016 report[237] highlights that 80% of Scottish bathing waters meet the sufficient or better classification required. There has been a steady improvement in bathing water quality over the last 27 years following investment by governing bodies and the rural agricultural community in reducing the levels of pollutants entering bathing water.

3.130 Reporting by the Scottish Government (2015)[238] also reveals that coastal flooding and fluvial flooding affected more properties in Scotland than surface flooding during that year. The Orkney Islands, Perth and Kinross, Moray and a number of local authorities located in the Midland Valley (Stirling, Falkirk, West Dunbartonshire and Scottish Borders) have the highest proportion of properties which are likely to be exposed to either coastal flooding or fluvial flooding. It was demonstrated that social vulnerability to flooding in Scotland tends to be concentrated in urban areas. It is estimated that 73% of the extremely or acutely vulnerable data zones were located in large urban areas and a further 23% were located in other urban areas.

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[228] Scottish Environment Protection Agency, 2011. *The State of Scotland's Soil*. Available at: https://www.sepa.org.uk/media/138741/state-of-soil-report-final.pdf

[229] Scottish Government, 2010. *Executive Summary: Management of Carbon-Rich Soils – Overview and Discussion Paper*. Available at: http://www.gov.scot/Resource/Doc/921/0109512.pdf

[230] Scotland's Water Environment, 2014. *Scotland's State of the Environment Report, 2014*. Available at: https://www.environment.gov.scot/media/1170/state-of-environment-report-2014.pdf

[231] Scottish Government, 2015. *Scotland's National Marine Plan*. Available at: http://www.gov.scot/Publications/2015/03/6517

[232] Scottish Government, 2015. *Scotland's National Marine Plan*. Available at: http://www.gov.scot/Publications/2015/03/6517

[233] Scottish Natural Heritage, 2017. *Lochs, rivers and wetlands*. Available at: https://www.nature.scot/habitats-and-ecosystems/habitat-types/lochs-rivers-and-wetlands

[234] Scotland's Water Environment, 2014. *Scotland's State of the Environment Report, 2014*. Available at: https://www.environment.gov.scot/media/1170/state-of-environment-report-2014.pdf

[235] Scotland's Environment, 2014. *Rivers and Canals*. Available at: https://www.environment.gov.scot/media/1179/water-rivers-and-canals.pdf

[236] Scotland's Environment, 2018. *Scotland's Freshwater*. Available at: www.environment.gov.scot

[237] Scottish Environment Protection Agency, 2016. *Scottish Bathing Waters*. Available at: http://apps.sepa.org.uk/bathingwaters/

[238] Scottish Government, 2015. *Mapping Flood Disadvantage in Scotland 2015*. Available at: http://www.gov.scot/Resource/0049/00490788.pdf

3.131 According to Scotland's National Coastal Change Assessment (NCCA)[239], the soft coastline (i.e. coasts with the potential to erode) makes up 19% of the Scottish coast which equates to 3,802 kilometres. However, between half and a third of all coastal building, roads, rail and water networks lie in these erodible sections. Since the 1970s, approximately 865 kilometres of the soft coastline has moved position: 11% (423 kilometres) has retreated through erosion; and the remaining 77% (2,936 kilometres) has remained approximately stable. Compared with the historic period between 1890 and 1970, the proportion of advancing coast has fallen by 22% since the 1970s. In addition, the proportion of retreating coast has increased by 39%. Larger shifts in the balance of erosion and accretion are found particularly on the east coast and Solway Firth.

3.132 Where coastal changes occur, they are faster than before. Nationally, average erosion rates since the 1970s have doubled from before to 1.0 metres/year whilst accretion rates have almost doubled to 1.5 metres/year. If recent erosion rates were to continue in the future, by 2050 at least 50 residential and non-residential buildings, 1.6 kilometres of railway, 5.2 kilometres of road and 2.4 kilometres of clean water networks as well as significant areas of runways, cultural and natural heritage sites are expected to be affected by coastal erosion. These numbers are likely to be underestimates, as large numbers of assets are sited close to potentially erodible coasts (including 30,000 buildings, 1,300 kilometres of reads and 100 kilometres of railway lines)[240].

Existing pressures

3.133 Scotland's waterbodies are under increasing pressure from various human activities.

3.134 Key pressures on water quality originate from human activity, particularly through loss of natural habitat due to development, climate change, erosion of peatlands, fragmentation of habitats such as wetlands and pollution caused by runoff from the rural and urban environment[241].

3.135 It is known that climate change could affect water quality. Climatic changes could have the potential to extend the growing season, which could place additional pressures on water quality as agriculture is a key source of environmental pollutants[242]. Moreover, low flows resulting from drier conditions can reduce dilution of pollutants[243]. Additionally, ocean acidification occurs when the extra CO_2 in the atmosphere dissolves in seawater[244]. Increasing acidification due to rising levels of atmospheric CO_2 will particularly affect those marine species that have calcareous shells and skeletons (see the biodiversity, flora and fauna section above)[245].

3.136 Local communities in Scotland, particularly coastal communities, could face a heightened flood risk associated with projected rates of climate change[246]. It is judged that this could affect Crown Estate Scotland's fishing rights.

3.137 Changes in climate are having significant effects on Scotland's rivers and streams. An increase of almost 70% in winter precipitation has been recorded in North Scotland since 1961. For the same period, annual precipitation across Scotland has increased by 20%. In addition, surface water temperatures in lakes and rivers have increased by 1°C to 3°C during this period. These climatic changes are likely to result in disruptions to rainfall patterns and to waterlogging of the soil, which in turn could influence the timing of peak flows, seasonal river flow pattern and flow velocity. Moreover, rivers are directly affected by changes in water temperature and flow. Even small

[239] Scotland's Centre of Expertise for Waters, 2017. *Scotland's National Coastal Change Assessment (NCCA)*. Available at: http://www.dynamiccoast.com/files/reports/NCCA%20-%20Summary%20-%201%20page.pdf
[240] *Ibid*
[241] Scottish Environment Protection Agency, 2015. *Strategic Environmental Assessment: Flood Risk Strategies, Environmental Report – consultation*. Available at: https://www.sepa.org.uk/media/163415/sea_environmental_report.pdf
[242] DPMAG (undated). *Rural diffuse pollution plan for Scotland*. Available at: https://www.sepa.org.uk/media/37557/rural-diffuse-pollution-plan-scotland.pdf
[243] Committee on Climate Change (2017) UK Climate Change Risk Assessment 2017 Evidence Report Summary for Scotland. Available at: https://www.theccc.org.uk/wp-content/uploads/2016/07/UK-CCRA-2017-Scotland-National-Summary.pdf
[244] Scottish Natural Heritage, 2018. *Marine impacts*. Available at: https://www.nature.scot/climate-change/climate-change-impacts-scotland/marine-impacts
[245] Scottish Natural Heritage, 2018. *Impacts on species*. Available at: https://www.nature.scot/climate-change/climate-change-impacts-scotland/impacts-species
[246] CREW, 2012. *Coastal Flooding in Scotland – A guidance document for coastal practitioners*. Available at: http://www.crew.ac.uk/sites/default/files/sites/default/files/publication/Coastal%20Flooding_300812_Final.pdf

increases in temperature could disrupt the life-cycles of fish and other aquatic creatures, which in turn could impact upon community composition[247], and subsequent effects on fishing rights.

3.138 Wetlands, rivers, peatlands and other natural features play a crucial role in managing flood risk. Hence, key pressures on these natural habitats including land use change and climate change) could indirectly increase flood risk.[248]

Air

Current state

3.139 The state of air quality is well-recorded as a number of air pollutants are continuously measured across a range of urban and rural locations throughout Scotland. In Scotland, there are 96 monitoring sites for ambient pollutants, with a few being run as part of a UK-wide monitoring network.

3.140 Air quality in Scotland has improved significantly since the 1950s, with dramatic reductions in some air pollutants such as sulphur dioxide due to tighter controls on emissions from industry, transport and domestic sources. Scotland is considered to have moderate levels of air quality. In most areas, the majority of ambient pollutants are present at levels well below limits set for protecting human health and the environment. It is estimated that air quality levels in Scotland will remain stable or continue to improve[249].

3.141 Poor air quality is of particular concern in urban areas. There are currently 38 Air Quality Management Areas (AQMAs) declared across 15 local authorities in Scotland, many of which are located in the densely populated local authority areas of Edinburgh City, Falkirk, North Lanarkshire, Aberdeen City, Glasgow City, Renfrewshire, South Lanarkshire and West Lothian[250].

3.142 The main air pollutants of current concern in Scotland are oxides of nitrogen (NO_x), particulate matter (PM_{10} and $PM_{2.5}$), sulphur dioxide (SO_2), non-methane volatile organic compounds (NMVOCs), ground level ozone (O_3) and ammonia (NH_3)[251].

Existing pressures

3.143 Key drivers behind air pollution include industrial activities and new development.

3.144 Scotland is not yet fully compliant with EU and Scottish legal requirements for air quality. The main reasons for non-compliance include trends such as an increase in the diesel fleet over the last decades, an increase in the total number of vehicles since 2004, limited integration of air quality policies and the transboundary nature of emission sources[252]. Other major drivers behind air pollution include emissions from industry, energy, agriculture, as well as household activities[253].

3.145 Air pollution remains an issue in many areas, particularly urban locations that experience high volumes of traffic[254]. Road transport and industrial emissions account for a large share of air pollutant emissions. In Scotland, just over one-sixth of Scotland's total PM_{10} emissions and over one-third of the total nitrogen oxide emissions are generated through transport movements, with the majority of these emissions attributed to road transport[255]. Congestion plays a major role in

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[247] Scottish Natural Heritage, 2011. *Trend Note – Climate change and rivers*. Available at: https://www.nature.scot/sites/default/files/B1043758%20-%20Natural%20Heritage%20Trends%20-%20Climate%20change%20and%20rivers%20-%20PDF.pdf

[248] Scottish Environment Protection Agency, 2015. *Strategic Environmental Assessment: Flood Risk Strategies, Environmental Report – consultation*. Available at: https://www.sepa.org.uk/media/163415/sea_environmental_report.pdf

[249] Scotland's Environment, 2014. *June 2014 State of the Environment Report*. Available at: https://www.environment.gov.scot/media/1170/state-of-environment-report-2014.pdf

[250] Air Quality in Scotland, 2018. *Air Quality Management Areas.* Available at: http://www.scottishairquality.co.uk/laqm/aqma

[251] Transport Scotland, 2017. *Scottish Transport Statistics No 35: 2016 Edition*. Available at: https://www.transport.gov.scot/media/33814/sct01171871341.pdf

[252] Scottish Government, 2015. *Cleaner Air for Scotland – The Road to a Healthier Future*. Available at: http://www.gov.scot/Resource/0048/00488493.pdf

[253] Scotland's Environment, 2014. *June 2014 State of the Environment Report*. Available at: https://www.environment.gov.scot/media/1170/state-of-environment-report-2014.pdf

[254] Scotland's Environment, 2014. *Get Informed – Air – Air Quality*. Available at: https://www.environment.gov.scot/get-informed/air/air-quality/

[255] Scottish Government, 2015. *Cleaner Air for Scotland*. Available at: http://www.gov.scot/Resource/0048/00488493.pdf

the impacts of traffic movements on local air quality, as longer journeys amount to higher emissions of air pollutants and greenhouse gas emissions. It is estimated that 11.7% of car driver journeys in 2016 were delayed due to traffic congestion – an increase from 9.7% in 2013, but below the 14.4% perceived in 2007[256].

3.146 Changes in economic activity and demographic changes could potentially influence the development of Scottish towns and cities, which in turn could affect traffic volumes and associated emissions of pollutants and greenhouse gases[257].

3.147 Although some types of air pollution can be locally damaging, they may have little effect on a national scale. A good example of this is hotspots of air pollution caused by traffic congestion. Conversely, other types of air pollution may result in damage at a national scale e.g. atmospheric deposition of acids and nutrients[258].

3.148 Within the UK, air pollution is implicated in approximately 40,000 early deaths per year[259]. Further, air pollution in the UK is believed to reduce life expectancy by 7-8 months[260]. In addition to negatively impacting population and human health, the effects of air pollution extend to soil, water, biodiversity, cultural heritage, climate, and other areas.

Climatic factors

Current state

3.149 Scotland's climate has undergone changes over the last 100 years. The UK Climate Change Projections (UKP09) indicates that the country's climate may continue to evolve.

3.150 Scotland has a temperate maritime climate characterised by generally cool summers, mild winters and rainfall spread throughout the year. However, there are regional differences due to factors such as latitude, altitude, prevailing winds and ocean currents. For instance, the south of Scotland is generally warmer than the north in summer, primarily due to differences of latitude[261].

3.151 Scotland's climate is affected by a range of global pressures including natural pressures such as the emissions of particles from volcanoes. However, global warming caused by increases in atmospheric greenhouse gases constitutes the overriding pressure on changes in climate over the last decades. The Intergovernmental Panel on Climate Change (IPPC)[262] reports that existing scientific evidence reveals with at least 95% certainty that human activity is the main cause of global warming over the last century. The main greenhouse gases causing rapid changes in climate are carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), ozone (O_3) and water vapour (H_2O)[263].

3.152 A direct result of global warming is its impacts on the environment and atmosphere; the world's atmosphere has warmed, the amounts of snow and ice have diminished and the sea level has risen. Globally, 13 out of 14 of the warmest years since records began in 1850 occurred in the 21st century. Scotland's climate has changed as well; changes in precipitation patterns have led to drier summers, wetter winters and more frequent heavy rainfall in the UK. According to the

[256] Scottish Government, 2017. *National Indicator: Traffic Congestion – Reduce traffic congestion*. Available at: http://www.gov.scot/About/Performance/scotPerforms/indicator/congestion
[257] Scottish Government, 2017. *Scotland's Draft Climate Change Bill – Strategic Environmental Assessment Scoping Report*. Available at: http://www.gov.scot/seag/seagDocs/SEA-01269/19390.pdf
[258] Scotland's Environment, 2014. *June 2014 State of the Environment Report*. Available at: https://www.environment.gov.scot/media/1170/state-of-environment-report-2014.pdf
[259] Royal College of Physicians, 2016. *Every breath we take: the lifelong impact of air pollution* [online]. Available at: https://www.rcplondon.ac.uk/projects/outputs/every-breath-we-take-lifelong-impact-air-pollution
[260] Air Quality in Scotland, 2018. *About air quality* [online]. Available at: http://www.scottishairquality.co.uk/air-quality/
[261] Scotland's Environment, 2014. *June 2014 State of the Environment Report*. Available at: https://www.environment.gov.scot/media/1170/state-of-environment-report-2014.pdf
[262] Intergovernmental Panel on Climate Change, 2013. *Climate Change 2013 – The Physical Science Basis*. Available at: http://www.ipcc.ch/report/ar5/wg1/
[263] Scotland's Environment, 2017. *Climate – Changing Climate*. Available at: https://www.environment.gov.scot/our-environment/climate/changing-climate/

UKP09[264], the temperatures across Scotland have increased by about 0.7-0.8°C since 1980. Furthermore, annual rainfall has increased by about 7% between 1961-1990 and 1981-2010[265].

3.153 According to recent statistics published by the Scottish Government[266], Scotland has seen a general decline in greenhouse gas emissions between 1994 and 2014, with a 39.5% reduction over this period compared to 1990 levels. Carbon dioxide (CO_2) accounted for 73.7% of Scotland's greenhouse emissions in 2014[267].

3.154 The main greenhouse gas contributors to these emissions included energy supply (29.7%), transport (27.7%), agriculture (22.8%), business and industrial processes (18.5%), residential (12.6%), with relatively minor totals attributed to waste management (4.8%) and other sectors[268].

3.155 In 2016, transport (including international aviation and shipping) was the largest source of net emissions (14.4 $MtCO_2e$) followed by agriculture and related land use (10.0 $MtCO_2e$), business and industrial processes (8.6 $MtCO_2e$), energy supply (7.2 $MtCO_2e$), residential use (6.3 $MtCO_2e$) and development (2.0 $MtCO_2e$). Forestry was the only aggregate sector in which there has been a net emissions sink (-12.7 $MtCO_2e$)[269].

3.156 Most oil and gas activity in Scottish waters takes place 'offshore' – beyond 12 nautical miles from the coastline. The oil and gas industry is also active in a small number of 'inshore' locations such as the Moray Firth.

3.157 Global increases in concentrations of carbon dioxide (CO_2) are primarily from transport, burning fossil fuels and changes in land use, whilst increases in methane (CH_4) and nitrous oxide (N_2) are mainly due to agriculture activities and landfills[270]. Greenhouse gas emissions from agricultural activities and landfills have a high warming potential which could significantly impact upon the state of the global climate. Methane (CH_4) is 25 times more potent in the atmosphere than CO_2 measured over 100 years, whilst nitrous oxide (N_2O) is 298 times more potent[271].

Existing pressures

3.158 Present scientific evidence shows that emissions of greenhouse gases into the atmosphere are a key driver behind climate change, which in turn could have adverse impacts on environmental quality and human well-being.

3.159 Climate projections indicate that the UK may experience milder, wetter winters and hotter, drier summers as a result of changes in climate. Increases in summer heatwaves, drought, reduced frost and increased incidence of extreme temperatures are also expected[272].

3.160 The UKCP09 provides the latest impacts of the likely scenarios for Scotland's projected climate, including the estimated impacts of emissions scenarios (low, medium, high). Under a medium emissions scenario, it is estimated that summer temperatures will increase by 3.5°C in eastern Scotland and west Scotland and 3°C in North Scotland by the 2080s, respectively[273]. Regional

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[264] UK Climate Projections, 2009. *Briefing report*. Available at: http://ukclimateprojections.metoffice.gov.uk/media.jsp?mediaid=87868&filetype=pdf

[265] Committee on Climate Change, 2017. *UK Climate Change Risk Assessment 2017 Evidence Report – Summary for Scotland*. Available at: https://www.theccc.org.uk/wp-content/uploads/2016/07/UK-CCRA-2017-Scotland-National-Summary.pdf

[266] Scottish Government, 2014. *An Official Statistics publication for Scotland – Scottish Greenhouse Gas Emissions 2014*. Available at: https://beta.gov.scot/publications/scottish-greenhouse-gas-emissions-2014/

[267] Natural Scotland, 2016. *Key Scottish Environment Statistics 2016*. Available at: http://www.gov.scot/Publications/2016/10/7565/334165

[268] Scottish Government, 2014. *An Official Statistics publication for Scotland – Scottish Greenhouse Gas Emissions 2014*. Available at: https://beta.gov.scot/publications/scottish-greenhouse-gas-emissions-2014/

[269] The Scottish Government, 2016. *Scottish Greenhouse Gas Emissions 2016*. Available at: https://beta.gov.scot/publications/scottish-greenhouse-gas-emissions-2016/documents/00536542.pdf?inline=true

[270] Scotland's Environment, 2014. *June 2014 State of the Environment Report*. Available at: https://www.environment.gov.scot/media/1170/state-of-environment-report-2014.pdf

[271] Scottish Government, 2017. *Section E. Further Information, Glossary and Acknowledgements*. Available at: http://www.gov.scot/Publications/2017/06/9986/342098

[272] Scotland's Environment, 2014. *June 2014 State of the Environment Report*. Available at: https://www.environment.gov.scot/media/1170/state-of-environment-report-2014.pdf

[273] Scotland's Environment, 2017. *Climate – Changing Climate*. Available at: https://www.environment.gov.scot/our-environment/climate/changing-climate/

winter precipitation totals are projected to change between -2% and +31% for the same scenario[274].

3.161 According to the UKCP09, major changes in sea levels are projected over the next few decades[275]. Sea level rise rates of up to 1.9 metres have been estimated for a plausible high emissions scenario, with the sea level in Edinburgh expected to increase by 20-40cm by 2090 compared to the 1990 baseline under a central scenario. Even under a low emission scenario, sea levels are projected to continue to rise by 2100. The majority (79%) of Scotland's 21,000 km coastline consists of hard and rocky material, making it more resistant to sea level rise. However, the remaining 21% is more vulnerable to coastal changes, particularly in relation to the proportion of infrastructure and assets that lie behind these coastlines[276]. The UK Climate Projections 2018 are due in November 2018, and will provide more up to date data on how the climate of the UK may change over the rest of the century.

3.162 Climate change is inextricably linked to pressures on other the SEA topic areas within Crown Estate Scotland's rural, urban, coastal and marine environments, such as water and air quality, as well as biodiversity and human health (refer to the previous and later topic sections). Climate change poses risks to Scotland's soils, wildlife, agriculture, aquaculture and natural carbon resources. For example, pests may become more prevalent as they are more likely to survive throughout warmer winters[277]. These trends could have considerable impacts on the agricultural sector in Scotland (including aquaculture), particularly in relation to securing farm viability for future generations[278].

3.163 Indirect negative impacts may also arise from mitigation and adaptation measures. For instance, individual renewable energy technologies may also have negative environmental impacts such as visual effects[279].

3.164 A recent progress report by the Committee on Climate Change[280] concluded that Scotland has made good progress in reducing its greenhouse gas emissions. Emissions on the net basis in 2016 were 45% below 1990 levels. Scotland is currently outperforming the interim target for at least a 42% reduction in net emissions by 2020. There were no significant emission reductions in most sectors outside electricity generation and waste over the five years to 2016.

Cultural and archaeological heritage

Current state

3.165 Scotland's historic environment includes thousands of historic buildings and monuments, which attracted more than 5 million people throughout 2017/18 financial year[281]. Many of these historic features are located within the Scottish Crown Estate's assets. It is estimated that over 5-10% of the historic environment in Scotland is designated, which amounts to more than 56,000 historic assets[282].

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[274] Committee on Climate Change, 2017. *UK Climate Change Risk Assessment 2017 Evidence Report – Summary for Scotland*. Available at: https://www.theccc.org.uk/wp-content/uploads/2016/07/UK-CCRA-2017-Scotland-National-Summary.pdf

[275] SEPA, undated. *The effects of climate change*. Available at: https://www.sepa.org.uk/environment/climate-change/the-effects-of-climate-change/

[276] Committee on Climate Change, 2017. *UK Climate Change Risk Assessment 2017 Evidence Report – Summary for Scotland*. Available at: https://www.theccc.org.uk/wp-content/uploads/2016/07/UK-CCRA-2017-Scotland-National-Summary.pdf

[277] Scotland's Environment, 2014. *June 2014 State of the Environment Report*. Available at: https://www.environment.gov.scot/media/1170/state-of-environment-report-2014.pdf

[278] The Scottish Government, 2017. *Farming For A Better Climate*. Available at: https://www.gov.scot/Topics/farmingrural/Agriculture/Environment/climatechange/Advice

[279] Carbon Trust, 2012. *Making sense of renewable energy technologies*. Available at: https://www.carbontrust.com/media/63632/ctg011-renewable-energy-technologies.pdf

[280] Committee on Climate Change, 2018. *Reducing emissions in Scotland – 2017 Progress Report to Parliament*. Available at: https://www.theccc.org.uk/wp-content/uploads/2018/09/Reducing-emissions-in-Scotland-2018-Progress-Report-to-Parliament.pdf

[281] Historic Environment Scotland, 2018. *Record-breaking visitor figures at Scotland's historic sites [online].* Available at: https://www.historicenvironment.scot/about-us/news/record-breaking-visitor-figures-at-scotland-s-historic-sites/

[282] Historic Environment Scotland, 2016. *Scotland's Historic Environment Audit 2016*. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=315b3f0d-631b-4a24-b12b-a6db00ba1696

3.166 According to the Historic Environment Scotland Portal[283], as at 1 May 2018, there are 47,483 Listed Buildings (of which 3,664 are Category A Listed Buildings, 23,625 are Category B Listed Buildings and 20,194 are Category C Listed Buildings), 40 Battlefields, 8,257 Scheduled Monuments, 384 Gardens and Designed Landscapes, 668 Conservation Areas and six World Heritage Sites at St. Kilda, Edinburgh Old Town and New Town, the Heart of Neolithic Orkney, New Lanark, the Antonine Wall and The Forth Bridge. Most (90-95%) of the historic environment is undesignated[284]. Currently, there are 2,386 buildings on the Buildings at Risk Register for Scotland[285]. Glenlivet Estate contains a number of Listed Buildings such as the Bridgend of Glenlivet (Old Bridge over River Livet) and the Glenlivet Distillery. The estate also contains a historic battlefield (Battle of Glenlivet). Fochabers Estate contains historic gardens and designed landscapes (Gordon Castle, Bog of Gight). In addition, there are a number of Listed Buildings along the coast at Lossiemouth.

3.167 There are eight Historic Marine Protected Areas (HMPAs) designated in Scotland's marine waters[286] (Outer Skerries, Drumbeg, Dartmouth, Iona I, Campania, Kinlochbervie, Duart Point and Mingary), four listed lighthouses, and seven Scheduled Monuments including the Wrecks of German High Fleet located in Scapa Flow[287], off the Orkney Islands, where several Crown Estate Scotland marine assets are also located[288]. There are also 14 designated vessels and six controlled sites under the *Protection of Military Remains Act 1986*[289]. All of the eight HMPAs in Scotland lie within the 12 nautical miles that Crown Estate Scotland manages. Therefore, Crown Estate Scotland might issue leases that may affect these HMPAs.

3.168 With regards to the underwater environment, including marine and freshwater environments, there is very little known about Scotland's underwater heritage compared to sites on land, and many sites await discovery. Underwater heritage can be visible on the water body or sea bed, or buried beneath sediment. Archaeological sites comprise of the remains of aircraft and sea vessels, as well as items dropped or lost overboard from boats. Additionally, sites can include the remains of structures that were originally built wholly or partly underwater, including fishtraps and crannogs, as well as the remains of terrestrial human activity that has since been inundated by water. There are also many coastal buildings that are listed because of their historic and/or architectural importance and which have portions of their structure permanently below water, such as piers and bridges.

Existing pressures

3.169 Key threats facing Scotland's historic assets are related to significant changes in the wider environment.

3.170 Key impacts on the historic environment relate to development and land use change, depending on the total area required for new infrastructure and other ancillary development. Indirect impacts include impacts on setting arising from new development, as well as changes to surface drainage patterns[290].

3.171 Climate change is one of the principal pressures that may affect Scotland's historic environment. Rising sea levels and increased storm events could adversely impact upon historic landscapes, structures and archaeology in the coastal zone. Intense rainfall events could cause flooding and erosion in historic settlements and archaeological sites. Further threats include water damage to masonry, which in turn could increase the risk of dampness, condensation, mould/fungal growth,

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[283] Historic Environment Scotland, undated. *Historic Environment Scotland Portal* [online]. Available at: http://portal.historicenvironment.scot/

[284] Historic Environment Scotland, 2016. *Scotland's Historic Environment Audit 2016*. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=315b3f0d-631b-4a24-b12b-a6db00ba1696

[285] Historic Environment Scotland, 2017. *Buildings at Risk – Register for Scotland.* Available at: https://www.buildingsatrisk.org.uk/

[286] Historic Environment Scotland, undated. *Historic Environment Scotland Portal* [online]. Available at: http://portal.historicenvironment.scot/

[287] Historic Environment Scotland, 2018. *Scapa Flow*. Available at: https://www.historicenvironment.scot/advice-and-support/listing-scheduling-and-designations/marine-heritage/scapa-flow/

[288] Crown Estate Scotland, 2018. *The assets map*. Available at: http://www.crownestatescotland.com/the-assets/map

[289] Marine Scotland, 2018. *NMPI* [online]. Available at: https://marinescotland.atkinsgeospatial.com/nmpi/default.aspx?layers=628

[290] Historic Environment Scotland, undated. *Assessing impacts on the historic environment*. Available at: https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/environmental-assessment/assessing-impacts-on-the-historic-environment/#potential-impacts_tab

algal growth and accelerated decay of building materials. Furthermore, changes in hydrology may alter vegetation patterns in the setting of designated sites, historic landscapes and archaeological remains. Internationally recognised sites such as part of the Heart of Neolithic Orkney, adjacent to the Crown Estate Scotland's coastal asset Brough Head[291], are considered to be at a high risk from issues relating to climate change[292].

Landscape and geodiversity

Current state

3.172 The Scottish Crown Estate's assets are present across Scotland, which contains a wide variety of landscapes. At present, Scotland's natural environment contains a number of designated landscapes, including National Scenic Areas (NSAs), national parks, regional parks, geoparks and country parks. Many of these cover Crown Estate Scotland's assets[293].

3.173 Scotland's 40 NSAs cover a total of approximately 13% of the country's total land area. NSAs are found across Scotland, with a significant concentration in the north and west, and are largely focused on upland and coastal landscapes, although they also include lochs, estuaries and river valleys. More than half contain a coastal and/or marine element.

3.174 There are two national parks in Scotland - Loch Lomond and The Trossachs National Park and the Cairngorms National Park – covering a combined 5,665 square kilometres. Crown Estate Scotland manages assets within both of these designations[294]. The protection of these areas is crucial to rural economic development and recreation, as well as the conservation of diverse natural habitats. There are also three Regional Parks – Clyde Muirshiel, Lomond Hills and Pentland Hills - and 40 Country Parks in Scotland[295].

3.175 Wild land covers large areas, predominantly in the north and west of Scotland[296]. These are large semi-natural landscapes that show minimal signs of human influence, including mountains and moorland, undeveloped coastline or peat bog.

3.176 There are three geoparks in Scotland - North West Highlands Geopark, Geopark Shetland and Lochaber Geopark. These geoparks cover about 10% of Scotland's land area. The geopark status recognises an area's outstanding geological heritage value, as well as its benefits to local people through tourism and education. As such, geoparks have the same level of status as World Heritage Sites and biosphere reserves[297].

3.177 There are nearly 900 Geological Conservation Review (GCR) sites across Scotland[298]. GCR sites contain outstanding geodiversity features including internationally and nationally important rock formations, minerals and fossils, landform features. Scotland's National Parks have also been recognised for their geodiversity value – 12.8% of the Cairngorms National Park and 1.5% of the Loch Lomond and The Trossachs National Park having GCR site status. Moreover, a considerable proportion of Scotland's National Nature Reserves (NNRs) contain sites of geological and geomorphological interest with around 37% of NNR areas in Scotland having GCR site status[299].

3.178 The management of the coast and foreshore is also important in relation to geodiversity, particularly for issues such as coastal erosion and flooding.

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[291] Crown Estate Scotland, 2018. *The assets map*. Available at: http://www.crownestatescotland.com/the-assets/map

[292] Historic Scotland, 2012. *A Climate Change Action Plan 2012-2017*. Available at: https://www.historicenvironment.scot/media/2611/climate-change-plan-2012.pdf

[293] Scottish Government, 2007. *Map of Natural Heritage Designations in Scotland*. Available at: http://www.gov.scot/Topics/Environment/Countryside/Heritage/Systems/designation

[294] Crown Estate Scotland, 2018. *The assets map*. Available at: http://www.crownestatescotland.com/the-assets/map

[295] Scottish Natural Heritage, undated. *Sitelink* [online]. Available at: http://gateway.snh.gov.uk/sitelink/index.jsp [Accessed 01 May 2018]

[296] Scottish Natural Heritage, 2018. *Landscape policy: wild land*. Available at: https://www.nature.scot/professional-advice/landscape-change/landscape-policy-and-guidance/landscape-policy-wild-land

[297] NWHG, 2017. *North West Highlands UNESCO Global Geopark Business Plan 2017-18*. Available at: http://www.nwhgeopark.com/wp-content/uploads/ThePlan.pdf

[298] Scottish Natural Heritage, undated. *Geological Conservation Review sites* [online]. Available at: https://www.nature.scot/landforms-and-geology/protecting-our-geodiversity/places-and-plans-safeguard-geodiversity/geological-conservation-review-sites

[299] Gordon, J.E. & Barron, H.F. for Scottish Natural Heritage, 2011. *Scotland's geodiversity: Development of the basis for a national framework.* Available at: http://nora.nerc.ac.uk/id/eprint/19222/1/National_Geodiversity_Framewrok_417.pdf

3.179 Between 1994 and 1999, SNH undertook a National Landscape Character Assessment[300] in collaboration with local authorities and other parties. The Assessment identified 372 'landscape character types' in total, which were then categorised into 18 'natural heritage settings' on the basis of their dominant land cover and the relevant forms of socio-economic activities occurring within that landscape character type. The 18 natural heritage settings include urban greenspace; lowland grassland; low arable land; upland grassland; crofting; lowland broadleaved; upland broadleaved; coniferous plantation; peatland; native pinewoods; heather moorland; montane; running waters; and, standing waters. Due to the complexity of certain landscapes it is difficult to categorise them within any of the landscape character types[301].

3.180 Scotland's landscapes provide numerous intangible benefits, including enjoyment and tranquillity[302]. As such, Scotland's landscapes play an important role in enhancing visitor experience and, thus, generating socio-economic benefits derived from the tourism industry. Further tangible benefits are derived from providing opportunities for recreation. For instance, rivers are important recreational resources, providing a place for a wide variety of activities such as fishing or swimming[303].

Existing pressures

3.181 Competing land uses remain a principal threat to managing landscape change. Key drivers behind land-use change include climate change, changing economic base and economic efficiency.

3.182 The coast and foreshore are under many pressures particularly from climate change, rising sea level and coastal erosion. These areas are also very important recreational resources, which is dependent on the landscape and environmental quality of these areas.

3.183 New development is putting increased pressure on Scotland's landscapes and agricultural land. Between 1947 and 1988, the total area of built land increased by an estimated 46% and the land used for infrastructure increased by around 22%. Most of these changes were at the expense of agricultural land, and the remainder was largely on upland or woodland habitats[304]. Over that same period, further land-use changes took place. Rough grassland decreased by 10%, heather moorland decreased by 23% and semi-natural features reduced by 17%. Conversely, forestry plantations increased by 613% over that period[305].

3.184 The seascape surrounding terrestrial Scotland is also impacted by the development of marine aquaculture[306]. Aquaculture development is predominantly located along the western and northern coasts of mainland Scotland, as well as around many of the offshore islands. The continuing development of marine aquaculture has the potential to impact coastal character and visual amenity, if poorly sited or designed. In addition to aquaculture development, energy generation development, including on and off-shore wind farms, can impact landscape and seascape if poorly sited and designed[307].

3.185 Climate change will have implications for Scottish landscapes and the social, economic and environmental benefits they provide. Landscape change will result from the direct impacts of a changing climate as well as from indirect impacts of human attempts to slow climate change (mitigation) and the way that we respond to a changing climate (adaptation). Overall, mitigation

[300] Scottish Natural Heritage, 2017. *Landscape Character Assessment*. Available at: https://www.nature.scot/professional-advice/landscape-change/landscape-character-assessment
[301] Scottish Natural Heritage, 2000. *Landscape Character Vignettes*. Available at: http://www.snh.org.uk/pdfs/publications/commissioned_reports/f99nb07.pdf
[302] Scottish Natural Heritage, 2017. *Why our landscapes are important*. Available at: https://www.nature.scot/landscapes-habitats-and-ecosystems/about-scotlands-landscapes/why-our-landscapes-are-important
[303] Scotland's Environment, 2014. *Rivers and canals*. Available at: https://www.environment.gov.scot/media/1179/water-rivers-and-canals.pdf
[304] Scottish Natural Heritage, 2003. *Trend note – Land Cover Change 1940s – 1980s: Built land*. Available at: https://www.nature.scot/sites/default/files/2017-09/B1009926%20-%20Trend%20note%20-%20Land%20Cover%20Change%201940s%20%E2%80%93%201980s%20-%20Built%20land.pdf
[305] Scottish Natural Heritage, 2009. *Trend note – A summary of land cover change in Scotland from 1947 – 1988*. Available at: https://www.nature.scot/sites/default/files/B1009930%20-%20Trend%20note%20-%20Land%20Cover%20Change%201947%20to%201988%20summary%20-%20pdf.pdf
[306] Scottish Natural Heritage, 2018. *Landscape and aquaculture*. Available at: https://www.nature.scot/professional-advice/landscape-change/landscape-policy-and-guidance/landscape-planning-and-development/landscape-and-aquaculture
[307] SNH, 2018. *Landscape and energy*. Available at: https://www.nature.scot/professional-advice/landscape-change/landscape-policy-and-guidance/landscape-planning-and-development/landscape-and-energy

and adaptation measures are likely to have a more significant influence on landscape character than the direct effects of climate change. The combined influence of these direct, mitigation and adaptation effects are likely to be greatest in lowland and coastal landscapes reflecting the dominance of land management, settlement and land use in shaping landscape character, and the likely impacts of changing sea levels.[308]

Material assets

Current state

3.186 Scotland is a net exporter of electricity, and therefore energy generation and distribution is an important sector in the country. In 2015, renewables were the single largest source of electricity generated in Scotland (42%), followed by nuclear generation (35%) and fossil fuel generation (22%)[309].

3.187 As mentioned previously (see the water section above), 4% of residential properties in Scotland are exposed to flooding and 8% of data zones, mainly located within large cities, have high or acute vulnerability to flood risk[310]. Coastal and fluvial flooding affects more properties in Scotland than surface flooding, and affects the highest proportion of properties in the Orkney Islands, Perth and Kinross, Moray and a number of local authorities located in the Midland Valley[311].

3.188 Additionally, as mentioned previously (see the water section above), significant improvements have been observed in Scotland's waterways in recent decades[312]. Nearly half of all rivers are of good to high status[313], nearly 80% of groundwater bodies are in good condition[314] and 80% of bathing waters meet the 'sufficient' or 'better' classification required[315].

3.189 The *2016 National Transport Strategy for Scotland*[316] highlighted that coastal shipping previously had the greatest share in freight movements in Scotland. However, there have been declines in the freight moved by water since 2008 and since 2011 road freight has had the greatest share in freight movements in the country. In 2012, road freight accounted for 42% of total tonne kilometres whilst shipping freight accounted for 30%. Additionally, the amount of freight moved by pipeline has remained similar, accounting for just under one fifth of total freight movement.

3.190 Scotland is rich in various minerals such as sandstone, rock and slate used for building materials and peat is used locally for fuel[317]. Mining and quarrying of such resources is within the top ten sectors in terms of international exports, exporting over £1 billion worth of exports in 2013[318]. Crown Estate Scotland manages the rights to naturally occurring gold and silver, also known as Mines Royal, across most of Scotland[319].

3.191 Peatland soils make up a significant portion of Scotland's land surface. Blanket bog is the most widespread and semi-natural peatland type in Scotland – extending to over 1.5 million hectares,

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[308] Land Use Consultants, 2011. *An assessment of the impacts of climate change on Scottish landscapes and their contribution to quality of life: Phase 1 - Final report. Scottish Natural Heritage Commissioned Report No. 488.* Available at: https://www.nature.scot/sites/default/files/2017-08/Publication%202012%20-%20SNH%20Commissioned%20Report%20488%20-%20An%20assessment%20of%20the%20impacts%20of%20climate%20change%20on%20Scottish%20landscapes%20and%20their%20contribution%20to%20quality%20of%20life%20-%20Final%20report%20-%20reduced%20size.pdf

[309] Scottish Government, 2016. *High Level Summary of Statistics Trend*. Available at: http://www.gov.scot/Topics/Statistics/Browse/Business/TrendElectricity

[310] Scottish Government, 2015. *Mapping Flood Disadvantage in Scotland 2015*. Available at: http://www.gov.scot/Resource/0049/00490788.pdf

[311] Scottish Government, 2015. *Mapping Flood Disadvantage in Scotland 2015*. Available at: http://www.gov.scot/Resource/0049/00490788.pdf

[312] Scotland's Environment, 2014. *Rivers and Canals*. Available at: https://www.environment.gov.scot/media/1179/water-rivers-and-canals.pdf

[313] Scotland's Environment, 2014. *Rivers and Canals*. Available at: https://www.environment.gov.scot/media/1179/water-rivers-and-canals.pdf

[314] Scotland's Environment, 2018. *Scotland's Freshwater*. Available at: www.environment.gov.scot

[315] Scottish Environment Protection Agency, 2016. *Scottish Bathing Waters*. Available at: http://apps.sepa.org.uk/bathingwaters/

[316] Transport Scotland, 2016. *National Transport Strategy*. Available at: https://www.transport.gov.scot/publication/national-transport-strategy-nts/

[317] Scottish Natural Heritage, 2018. *Geodiversity and natural resources*. Available at: https://www.nature.scot/landforms-and-geology/importance-geodiversity/geodiversity-and-natural-resources

[318] Scottish Government, 2015. *Scotland's Economic Strategy*. Available at: https://beta.gov.scot/publications/scotlands-economic-strategy/

[319] Crown Estate Scotland, 2018. *Minerals*. Available at: http://www.crownestatescotland.com/the-assets/rural/asset/minerals

which equals to about 20% of Scotland's land area of 7.8 million hectares[320]. Peat is a major mineral resource in Scotland, and is extracted for a number of reasons: compost production for horticulture, fuel and for use during 'kilning' in the whiskey industry. Information on the extent of peat extraction[321] shows that approximately 5.5% of Scotland's blanket bogs show evidence of peat cutting.

3.192 Features such as wetlands, floodplains and woodlands can provide 'natural flood management' by slowing the flow of water and storing water within catchments to reduce flood risk downstream[322]. Floodplains are areas that flood naturally at times of high water level[323]. Floodplains naturally store floodwaters, thereby attenuating the flood waters[324]. Wetlands, including peatland and saltmarsh, are saturated areas in which the water table is either at or near the ground surface and can help to reduce flooding by slowing and storing flood water and then releasing this during drier periods[325]. Additionally, wetlands can improve water quality by retaining sediments, and excess nutrients and pollutants[326]. Woodlands, particularly floodplain woodlands, can help to reduce local flooding by improving the infiltration rates of woodland soils and 'sponging up' water through evapotranspiration, reducing runoff and additionally reducing diffuse pollution by intercepting pollutant laden runoff[327].

3.193 Approximately 75% of the land area in Scotland is used for agriculture, including arable farming, hill farming, crofting, and lowland livestock and dairy farming[328]. 50% of Scotland's agriculture is dedicated to upland sheep farming and mixed sheep and beef cattle farming[329]. Scotland was previously widely covered by woodland, however heavy exploitation for timber, charcoal and tanbark, as well as land use changes, led to the decline of woodland and by 1990 woodland covered 5% of the country[330]. Large scale afforestation has increased woodland coverage across Scotland to 17% by the early 21st Century, providing more woodland benefits such as[331]:

- richer and more diverse habitats;
- enhanced landscapes;
- carbon sequestration and storage
- timber, wood fuel and other woodland products; and
- ecosystem services – such as clean water, mitigation of diffuse agricultural pollution, and reduced flood risk.
- secure jobs and a stronger economy – both rural and national

3.194 Marine habitats and foreshores also provide a wide range of benefits such as[332]:

- supporting ecosystem function and providing diverse habitats;
- seafood harvest;

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[320] Scottish Government, 2010. *Executive Summary: Management of Carbon-Rich Soils – Overview and Discussion Paper*. Available at: http://www.gov.scot/Resource/Doc/921/0109512.pdf

[321] The Scottish Government, 2012. *SPICe Briefing – Peatlands and Climate Change*. Available at: http://www.parliament.scot/ResearchBriefingsAndFactsheets/S4/SB_12-28.pdf

[322] The Scottish Natural Heritage, 2018. *Flood management*. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-freshwater/flood-management

[323] The Scottish Government, 2010. *What is a river floodplain*? Available at: http://www.gov.scot/Topics/farmingrural/SRDP/RuralPriorities/Options/ManagementofFloodPlain/Whatisariverfloodplain

[324] Scottish Environment Protection Agency, 2015. *Natural Flood Management Handbook*. Available at: https://www.sepa.org.uk/media/163560/sepa-natural-flood-management-handbook1.pd f

[325] Ibid.

[326] Ibid.

[327] Ibid.

[328] Scottish Natural Heritage, 2018. *Farming and crofting.* Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-land/farming-and-crofting

[329] Scottish Natural Heritage, 2018. *Hill farming*. https://www.nature.scot/professional-advice/land-and-sea-management/managing-land/farming-and-crofting/types-farming/hill-farming

[330] Scottish Natural Heritage, 2018. *History of Scotland's woodlands*. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-land/forests-and-woodlands/history-scotlands-woodlands

[331] Scottish Natural Heritage, 2018. *Woodland expansion across Scotland*. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-land/forests-and-woodlands/woodland-expansion-across-scotland

[332] Joint Nature Conservation Committee, 2016. *Exploring the Components and Processes of Marine Ecosystems Critical to Ecosystem Service Generation*. Available at:

- provision of kelp for use in alginate, food, biofuels, medicine and other chemicals;
- ocean water mass mixing and nutrient recycling;
- bioremediation of hydrocarbons in the marine environment by microorganisms;
- recreational opportunities e.g. good diving experiences;
- natural coastal defences; and
- carbon sequestration.

Existing pressures

3.195 Good electricity grid connection is essential to the social and economic wellbeing of communities in every part of Scotland. Scotland's grid system needs significant reinforcement to ensure that Scotland delivers its energy potential, maintains security in our energy supply to homes, communities and businesses, and meets our Renewable Energy generation targets and Climate Change commitments. Scotland faces significant challenges in grid capacity constraints and infrastructure development requirements.

3.196 The laying of cables and pipelines for energy generation and distribution can threaten the cold-water coral reefs that are priority marine features in Scotland's seas[333]. There are multiple on and off-shore windfarms present across Scotland, however wind turbines and their associated transmission infrastructure can impact wildlife including birds, marine mammals, seabed ecology, fish, landscapes and seascapes and visual amenity[334]. Additionally, Scotland is developing new wave and tidal technologies, however the known potential impacts of these technologies on wildlife is limited[335]. Therefore, such technology is sited in locations away from locations of known importance for marine species[336].

3.197 As also covered in relation to 'water', changes in climate are having significant effects on Scotland's rivers and streams, including an increase of almost 70% in winter precipitation in North Scotland and 20% across the whole of Scotland since 1961, and an increase in surface water temperatures of 1°C to 3°C since 1961[337]. Such rainfall increases are likely to result in disruptions to the waterlogging of soil, thereby influencing the timing of peak flows, seasonal river flow pattern and flow velocity, and such temperature increases could impact upon aquatic ecosystems[338]. Additionally, climate change is causing rising sea levels that will impact coastal flooding across Scotland[339].

3.198 As discussed in relation to 'water', many key pressures on water quality originate from human activity, including through loss of natural habitat to development, climate change, peatland erosion, habitat fragmentation and pollution[340]. Climate change could potentially extend growing seasons, increasing agricultural pollution[341], limit the capacity of aquatic environments to safely absorb and decompose contaminants[342], and contribute to ocean acidification[343].

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[333] Scottish Natural Heritage, 2018. *Cold-water coral*. Available at: https://www.nature.scot/landscapes-habitats-and-ecosystems/habitat-types/coast-and-seas/marine-habitats/cold-water-coral

[334] Scottish Natural Heritage, 2018. *Offshore wind energy*. Available at: https://www.nature.scot/professional-advice/planning-and-development/renewable-energy-development/types-renewable-technologies/marine-renewables/offshore-wind-energy

[335] Scottish Natural Heritage, 2018. *Wave and tidal energy*. Available at: https://www.nature.scot/professional-advice/planning-and-development/renewable-energy-development/types-renewable-technologies/marine-renewables/wave-and-tidal-energy

[336] Ibid.

[337] SNH, 2011. *Trend Note – Climate change and rivers*. Available at: https://www.nature.scot/sites/default/files/B1043758%20-%20Natural%20Heritage%20Trends%20-%20Climate%20change%20and%20rivers%20-%20PDF.pdf

[338] Ibid.

[339] Scottish Natural Heritage, 2018. *Marine impacts*. Available at: https://www.nature.scot/climate-change/climate-change-impacts-scotland/marine-impacts

[340] Scottish Environment Protection Agency, 2015. *Strategic Environmental Assessment: Flood Risk Strategies, Environmental Report – consultation*. Available at: https://www.sepa.org.uk/media/163415/sea_environmental_report.pdf

[341] DPMAG (undated). *Rural diffuse pollution plan for Scotland*. Available at: https://www.sepa.org.uk/media/37557/rural-diffuse-pollution-plan-scotland.pdf

[342] European Commission, 2014. *Study on Soil and water in a changing environment*. Available at: http://ec.europa.eu/environment/soil/pdf/Soil%20and%20Water.pdf

[343] Scottish Natural Heritage, 2018. *Marine impacts*. Available at: https://www.nature.scot/climate-change/climate-change-impacts-scotland/marine-impacts

3.199 Transport accounted for 27% of Scotland's greenhouse gas emissions in 2015[344]. Of this, road transport accounted for 73% and water vessels accounted for 11% of total transport greenhouse gas emissions[345]. In addition to emitting greenhouse gas emissions, which contribute to climate change, transport is also a significant contributor of pollutants that impact air quality and subsequently health, such as nitrogen oxides and particulate matter[346].

3.200 Maritime transport links are of significant importance in Scotland, recognised through the completion of the Loch Ryan Port project, which was identified as a project of national significance in the second National Planning Framework[347]. Total shipping emissions have been generally decreasing from their all-time peak in 1998, and domestic emissions alone have also been steadily decreasing[348]. International shipping emissions have been significantly more variable and this could be due to variable economic activity, which drives demand for imports and exports[349]. In addition to greenhouse gas emissions and air pollution, other environmental issues caused by shipping include the release of oil and chemicals through spills and operational discharges, the transfer of invasive species through ballast water and on ship hulls, the dumping of waste, physical damage through dropping anchors and the striking of marine animals, and the disturbance caused by noise and waves[350].

3.201 Mineral extraction within Scotland places pressures on the surrounding landscape, including by quarrying, and spoil heaps are a legacy of mining[351]. Panning for gold can cause damage to aquatic environments[352]. This includes via the use of power machinery, disturbing spawning fish, creating hollows in river bets, digging into river banks, impacting freshwater pearl mussels and via the use of power machinery[353].

3.202 Peat is another raw material that is extracted in Scotland[354]. In 2014, 500,000 m^3 of peat was commercially extracted in Scotland, 94% of which was used for horticultural usage and the remainder for other uses such as fuel, animal bedding and whisky production[355]. Such extraction can cause large effects on the environment, including emitting carbon into the atmosphere. Peat extraction in Scotland emits around 100,000 tonnes of CO_2e each year, contributing to climate change and its associated effects[356]. In addition, peat is a carbon sink, providing carbon sequestration, and therefore the loss of peatlands themselves removes the function they play in carbon sequestration from the atmosphere.

3.203 Land management practices, particularly agricultural land management, can affect the ability of land to slow down and store runoff[357]. Agricultural practices that result in a higher risk of soil erosion and compaction, as well as leave less over-winter vegetation cover, can reduce the potential for infiltration of surface runoff and associated pollutants, contributing to both flooding and pollution[358]. SEPA's Natural Flood Management Handbook[359] highlights different techniques

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344 Transport Scotland, 2017. *Scottish Transport Statistics, No 36, 2017 Edition – Chapter 13: Environment and Emissions*. Available at: https://www.transport.gov.scot/publication/scottish-transport-statistics-no-36-2017-edition/chapter-13-environment-and-emissions/

345 Ibid.

346 Ibid.

347 Transport Scotland, 2016. *National Transport Strategy*. Available at: https://www.transport.gov.scot/publication/national-transport-strategy-nts/

348 Transport Scotland, 2017. *Carbon Account for Volume 9, 2017 Edition*. Available at: https://www.transport.gov.scot/publication/carbon-account-for-transport-volume-9-2017/

349 Ibid.

350 WWF, 2018. *Marine problems: Shipping*. Available at: http://wwf.panda.org/about_our_earth/blue_planet/problems/shipping/

351 Scottish Natural Heritage, 2018. *Geodiversity and natural resource*. Available at: https://www.nature.scot/landforms-and-geology/importance-geodiversity/geodiversity-and-natural-resources

352 Crown Estate Scotland, 2017. *Policy statement: gold panning*. Available at: http://www.crownestatescotland.com/the-assets/rural/asset/minerals

353 Scottish Environment Protection Agency, 2017. *SEPA's position on gold panning*. Available at: https://www.sepa.org.uk/regulations/water/guidance/

354 Scottish Natural Heritage, 2018. *Geodiversity and natural resource*. Available at: https://www.nature.scot/landforms-and-geology/importance-geodiversity/geodiversity-and-natural-resources

355 IUCN Peatland Programme, 2017. *Horticulture and peatlands: A discussion briefing for Scotland's National Peatland Plan Steering Group*. Available at: http://www.iucn-uk-peatlandprogramme.org/resources/peat-and-horticulture

356 Ibid.

357 Scottish Environment Protection Agency, 2015. *Natural Flood Management Handbook*. Available at: https://www.sepa.org.uk/media/163560/sepa-natural-flood-management-handbook1.pdf

358 Ibid.

359 Ibid.

for enhancing natural flood management within catchments, including woodland creation, land and soil management practices, agricultural and upland drainage modifications, non-floodplain wetland creation, overland sediment trap creation, and river and floodplain restoration, as well as coastal natural flood management measures such as managed realignment, saltmarsh, mudflat, shingle and sand dune restoration, and the recharging of beach and intertidal areas.

3.204 Climate change may cause tree species in woodland to move further northwards or uphill, altering species distributions and potentially causing slow-moving species to die out[360]. Additionally, warmer temperatures in Scotland, as a result of climate change, may encourage the spread of pests and pathogens more associated with the south of England, and already climate change is the likely cause of the sudden increase in the rate of red band needle blight since the 1990s, which causes defoliation, resulting in poor growth and death of trees[361]. Moreover, changing temperatures may alter the seasonality of trees, which could have knock on effects for species that rely on them, such as butterflies, insects and birds[362].

3.205 Trees store carbon in their timber and roots, removing carbon dioxide from the atmosphere, and therefore the large scale afforestation that has increased woodland coverage across Scotland to 17% by the early 21st Century, and is planned to increase coverage to 21% by 2032[363], is contributing to increased carbon storage[364]. However, inappropriate woodland planting on peatland can cause the drying out of peat and the release of more stored carbon into the atmosphere than which would be stored by the woodland[365].

3.206 Overgrazing of woodlands by deer and domestic livestock can also cause loss of species in the ground flora and create a simplified woodland structure without shrubs or climbing species[366]. However, under grazing of woodland can cause competitive ground species to grow rapidly and prevent tree seeds from germinating, and eventually causing a decline in the woodland area[367].

3.207 Invasive plants and wildlife introduced by human activity, such as rhododendron and grey squirrel, can outcompete and spread disease that causes the decline of native species[368]. Moreover, the fragmentation or isolation of woodland due to development can cause the loss of species and decline in biodiversity due to lack of habitat networks[369]. Lack of management across any of Scotland's woodlands can therefore impact them and their ecosystems[370].

3.208 Farming in Scotland includes arable farming, hill farming, crofting, and lowland livestock and dairy farming[371]. Each type of farming has different impacts upon the environment, such as hill farming benefitting biodiversity and dairy and meat production linking to lower biodiversity and higher pollution risks[372].

3.209 Changes in temperature as a result of climate change are already affecting farming business and will alter the patterns of agricultural land uses over time, placing farm wildlife and valued landscapes at risk[373]. Additionally, agriculture contributes to climate change via the emission of greenhouse gasses from livestock, animal wastes and fertilisers[374].

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[360] Scottish Natural Heritage, 2018. *Woodland and climate change*. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-land/forests-and-woodlands/woodland-and-climate-change
[361] Ibid.
[362] Ibid.
[363] Scottish Natural Heritage, 2018. *Woodland expansion across Scotland*. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-land/forests-and-woodlands/woodland-expansion-across-scotland
[364] Scottish Natural Heritage, 2018. *Woodland and climate change*. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-land/forests-and-woodlands/woodland-and-climate-change
[365] Ibid.
[366] Scottish Natural Heritage, 2018. *Woodland condition.* Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-land/forests-and-woodlands/woodland-condition
[367] Ibid.
[368] Ibid.
[369] Ibid.
[370] Ibid.
[371] Scottish Natural Heritage, 2018. *Farming and crofting.* Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-land/farming-and-crofting `
[372] Ibid.
[373] Scottish Natural Heritage, 2018. *Farming and climate change*. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-land/farming-and-crofting/farming-and-climate-change
[374] Ibid.

Key environmental issues and likely evolution without the strategy

3.210 Analysis of the baseline information has enabled a number of key environmental issues to be identified. Identification of the key environmental issues and consideration of how these issues might develop over time if the Crown Estate Scotland Draft Investment Strategy is not prepared, help to meet the requirements of Schedule 3 of the 2005 Act to provide information on:

- *(2) The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.*
- *(4) Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directives 79/409/EEC on the conservation of wild birds and Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna (as last amended by Council Directive 97/62/EC).*

3.211 **Table 4.1** presents the key environmental issues and likely evolution of the environment without the Crown Estate Scotland Draft Investment Strategy.

Table 3.1 Key Environmental Issues and likely evolution of the environment without the Crown Estate Scotland Draft Investment Strategy

Relevant aspects of the current state of the environment	Likely evolution of the issue without the Crown Estate Scotland Draft Investment Strategy
Biodiversity, flora and fauna	
The biodiversity across the land and marine environment is important at an international and national level but these environments are also under a number of pressures including land use intensification and modification, pollution, invasive species and disease, climate change and marine exploitation.	The Scottish Crown Estate incorporates the rural, coastal and marine environments in relation to forestry, agriculture, aquaculture and marine renewables. The Crown Estate Scotland Draft Investment Strategy seeks to improve the environmental impacts derived from the assets. Without the Draft Investment Strategy, Crown Estate Scotland decision making for capital investment would be less clearly influenced by these considerations with potentially poorer outcomes for biodiversity, flora and fauna , although within the requirement of 'good management'.
Climate change, energy consumption and energy efficiency	
Scotland has seen a general decline in greenhouse gas emissions however energy is one of the main contributors to greenhouse gas emissions. Crown Estate Scotland operates in the area of marine renewables and carbon capture and storage. Likely climate changes include hotter drier summers and warmer wetter winters with implications for management of property, agriculture and forestry. This includes issues such as flood management and water availability. In addition, sea level rise is likely to affect coastal assets, such as Rhu Marina.	The Crown Estate Scotland Draft Investment Strategy supports the facilitation and drives the development of marine renewables and carbon capture and storage. In the absence of the Investment Strategy, the development of offshore renewable energy sector and carbon capture and storage is likely to progress, albeit at a potentially slower rate than with the Draft Investment Strategy in place. The Draft Investment Strategy supports working with tenants to identify improvement works and investment in the rural portfolio and maintaining rural infrastructure, and also supports farm diversification. In the absence of the Investment Strategy the management of these assets would continue within the requirement of 'good management' but may provide less opportunity for specific capital investment in response to pressures which arise from climate change.
Water resources and flooding	
Key pressures on water quality originate from human activity and climate change is predicted to impact on the seasonality, frequency and intensity of precipitation with flooding impacts which may affect the viability of rural assets for agricultural and forestry use.	Rural activities which may be influenced by the Draft Investment Strategy in relation to water and flooding include management of the rural estate such as flood defence and bridge management. The Investment Strategy supports capital investment in rural property which includes infrastructure which may be affected by

Relevant aspects of the current state of the environment	Likely evolution of the issue without the Crown Estate Scotland Draft Investment Strategy
	issues such as water quality and flooding. In the absence of the Draft Investment Strategy the management of rural assets would continue within the requirement of 'good management' however there may be fewer enhancements of these assets to support flooding and water quality resilience.
Air quality	
Scotland is considered to have moderate levels of air quality. In most areas, the majority of ambient pollutants are present at levels well below limits set for protecting human health and the environment. It is estimated that air quality levels in Scotland will remain stable or continue to improve.	The Draft Investment Strategy influences operations predominantly in the rural, coastal and marine environment and therefore has more limited impact in urban areas where air quality is poorer. In the absence of the Draft Investment Strategy the development of marine renewables and carbon capture and storage would continue within the framework of higher level policy and strategy documents with limited change on the rate or scale of progress and associated impacts on air quality.
Landscape and geodiversity	
Competing land uses remain a principal threat to managing landscape change including impacts from new development. Climate change will also impact on Scotland's landscapes as a result of both direct and indirect impacts (from adaptation).	The Draft Investment Strategy influences landscape in relation to management of property, forestry, agriculture and the marine environment. In the absence of the Investment Strategy landscape change would continue to take place, however the rate of change within the marine environment would potentially proceed at a slightly slower rate without the facilitation of investment in offshore energy development.
Cultural and archaeological heritage	
Scotland's historic environment includes thousands of historic buildings and monuments. Key impacts on the historic environment include development and land use change, alongside climate change. Crown Estate Scotland's assets include many historic environment features both within the rural, urban and marine environment.	The Draft Investment Strategy supports investment in rural property and opportunities for further investment in the urban sector. In the absence of the Draft Investment Strategy the management of existing assets would be carried out in line with Crown Estate Scotland requirement for 'good management' of its assets and therefore the level of management of historic buildings would be unlikely to significantly change.
Population and human health	
There is general trend for population growth in Scotland as a whole and an increasing trend in the proportion of older people in Scotland. The crucial role of environmental quality in maintaining human health is well-documented, particularly in relation to protecting water quality and air quality. Levels of air pollution are relatively stable and there has been steady improvement in the water quality of Scotland's designated bathing sites. The quality of individual living environments also impacts on health. Levels of physical activity have an important bearing on many aspects of health and physical activity levels in Scotland and the proportion of adults who regularly meet the guidelines for Moderate or Vigorous Physical Activity remains relatively stable.	The Draft Investment Strategy supports capital investment in rural property, providing higher quality residential assets with associated benefits for human health. The Draft Investment Strategy also supports compliance with health and safety regulations. In the absence of the Draft Investment Strategy Crown Estate Scotland still has a duty to ensure 'good management' of the Crown Estate Scotland assets and therefore impacts on population and human health would be unlikely to be significantly different to the situation with the Draft Investment Strategy.
Soil	
The principal threats to soil functions are erosion and soil sealing, landslides, changes in soil biodiversity, loss of organic matter and land-use changes. These affect the functionality of the soil as a growth medium and impact	The Draft Investment Strategy supports investment in forestry and agriculture including farm diversification, and the release of capital from disposal of assets including land and property.

Relevant aspects of the current state of the environment	Likely evolution of the issue without the Crown Estate Scotland Draft Investment Strategy
on climate change.	In the absence of the Draft Investment Strategy forestry and agricultural activities would continue to impact on the soil resource and the disposal of land and property would also continue in line with the Corporate Plan.
Material assets	
Agricultural and forestry land play an important role in supporting rural development and in delivering wider environmental benefits through activities such as flood attenuation and climate regulation. Land management practices can affect the ability of land to perform these functions. Foreshores, seabeds and other marine habitats play an important role in delivering wider environmental benefits such as supporting ecosystem function and providing recreational opportunities. In terms of the energy grid network, Scotland faces significant challenges in grid capacity constraints and infrastructure development requirements. These affect residential and commercial property, as well as ports and harbours.	In the absence of the Draft Investment Strategy, the management of material assets which relate to the Crown Estate Scotland portfolios would be similar as the Draft Investment Strategy does not strongly influence the management of these assets. At an organisation level Crown Estate Scotland is seeking to establish an integrated framework (the 'Value Project' approach) which incorporates consideration of wider social, economic and environmental considerations into decision making.

4 Strategic Environmental Assessment findings

4.1 This section of the environmental report sets out the assessment findings of the alternatives and the Draft Investment Strategy. The findings are presented by SEA topic area.

4.2 The tables presented in Appendix 4 illustrate how each of the four Crown Estate Scotland portfolios relate to the different investment objectives. Not all investment objectives are relevant across each portfolio. The detailed assessment tables are presented in Appendix 5.

Biodiversity, flora and fauna

Rural

4.3 Investment objective 1 seeks to "maintain and enhance the rural […] assets through investment in infrastructure development and fixed equipment". This relates to forest restocking, meeting investment obligations for fixed equipment on agricultural holdings and raising the standard of residential assets. Environmental impacts from forest restocking on biodiversity include those arising from forestry planting, associated fencing and species choice with impacts in the longer term. The environmental effects of continuing to meet investment obligations for fixed equipment on agricultural holdings and raising the overall standard of residential assets relate to building repairs, building improvements and some replacement of farm buildings. The residual effects on biodiversity, flora and fauna are judged to be very low. This reflects the role of the regulatory requirements (e,g. long-term forest plans, forestry grant requirements and the Habitats Directive), and the limited extent of building works and forest restocking. Although it is recognised that Alternative 1 (as described in section 2.9) reflects the highest level of investment, and therefore could result in environmental effects across a wider geographic area, **minor negative** effects are identified for each of the three alternatives and the preferred strategy.

4.4 Investment objective 2 promotes and supports partnerships which drive third-party investment, farm diversification, agroforestry, new forestry planting and facilitates voluntary lease restructures. Environmental effects on biodiversity from farm diversification could be diverse reflecting the range of potential diversification activities. The environmental effects of tree planting and agroforestry are likely to be positive for biodiversity through habitat creation but negative effects may occur from management of new woodland from fencing and weed control measures. The residual effects on biodiversity, flora and fauna are judged to be very low in scale. This reflects the role of the regulatory requirements, as outlined in relation to the first investment objective, and the role of the planning system. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in environmental effects across a wider geographic area, **mixed minor positive and minor negative** effects are identified for each of the three alternatives and the preferred strategy.

4.5 Investment objective 3 seeks to build a capital fund over three years through the granting of servitude rights for use of assets for infrastructure/access and the sale of land for strategic development. The granting of servitude rights could encompass a wide range of activities, which in turn could result in environmental effects depending on the nature and the scale of the works carried out. This particularly applies to larger developments that are undertaken following the granting of servitude rights. Therefore, the potential environmental effects associated with servitude rights are judged to be **uncertain**. The environmental effects of sale of land for strategic development are also **uncertain**, depending on the future use of the site.

4.6 Investment objective 4 seeks to identify and dispose of non-core assets including sale of agricultural units, assets such as forestry, residential property and fishing rights and sale of non-core assets to community bodies. It is recognised that Alternative 1 reflects the highest level of disposal of low yielding rural assets, in order to support the largest capital fund. This would result in a greater reduction in the rural estate than under the other alternatives. However, the effects

on biodiversity, flora and fauna are **uncertain**, reflecting the management aims of the new landowners of the agricultural assets and the aims of community bodies managing the assets.

4.7 Investment objective 5 seeks to comply with lease obligations and manage liabilities through continuing to meet landlord liability investment obligations for fixed equipment on agricultural holdings, prioritising works to meet regulatory requirements and maintaining and enhancing the fabric of the rural estate. Environmental effects on biodiversity could arise from building improvements and repairs and maintenance of infrastructure assets. The residual effects on biodiversity, flora and fauna are judged to be very low in scale. This reflects the role of the regulatory requirements such as building regulations, the planning process and legal protection for habitats and species, and the limited extent of building works. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in environmental effects across a wider geographic area, **minor negative** effects are identified for the three alternatives and the preferred strategy.

Coastal

4.8 For investment objective 1, capital investment in Rhu Marina infrastructure to support current rental income and maintain the fabric of the marina could result impacts on habitats and species from the construction and installation of these works. Rhu marina is not located within any designated areas and therefore no significant impacts on protected habitats and species are identified, although localised issues of disturbance and minor impacts on habitats could occur both from construction and from overall increased activity. It is recognised that Alternative 1 represents a higher capital fund, and potential greater scale of investment, overall a **negligible** effect is identified for the three alternatives and the preferred strategy..

4.9 Investment objective 2 supports investment in infrastructure at Rhu Marina and feasibility studies to inform future investment in coastal infrastructure, and investment in stewardship or community initiatives which deliver significant local economic, community and environmental benefit. Although it is recognised that these studies could lead to environmental effects in the future, due to the lack of direct environmental effects at this stage the environmental effects of feasibility studies under the three alternatives and the preferred strategy are identified as **negligible**.

4.10 Investment objective 3 facilitates dredging around the coastline, and capitalisation of rent for long term leases which is an accounting measure. Dredging activity typically requires a marine license and any necessary wildlife licences if the dredging will impact on protected habitats or species. In light of the existing regulatory controls a **negligible** effect is identified.

4.11 Investment objective 4 relates to identifying and disposing of non-core assets through facilitating sale of foreshore, occupied seabed and coastal infrastructure (pontoons) to communities or port authorities in line with agreed protocols. It is recognised that under Alternative 1, the greatest level of asset disposal will take place with new ownership of these assets. Assets could pass from an organisation with a biodiversity duty, to other organisations without these aims. Therefore there is potential risk that the management of these assets could result in potential adverse effects on biodiversity. The effects on biodiversity, flora and fauna are **uncertain**, reflecting the risk of differing management aims of the new landowners.

Marine

4.12 For investment objective 2, investment in offshore renewable energy facilitates the development of renewable energy which could result in indirect adverse impacts on habitats and species from impacts during construction for developments such as offshore wind turbines and tidal energy developments. Both positive and negative effects may occur during operation reflecting the creation of new habitats, changes to existing habitats or direct impacts on species. There is however a high degree of uncertainty depending on the nature of the developments, their location and prevailing local conditions. Reflecting the role of the regulatory framework, the overall effects are judged to be very low. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in environmental effects across a wider area, minor **negative** but **uncertain** effects are identified across the three alternatives and the preferred strategy.

4.13 For investment objective 2, facilitation of CCS has potential adverse effects on biodiversity, flora and fauna which may include habitat loss, disturbance to species and impacts on habitats from CO_2 leakage. Reflecting the role of the regulatory framework and the influence of the Investment objective on the development of CCS, the overall effect on marine habitats and species is judged to be very low. Although it is recognised that Alternative 1 reflects the highest level of investment and therefore could influence CCS development over the widest geographical area, a **minor negative** effect has been identified for each alternative and the preferred strategy.

4.14 For investment objective 2 investment in aquaculture (finfish, shellfish) has potential indirect positive effects on biodiversity, flora and fauna. Working with stakeholders to improve marine co-existence and assisting with funding for research for biomethane production for waste streams could have positive effects on biodiversity, flora and fauna through actions to improve management of waste and reduce environmental impacts from fish farm operation. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in environmental effects across a wider area, **minor positive** effects are identified for the three alternatives and the preferred strategy.

Urban

4.15 Although it is recognised that internal works to 39-41 George Street could have potential impacts on European protected species which may be present in an historic building, reflecting the existing regulatory framework and the scale and extent of the works, a **negligible** effect is identified. Investing in additional urban property would take place at a higher level under Alternative 1, however no impacts on biodiversity, flora and fauna are identified from investing in additional property.

Investment objectives 6 and 7

4.16 Investment objectives 6 and 7 are relevant across all of the portfolios. Investment objective 6 relates to the development of criteria for appraising investment opportunities. This includes appraisal criteria which consider impacts on the environment, but not specifically biodiversity, and **negligible** effects are identified.

4.17 Investment objective 7 seeks to ensure that decisions do not constrain future management of assets following new legislation. As a public body, Crown Estate Scotland has a duty to further the conservation of biodiversity when carrying out their duties. The extent to which this may influence biodiversity is **uncertain,** however in line with the biodiversity duty this should include consideration of impacts on biodiversity assets.

Cumulative, secondary and synergistic effects

4.18 Across the rural portfolio a diversity of minor impacts are identified with positive, negative and uncertain effects. Reflecting the diversity of receptors and scale of effect identified no cumulative, synergistic or secondary effects are identified.

4.19 For the marine portfolio, the minor negative and mixed positive and negative effects are identified for a diversity of sectors with differing geographic distribution within the Scottish marine environment. Therefore reflecting the scale and distribution of effects, no cumulative, synergistic or secondary effects are identified.

4.20 No cumulative, secondary or synergistic effects are identified for the coastal or urban portfolios.

Population and human health

Rural

4.21 The residual effects of investment objective 1 on population and human health are judged to be very low in scale. This reflects the role of the regulatory requirements of building regulations, planning permission, forestry grant schemes and the limited extent of building works and forest restocking. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in environmental effects across a wider geographic area a **mixed minor negative and minor positiv**e effect is identified for all alternatives and the preferred

strategy. This reflects potential minor negative effects on access and recreation from forest restocking activities, and minor positive effects on the quality and energy efficiency of residential buildings in the longer term.

4.22 The residual effects of Investment objective 2 on population and human health are judged to be very low in scale. This reflects the role of the regulatory requirements such as the planning process, and the limited extent of building works and other activities associated with the aforementioned investment objectives. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in environmental effects across a wider geographic area a **mixed minor negative and minor positiv**e effect is identified for all alternatives and the preferred strategy. This reflects the range of potential impacts from farm diversification on community wellbeing, impacts of farm restructuring, and environmental effects of new forestry planting on access and recreation.

4.23 The residual effects of Investment objective 3 on population and human health are judged to be very low in scale. The granting of servitude rights is judged to have very limited environmental effects for population and human health. The effects of sale of land for strategic development are uncertain, depending on the future use of the site, although construction activities could result in temporary impacts on local amenity. Although it is recognised that Alternative 1 reflects the highest level of sale of land, reflecting the regulatory role of the planning system, across the three alternatives and the preferred strategy **negligible** effects are identified depending on the activities facilitated by the granting of servitude rights and the extent of land sold for strategic development.

4.24 The residual effects of Investment objective 4 relating to capital release, the sale of agricultural units and the sale of core assets are likely to be minimal, as the focus of these actions is essentially about changing ownership. However, across the three alternatives and the preferred strategy the significance and the nature of these effects are **uncertain**, depending on the future management and use of the asset in question.

4.25 The sale of non-core assets to community bodies to support sustainable development could entail landscape improvements or the provision of amenities following acquisition by the community body. This could have positive effects on population and human health, however across the three alternatives and the preferred strategy, the significance of these effects is **uncertain**, depending on the aims of the community body in question.

4.26 The residual effects of Investment objective 5 include positive effects on population and human health as a result of improvement to standards of residential assets and maintenance of infrastructure assets. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of effect across a wider area, **minor positive** effects are identified for the three alternatives and the preferred strategy.

Coastal

4.27 Investment objective 1 supports capital investment in Rhu marina infrastructure to support current rental income and maintain the fabric of the marina, impacts on population and human health are identified as **negligible** for the three alternatives and the preferred strategy.

4.28 Investment objective 2 supports investment in infrastructure at Rhu Marina and feasibility studies to inform future investment in coastal infrastructure, and investment in stewardship or community initiatives which deliver significant local economic, community and environmental benefit. Although it is recognised that these studies could lead to environmental effects in the future, due to the lack of direct environmental effects at this stage the environmental effects of feasibility studies and the environmental effects of investment in infrastructure at Rhu Marina and feasibility studies are identified as **negligible** for the three alternatives and the preferred strategy.

4.29 Investment objective 3 facilitates dredging around the coastline, and capitalisation of rent for long term leases which is an accounting measure. Dredging activity typically requires a marine license and impacts on population and human health are judged to be **negligible** for the three alternatives and the preferred strategy.

4.30 Investment objective 4 relates to identifying and disposing of non-core assets through facilitating sale of foreshore, occupied seabed and coastal infrastructure (pontoons) to communities or port

authorities in line with agreed protocols. Impacts on population and human health will depend on the future management aims and activities of the new landowners and although it is recognised that a higher level of disposal would occur under Alternative 1, the overall effects on population and human health are **uncertain** for the three alternatives and the preferred strategy, reflecting the unknown management aims of the new landowners.

Marine

4.31 Investment objective 2 supports development of renewable energy which may have indirect positive and negative effects on quality of life for some communities in the long term. This includes positive effects from reducing reliance on fossil fuels, and community benefits implemented by the developer, although adverse effects on quality of life may arise from landscape impacts from development. Reflecting the scale of influence of the draft Investment Strategy an overall **negligible** effect is identified.

4.32 Investment objective 2 supports CCS technology which may result in direct health and safety risks to workers, particularly associated with compressed CO_2. However it is assumed that regulation by the Health and Safety Executive will address these issues, although the risk of leakage remains. An overall **negligible** effect is identified.

4.33 Investment objective 2 supports expansion of aquaculture, working with stakeholders to improve marine coexistence and assisting with funding for research on bio-methane production are not identified as having impacts for population and human health.

Urban

4.34 No impacts identified.

Investment objectives 6 and 7

4.35 Investment objectives 6 and 7 are relevant across all of the portfolios. Investment objective 6 relates to the development of criteria for appraising investment opportunities which does not vary with the alternatives. This includes developing and using appraisal criteria for consideration of social and environmental benefits, and a **minor positive** effect is identified.

4.36 Investment objective 7 seeks to ensure that decisions do not constrain future management of assets following new legislation. Investment objective 7 does not vary with the alternatives. No impacts on population and human health are identified.

Cumulative, secondary and synergistic effects

4.37 Across the rural portfolio a diversity of minor impacts are identified with mixed minor positive, negative and uncertain effects. Reflecting the diversity of potential receptors and minor scale of effect identified no cumulative, synergistic or secondary effects are identified.

4.38 No cumulative, secondary or synergistic effects are identified for the coastal, marine or urban portfolios.

Soil

Rural

4.39 The residual effects of investment objective 1 are judged to be very low in scale. This reflects the role of the regulatory regimes of the forestry grant schemes and the planning process in mitigating impacts on soils from forest restocking and building works. Forest restocking may impact on high carbon soils, with long term implications for soil quality, or have localised impacts on sedimentation. Building works can result in soil sealing and erosion with permanent effects. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of forest restocking and building works across a wider area, a **mixed minor negative and minor positive** effect is identified for the three alternatives and the preferred strategy..

4.40 The residual effects of investment objective 2 are judged to be very low in scale. This reflects the range of potential impacts on soil from farm diversification, which may encompass a range of activities, new forestry planting and agroforestry. Where appropriate, impacts on soils from forestry will be addressed through the forestry grants process or the use of long term forest plans, although impacts on high carbon soils could occur. For farm diversification, any required development may be regulated through the planning process, although this could also lead to local impacts on soil sealing from development or planting on high carbon soils, with long term effect. It is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in greater levels of farm diversification, agroforestry, and new forestry planting and their associated impacts on soil. Reflecting the range of potential impacts on soil including soil sealing from development, negative impacts from forestry planting, and improvements to soil quality **mixed minor positive and minor negative** effects are identified for the three alternatives and the preferred strategy.

4.41 The effects of investment objective 3 relate to the grant of servitude rights, which could encompass a wide range of activities, and the sale of land for strategic development. Therefore the range of potential environmental effects is **uncertain** across the three alternatives and the preferred strategy.

4.42 Investment objective 4 relates to capital release, the sale of agricultural units and the sale of non-core assets. These are likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are **uncertain**, depending on the future use of the asset in question. The sale of non-core assets to community bodies to support sustainable development could entail land management following acquisition by the community body, resulting in positive effects on soil quality. It is recognised that Alternative 1 would result in the disposal of the greatest number of assets. However, the significance of these effects is **uncertain** across the three alternatives and the preferred strategy, depending on the aims of the community body in question.

4.43 Investment objective 5 relates to building works to improve the overall standard of residential assets and works to meet regulatory requirements. Construction works may result in adverse impacts on soil through compaction, contamination and soil sealing. The residual effects on soil quality are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of building works, a **minor negative** effect is identified across the three alternatives and the preferred strategy.

Coastal

4.44 Investment objective 1 supports capital investment in Rhu marina infrastructure to support current rental income and maintain the fabric of the marina, the site is already developed and further impacts on soil are identified as **negligible**.

4.45 Investment objective 2 supports investment in infrastructure at Rhu Marina and feasibility studies to inform future investment in coastal infrastructure, and investment in stewardship or community initiatives which deliver significant local economic, community and environmental benefit. Although it is recognised that these studies could lead to environmental effects in the future, due to the lack of direct environmental effects at this stage the environmental effects of feasibility studies and the direct environmental effects of investment in infrastructure at Rhu Marina and feasibility studies are identified as **negligible**.

4.46 Investment objective 3 facilitates dredging around the coastline, and capitalisation of rent for long term leases which is an accounting measure. Dredging activity typically requires a marine license and impacts on marine sediment would be addressed through this process, therefore effects on soil are judged to be **negligible**.

4.47 Investment objective 4 relates to identifying and disposing of non-core assets through facilitating sale of foreshore, occupied seabed and coastal infrastructure (pontoons) to communities or port authorities in line with agreed protocols. It is recognised that Alternative 1 results in the highest level of disposal of assets, however, the effects on soil are **uncertain**, depending on the management aims of the new landowners.

Marine

4.48 Investment objective 2 in relation to offshore renewable energy may indirectly result in impacts on marine sediments through construction works. However due to the role of Crown Estate Scotland as a facilitator, but not as an implementer of renewable energy, these effects in relation to the Draft Investment Strategy are identified as **negligible**.

4.49 Investment objective 2 in relation to CCS may indirectly result in impacts on the seabed, sedimentation and geomorphology through the development of CCS infrastructure, although it is recognised that CCS is likely to have similar spatial characteristics to the offshore oil and gas industry. However due to the role of Crown Estate Scotland as a facilitator and not an implementer, these effects in relation to the Draft Investment Strategy they are identified as **negligible**.

4.50 Investment objective 2 supports expansion of aquaculture, working with stakeholders to improve marine coexistence and assisting with funding for research on bio-methane production. These activities are not identified as having impacts for soil and a **negligible** effect is identified.

Urban

4.51 No impacts identified.

Investment objectives 6 and 7

4.52 Investment objectives 6 and 7 are relevant across all of the portfolios. Investment objective 6 relates to the development of criteria for appraising investment opportunities. This includes appraisal criteria for consideration of environmental benefits, but not specifically in relation to soil and a **negligible** effect is identified.

4.53 Investment objective 7 seeks to ensure that decisions do not constrain future management of assets following new legislation. Investment objective 7 does not vary with the alternatives. No impacts on soil are identified.

Cumulative, secondary and synergistic effects

4.54 Across the rural portfolio a diversity of minor impacts are identified with positive, negative and uncertain effects. Reflecting the diversity of receptors and scale of effect identified no cumulative, synergistic or secondary effects are identified.

4.55 For the marine portfolio, the minor negative and mixed positive and negative effects are identified for a diversity of sectors with differing geographic distribution within the Scottish marine environment. Therefore reflecting the scale and distribution of effects, no cumulative, synergistic or secondary effects are identified.

4.56 No cumulative, secondary or synergistic effects are identified for the coastal or urban portfolios.

Water

Rural

4.57 The environmental effects of Investment objective 1 include impacts on the water environment from forest restocking which can be both positive in the long term and result in temporary negative effects. Building and construction works may also impact on the water environment through negative impacts on water quality and quantity. These impacts are managed through long term forest plans, the forestry grant scheme and Water Environment (Controlled Activities) (Scotland) Regulations (CAR), and planning permission where relevant. The residual effects on water quality and quantity are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and forest restocking. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of forest restocking and building works over a larger area, a **mixed minor negative and minor negative** effect is identified across the three alternatives and the preferred strategy.

4.58 The impacts of investment objective 2 on the water environment relate principally to potential impacts from farm diversification activities, agroforestry and new forest planting. These activities could have mixed effects on the water environment through both positive impacts on water quality through protection of the soil resource, and impacts of forestry on intercepting rain water. Soil cultivation for the purposes of forestry can have temporary negative effects on water quality, but long term benefits. Regulatory requirements such as long term forest plants, requirements of forestry grant schemes and CAR support the maintenance of water quality. Although it is recognised that Alternative 1 reflects the highest level of investment, reflecting the range of positive and negative effects from development and forestry planting **mixed minor negative and minor positive** effects are identified across all of the alternatives.

4.59 The effects of investment objective 3 relate to the granting of servitude rights, which could encompass a wide range of activities, and the sale of land for strategic development. Reflecting the uncertainty around the type of development which may occur, the range of potential environmental effects on the water environment is **uncertain**.

4.60 Investment objective 4 relates to capital release, the sale of agricultural units and the sale of non-core assets. These are likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. The sale of non-core assets to community bodies to support sustainable development could include a range of potential environmental benefits such as support for flood risk management. Alternative 1 would result in the disposal of the greatest number of non-core assets, however, the significance and the nature of these effects are **uncertain** across the three alternatives and the preferred strategy, depending on the future use of the asset in question.

4.61 Investment objective 5 relates to building works to improve the overall standard of residential assets and works to meet regulatory requirements. This may impact negatively on the water environment through soil compaction and sealing from construction and development activities, although impacts on the water environment are controlled through regulatory process such as CAR. The residual effects on water quality and quantity are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works. Although it is recognised that Alternative 1 reflects the highest level of investment, a **minor negative** effect on the water environment is identified across the three alternatives and the preferred strategy.

Coastal

4.62 Investment objective 1 supports capital investment in Rhu marina infrastructure to support current rental income and maintain the fabric of the marina. Construction and operational activities may impact on the water environment through sedimentation and pollution. Impacts on the water environment are controlled through CAR and impacts on the water environment are identified as **negligible** for the three alternatives and the preferred strategy.

4.63 Investment objective 2 supports investment in infrastructure at Rhu Marina and feasibility studies to inform future investment in coastal infrastructure, and investment in stewardship or community initiatives which deliver significant local economic, community and environmental benefit. Although feasibility studies may result in positive indirect future environmental effects, the overall environmental effects of investment in infrastructure at Rhu Marina and feasibility studies are identified as **negligible**.

4.64 Investment objective 3 facilitates dredging around the coastline, and capitalisation of rent for long term leases which is an accounting measure. Dredging activity typically requires a marine license and disturbance of marine sediment may have impacts on water quality. However in light of existing regulatory controls residual effects are judged to be **negligible**.

4.65 Investment objective 4 relates to identifying and disposing of non-core assets through facilitating sale of foreshore, occupied seabed and coastal infrastructure (pontoons) to communities or port authorities in line with agreed protocols. The effects on water are **uncertain**, reflecting the management aims of the new landowners.

Marine

4.66 Investment objective 2 in relation to offshore renewable energy is judged to have indirect negative effects on the water environment, particularly during construction processes which may impact on marine sediment. Regulatory processes such as those within the Marine (Scotland) Act 2010 seek to manage impacts on the marine environment. Although it is recognised that Alternative 1 reflects the highest level of investment, a **minor negative** effect on the water environment is identified across the three alternatives and the preferred strategy.

4.67 Investment objective 2 in relation to CCS can result in impacts on water quality through sedimentation and contamination. However reflecting the regulatory controls required by marine licencing, the effect of the Draft Investment Strategy on facilitating CCS is judged to be **negligible**.

4.68 Investment objective 2 supports expansion of aquaculture, working with stakeholders to improve marine coexistence and assisting with funding for research on bio-methane production. Expansion of finfish production is likely to result in adverse impacts on water quality, however funding research associated with managing fish farm waste could indirectly lead to more sustainable waste management. The nature of these effects are uncertain, however a **minor negative** effect is identified for the three alternatives and the preferred strategy.

Urban

4.69 No impacts identified.

Investment objectives 6 and 7

4.70 Investment objectives 6 and 7 are relevant across all of the portfolios. Investment objective 6 relates to the development of criteria for appraising investment opportunities. This includes appraisal criteria for consideration of environmental benefits, but not specifically in relation to water and a **negligible** effect is identified.

4.71 Investment objective 7 seeks to ensure that decisions do not constrain future management of assets following new legislation. Investment objective 7 does not vary with the alternatives. No impacts on water are identified.

Cumulative, secondary and synergistic effects

4.72 Across the rural portfolio a diversity of minor impacts are identified with mixed, negative and uncertain effects. Reflecting the diversity of receptors and scale of effect identified no cumulative, synergistic or secondary effects are identified.

4.73 No cumulative, secondary or synergistic effects are identified for the coastal, marine or urban portfolios.

Air

Rural

4.74 The environmental effects of investment objective 1 relate to the positive effects on air quality of maintaining the forest resource which supports the direct removal of air pollutants. Air quality impacts from building works associated with building repairs and some replacement of farm buildings is likely to be localised and associated with the duration of the works. The residual effects on air quality are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and forest restocking. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of forest restocking and building works over a larger area, a **mixed minor negative and minor negative** effect is identified across the three alternatives and the preferred strategy.

4.75 Investment objective 2 relates to a range of activities which may have both positive and negative effects on air quality. Farm diversification activities which generate additional vehicle journeys or construction work may be negative, and additional forestry planting may have positive effects.

The overall effects on air quality are judged to be very low, and although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of activities, overall **mixed minor negative and minor positive** effects are identified for the three alternatives and the preferred strategy.

4.76 The effects of investment objective 3 relate to the grant of servitude rights, which could encompass a wide range of activities, and the sale of land for strategic development. Although air quality impacts could occur, the range of potential environmental effects on air is **uncertain**.

4.77 Investment objective 4 relates to capital release, the sale of agricultural units and the sale of core assets. These are likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership, although this could result in effects from different management approaches for these assets. The sale of non-core assets to community bodies to support sustainable development could support actions which affect air quality. However, the significance and the nature of these effects are **uncertain**, depending on the future use of the asset in question.

4.78 Investment objective 5 relates to building works to improve the overall standard of residential assets and works to meet regulatory requirements. Building improvements could result in positive effects on air quality through improving the quality and energy efficiency of properties with positive effects on air quality. However, the construction of access tracks, traffic movements and the use of equipment associated with construction work are likely to increase emissions of greenhouse gases and air pollutants, although this will be short term in effect. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of activities a **minor positive** effect is identified for the three alternatives and the preferred strategy.

Coastal

4.79 Investment objective 1 supports capital investment in Rhu marina infrastructure to support current rental income and maintain the fabric of the marina, the marina is already developed and air quality impacts from the use of the site are established. Reflecting the scale of development, any additional vehicle movements generated from capital investment are identified as **negligible**.

4.80 Investment objective 2 supports investment in infrastructure at Rhu Marina and feasibility studies to inform future investment in coastal infrastructure, and investment in stewardship or community initiatives which deliver significant local economic, community and environmental benefit. The environmental effects of feasibility studies are identified as **negligible,** due to the indirect and uncertain nature of future effects.

4.81 Investment objective 3 facilitates dredging around the coastline, and capitalisation of rent for long term leases which is an accounting measure. Although dredging activities result in air quality impacts from the vessels undertaking the work, air quality impacts of dredging activity are judged to be **negligible** reflecting the limited scale of activity generated by the draft investment strategy in relation to Crown Estate assets.

4.82 Investment objective 4 relates to identifying and disposing of non-core assets through facilitating sale of foreshore, occupied seabed and coastal infrastructure (pontoons) to communities or port authorities in line with agreed protocols. The effects on air are **uncertain**, reflecting the unknown management aims and activities of the new landowners, the use of these assets is likely to be in line with the current activities although levels of use may vary.

Marine

4.83 Investment objective 2 in relation to development of offshore renewable energy is likely to have an indirect positive effect on air quality through facilitating the renewable energy industry. Due to the role of Crown Estate Scotland as a facilitator and not an implementer of offshore renewable energy, a **negligible** effect is identified.

4.84 Investment objective 2 in relation to CCS is likely to have an indirect negative effect on air quality due to the emissions from the energy requirements for the CCS process. Due to the indirect nature of these effects from the Draft Investment Strategy, a **minor negative** effect is identified for the three alternatives and the preferred strategy.

4.85 Investment objective 2 supports expansion of aquaculture, working with stakeholders to improve marine coexistence and assisting with funding for research on bio-methane production. Research on biomethane production, does not have environmental effects, although the outcomes of the research, if implemented could lead to future minor positive effects on air quality.

Urban

4.86 No impacts identified.

Investment objectives 6 and 7

4.87 Investment objectives6 and 7 are relevant across all of the portfolios. Investment objective 6 relates to the development of criteria for appraising investment opportunities. This includes appraisal criteria for consideration of environmental benefits, but not specifically in relation to air and a **negligible** effect is identified.

4.88 Investment objective 7 seeks to ensure that decisions do not constrain future management of assets following new legislation. Investment objective 7 does not vary with the alternatives. No impacts on air are identified.

Cumulative, secondary and synergistic effects

4.89 Across the rural portfolio a diversity of minor impacts are identified with mixed, positive and uncertain effects. Reflecting the diversity of receptors and scale of effect identified no cumulative, synergistic or secondary effects are identified.

4.90 No cumulative, secondary or synergistic effects are identified for the coastal, marine or urban portfolios.

Climatic factors

Rural

4.91 The environmental effects of forest restocking relate to the replacement of trees following felling activities, which supports the cycle of carbon sequestration after timber harvesting. The environmental effects of continuing to meet investment obligations for fixed equipment on agricultural holdings relates to building repairs and some replacement of farm buildings, with emissions associated with construction works. Forest restocking is regulated by long term forest plans and the forestry grants scheme. Building regulations apply to building improvements. The residual effects on climatic factors are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and forest restocking. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of forest restocking and building works over a larger area, a **mixed minor negative and minor negative** effect is identified across the three alternatives and the preferred strategy.

4.92 Investment objective 2 includes support for farm diversification which may generate additional vehicle journeys and increase greenhouse gas emissions. Activities such as agroforestry and new forest planting contribute towards carbon sequestration, provided that these activities do not take place on high carbon soils. Minimal effects are identified in relation to creation of partnerships or voluntary lease restructures. The overall effects on climatic factors are judged to be very low in scale. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of diversification and forestry planting a **mixed minor negative and minor negative** effect is identified across the three alternatives and the preferred strategy.

4.93 The effects of investment objective 3 relate to the grant of servitude rights, which could encompass a wide range of activities, and the sale of land for strategic development. Therefore the range of potential environmental effects on the climatic factors is **uncertain**.

4.94 Investment objective 4 relates to capital release, the sale of agricultural units and the sale of core assets. These are likely to have minimal environmental effects, as the focus of these actions is

essentially about changing ownership. The sale of non-core assets to community bodies to support sustainable development could result in activities which increase or reduce greenhouse gas emissions. However, the significance and the nature of these effects are **uncertain**, depending on the future use of the asset in question.

4.95 Investment objective 5 relates to building works to improve the overall standard of residential assets and works to meet regulatory requirements. Building improvements could result in positive effects on climatic factors through improving the quality and energy efficiency of properties. However, the construction of access tracks, traffic movements and the use of equipment associated with construction work are likely to increase emissions of greenhouse gases and air pollutants, although this will be short term in effect. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of activities a **minor positive** effect is identified for the three alternatives and the preferred strategy.

Coastal

4.96 Investment objective 1 supports capital investment in Rhu marina infrastructure to support current rental income and maintain the fabric of the marina. The marina is already developed and greenhouse gas emissions associated with the use of the site are established. Although it is recognised that capital investment could increase the vehicular traffic generated to the site and within the site from boat movements, the limited scale of this effect means that any additional greenhouse gas emissions generated from capital investment are identified as **negligible**.

4.97 Investment objective 2 supports investment in infrastructure at Rhu Marina and feasibility studies to inform future investment in coastal infrastructure, and investment in stewardship or community initiatives which deliver significant local economic, community and environmental benefit. The feasibility studies do not have direct environmental effects, but could lead to future effects which are **uncertain**.

4.98 Investment objective 3 facilitates dredging around the coastline, and capitalisation of rent for long term leases which is an accounting measure. Although dredging uses fossil fuels with impacts on greenhouse gas emissions, the impacts of dredging activity influenced by the Draft Investment Strategy are judged to be **negligible**.

4.99 Investment objective 4 relates to identifying and disposing of non-core assets through facilitating sale of foreshore, occupied seabed and coastal infrastructure (pontoons) to communities or port authorities in line with agreed protocols. The effects on climatic factors are **uncertain**, reflecting the management aims of the new landowners.

Marine

4.100 Investment objective 2 in relation to offshore renewable energy is likely to have an indirect positive effect on climatic factors due to facilitation of renewable energy development which has positive effects on reducing greenhouse gas emissions. CCS is also likely to have an indirect positive effect on climatic factors due to the positive effect of this industry on the concentration of CO_2 in the atmosphere. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of activities a **minor positive** effect is identified for the three alternatives and the preferred strategy.

4.101 Investment objective 2 supports expansion of aquaculture, working with stakeholders to improve marine coexistence and assisting with funding for research on bio-methane production are not identified as having direct impacts for climatic factors and a **negligible** effect is identified.

Urban

4.102 No impacts identified.

Investment objectives 6 and 7

4.103 Investment objectives 6 and 7 are relevant across all of the portfolios. Investment objective 6 relates to the development of criteria for appraising investment opportunities. This includes appraisal criteria for consideration of environmental benefits, but not specifically in relation to climatic factors and a **negligible** effect is identified.

4.104 Investment objective 7 seeks to ensure that decisions do not constrain future management of assets following new legislation. Investment objective 7 does not vary with the alternatives. No impacts on climatic factors are identified.

Cumulative, secondary and synergistic effects

4.105 Across the rural portfolio a diversity of minor impacts are identified with mixed, positive and uncertain effects.

4.106 Reflecting the diversity of receptors and scale of effect identified no cumulative, synergistic or secondary effects are identified.

4.107 The marine portfolio is identified as having a minor positive effect on greenhouse gas emissions through the role of Crown Estate Scotland in facilitating the development of renewable energy and carbon capture and storage. The overall scale of effect from the draft investment strategy is not identified as significant and no cumulative, secondary or synergistic effects are identified.

4.108 No cumulative, secondary or synergistic effects are identified for the coastal or urban portfolios.

Cultural and archaeological heritage

Rural

4.109 Impacts on listed buildings and Scheduled Monuments are managed through the relevant consenting processes, and the planning process influences the potential impacts of development.

4.110 Investment objective 1 supports forest restocking which can impact on buried archaeology, although the forestry grant scheme and long term forest plans require consideration of impacts on cultural heritage. Works to buildings and replacement farm buildings could also impact on built heritage and buried archaeology. The residual effects on cultural heritage are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and forest restocking. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of forest restocking and building works over a larger area, a **minor negative** effect is identified for the three alternatives and the preferred strategy..

4.111 Investment objective 2 supports partnerships to drive third-party investment, voluntary lease restructuring, supports farm diversification, agroforestry and new forestry planting. Farm diversification, agroforestry and new forestry planting could all result in direct adverse effects on known and unknown archaeology and built heritage assets through development and planting activities. Based on the regulatory controls for forestry planting and development the residual effects on cultural heritage are judged to be very low in scale. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of farm diversification, agroforestry and forestry planting a **minor negative** effect is identified for the three alternatives and the preferred strategy.

4.112 The effects of investment objective 3 relate to the grant of servitude rights, which could encompass a wide range of activities, and the sale of land for strategic development. Therefore the range of potential environmental effects on the cultural heritage is **uncertain**.

4.113 Investment objective 4 relates to capital release, the sale of agricultural units and the sale of core assets. These are likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. The sale of non-core assets to community bodies to support sustainable development could potentially support management of cultural and archaeological heritage assets. Although Alternative 1 is recognised as influencing the highest level of capital release, the significance and the nature of these effects are **uncertain**, depending on the future use of the asset in question.

4.114 Investment objective 5 relates to building maintenance and improvements which could result in adverse effects on built heritage through alterations to buildings and on buried archaeology from construction works, but can also support the quality of the built assets and maintaining these in viable uses. The residual effects on cultural heritage and the historic environment are judged to be very low in scale. This reflects the role of the regulatory requirements such as listed building

consent and the limited extent of building works. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of building improvements, a **mixed minor negative and minor negative** effect is identified across the three alternatives and the preferred strategy.

Coastal

4.115 Investment objective 2 supports capital investment in Rhu marina infrastructure to support current rental income and maintain the fabric of the marina. The marina is already developed does not include any historic environment designations. Investment and maintenance works could impact on unknown archaeology, however due to the site specific nature of any effects, these are identified as **negligible**.

4.116 Investment objective 2 supports investment in infrastructure at Rhu Marina and feasibility studies to inform future investment in coastal infrastructure, and investment in stewardship or community initiatives which deliver significant local economic, community and environmental benefit. The environmental effects of feasibility studies are identified as **negligible**.

4.117 Investment objective 3 facilitates dredging around the coastline, and capitalisation of rent for long term leases which is an accounting measure. Dredging activities can relate to areas which have previously been dredged or areas newly requiring dredging. Areas are assessed for archaeological potential prior to granting dredging licences. Based on the regulatory controls impacts in relation to dredging are judged to be **negligible.**

4.118 Investment objective 4 relates to identifying and disposing of non-core assets through facilitating sale of foreshore, occupied seabed and coastal infrastructure (pontoons) to communities or port authorities in line with agreed protocols. The effects on cultural and archaeological heritage are **uncertain**, reflecting the management aims of the new landowners.

Marine

4.119 Investment objective 2, facilitation of offshore renewable energy installations could indirectly result in physical impacts on marine archaeology such as shipwrecks and registered battlefields through dredging and pile driving. Furthermore, changes in sedimentation caused by dredging and pile driving are likely to result in heritage assets being uncovered and exposed to damage. Reflecting the role of regulatory requirements the residual effects on cultural heritage are judged to be very low in scale. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of renewables development, reflecting the role of Crown Estate Scotland in facilitating this development through the leasing process, a **minor negative** effect is identified for the three alternatives and the preferred strategy.

4.120 CCS could also result in effects such as sedimentation which can impact on marine archaeology, however based on the likely extent to which the Draft Investment Strategy will influence such activity a **negligible** effect is identified for the three alternatives and the preferred strategy.

4.121 Investment objective 2 supports expansion of aquaculture, working with stakeholders to improve marine coexistence and assisting with funding for research on bio-methane production are not identified as having impacts for cultural heritage, and a **negligible** effect is identified.

Urban

4.122 39-41 George Street is located within the Edinburgh World Heritage Site and is a B listed building. Modifications to the building could result in impacts on the historic characteristics of the building, however, reflecting the regulatory controls and relevance to a single property, a **negligible** effect is identified. No impacts are identified from further investment in additional property.

Investment objectives 6 and 7

4.123 Investment objectives 6 and 7 are relevant across all of the portfolios. Investment objective 6 relates to the development of criteria for appraising investment opportunities. This includes appraisal criteria for consideration of environmental benefits, but not specifically in relation to cultural and archaeological heritage and a **negligible** effect is identified.

4.124 Investment objectives 7 seeks to ensure that decisions do not constrain future management of assets following new legislation. Investment objective 7 does not vary with the alternatives. No impacts on cultural and archaeological heritage are identified.

Cumulative, secondary and synergistic effects

4.125 Across the rural portfolio a diversity of minor negative and uncertain impacts are identified. This reflects potential changes to rural buildings and development impacts, including from forestry within the rural estate. Reflecting the likely overall scale of impacts on cultural and archaeological heritage no cumulative, synergistic or secondary effects are identified.

4.126 The marine portfolio is identified as having a minor negative effect on marine archaeology through support for renewable energy development. The overall scale of effect on development of this industry from the draft investment strategy is not identified as significant and no cumulative, secondary or synergistic effects are identified.

4.127 No cumulative, secondary or synergistic effects are identified for the coastal or urban portfolios.

Landscape and geodiversity

Rural

4.128 Under Investment objective 1 forest restocking activities can have both positive effects in terms of landscape character and negative effects which may result from species choice, design, fencing or access tracks. The environmental effects of continuing to meet investment obligations for fixed equipment on agricultural holdings is likely to involve building improvements which could bring both positive and negative landscape impacts through improving the quality of the built environment and development which may have adverse landscape impacts. Construction could also impact on geological features. The residual effects on landscape quality are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and forest restocking. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of forest restocking and building works over a larger area a **mixed minor positive and minor negative** effect is identified for the three alternatives and the preferred strategy.

4.129 Investment objective 2 supports partnerships to drive third-party investment, voluntary lease restructuring, supports farm diversification, agroforestry and new forestry planting. Farm diversification, agroforestry and new forestry planting could all result in direct positive and negative effects on landscape and geodiversity. This could arise from new development associated with farm diversification and landscape effects of increased woodland planting. The residual effects on landscape quality and geodiversity are judged to be very low in scale. This reflects the role of the regulatory requirements such as requirements of forestry grant schemes and the planning process, and the limited extent of these activities. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of farm diversification, agroforestry and new forestry planting a **mixed minor positive and minor negative** effect is identified across the three alternatives and the preferred strategy.

4.130 The effects of investment objective 3 relate to the grant of servitude rights, which could encompass a wide range of activities with uncertain effects, and the sale of land for strategic development. The sale of land for strategic development could result in adverse landscape effects, however reflecting the role of the planning system these effects are judged to be **minor negative** across the three alternatives and the preferred strategy.

4.131 Investment objective 4 relates to capital release, the sale of agricultural units and the sale of core assets. These are likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. The sale of non-core assets to community bodies to support sustainable development could support positive landscape management. However, the significance and the nature of these effects are **uncertain**, depending on the future use of the asset in question.

4.132 Investment objective 5 relates to building works which could result in direct adverse effects on landscape character through changes in the character of the built environment. The residual

effects on landscape quality and geodiversity are judged to be very low in scale. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of building works, a **minor negative** effect is identified across the three alternatives and the preferred strategy.

Coastal

4.133 Investment objective 1 supports capital investment in Rhu marina infrastructure to support current rental income and maintain the fabric of the marina, the marina is already developed and landscape impacts from the use of the site are established, any additional landscape impacts generated from capital investment are identified as **negligible**.

4.134 Investment objective 2 supports investment in infrastructure at Rhu Marina and feasibility studies to inform future investment in coastal infrastructure, and investment in stewardship or community initiatives which deliver significant local economic, community and environmental benefit. The environmental effects of feasibility studies are identified as **negligible**.

4.135 Investment objective 3 facilitates dredging around the coastline, and capitalisation of rent for long term leases which is an accounting measure. No landscape impacts are identified, and reflecting the regulatory controls of the licencing process impacts on geodiversity are judged to be **negligible**.

4.136 Investment objective 4 relates to identifying and disposing of non-core assets through facilitating sale of foreshore, occupied seabed and coastal infrastructure (pontoons) to communities or port authorities in line with agreed protocols. The effects on landscape and geodiversity are **uncertain**, reflecting the management aims of the new landowners.

Marine

4.137 For Investment objective 2, facilitating development of offshore renewable energy is likely to have potential visual impacts on the character and qualities of seascapes. Such visual impacts are mainly a result of visual impacts by offshore wind turbine development. Visual impacts on seascapes principally relate to the impacts of the development on views of the seascape through changing the content and focus of views, the reactions (attitudes and behaviours) of the viewers who may be affected, and the overall change in visual amenity. With offshore wind farms, the majority of the development is not on a landscape, so consideration should be given to the indirect landscape effects on the setting or perception of coastal and marine landscapes. It is important to note that this depends on the levels of sensitivity and impact magnitude for each seascape and visual receptor. It is important to note that the significance of impacts will generally depend on the size of the installation, the location selected for development, and the potential receptors. Crown Estate Scotland manages the leasing of the seabed, and although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of renewable energy development, a **minor negative** effect is identified across the three alternatives and the preferred strategy reflecting the role of Crown Estate Scotland in influencing the development that takes place.

4.138 Investment objective 2 facilitates CCS, the landscape impacts of which are identified as **negligible**.

4.139 Investment objective 2 supports expansion of aquaculture through facilitating leasing and partnership work to address sustainability issues. Aquaculture can have local landscape effects, however the scale of this effect arising from the Draft Investment Strategy, reflecting the facilitating role of Crown Estate Scotland, is judged to be negligible. Working with stakeholders to improve marine coexistence and assisting with funding for research on bio-methane production are not identified as having impacts for landscape and **negligible** effects are identified.

Urban

4.140 No impacts identified.

Investment objectives 6 and 7

4.141 Investment objectives 6 and 7 are relevant across all of the portfolios. Investment objective 6 relates to the development of criteria for appraising investment opportunities. This includes

appraisal criteria for consideration of environmental benefits, but not specifically in relation to landscape and geodiversity and a **negligible** effect is identified.

4.142 Investment objective 7 seeks to ensure that decisions do not constrain future management of assets following new legislation. Investment objective 7 does not vary with the alternatives. No impacts on landscape and geodiversity are identified.

Cumulative, secondary and synergistic effects

4.143 Across the rural portfolio a diversity of minor impacts are identified with mixed, minor negative and uncertain effects. Reflecting the scale of effect identified no cumulative, synergistic or secondary effects are identified.

4.144 The marine portfolio is identified as having a minor negative effect on landscape and geodiversity through support for renewable energy. The overall scale of effect from the draft investment strategy is not identified as significant and no cumulative, secondary or synergistic effects are identified.

4.145 No cumulative, secondary or synergistic effects are identified for the coastal or urban portfolios.

Material assets

Rural

4.146 For Investment objective 1, forest restocking and meeting investment obligations for fixed equipment on agricultural holdings supports the maintenance of these assets. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of forest restocking and building works over a larger area a **minor positive** effect is identified for the three alternatives and the preferred strategy.

4.147 Investment objective 2 supports partnerships to drive third-party investment, voluntary lease restructuring, supports farm diversification, agroforestry and new forestry planting. The creation of partnerships which drive third party investment could support the development and enhancement of material assets, with positive effects. Farm diversification, agroforestry and new forestry planting could all result in improvements to the farm estate and forestry asset. Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of forest restocking and building works over a larger area a **minor positive** effect is identified for all four alternatives.

4.148 The effects of investment objective 3 relate to the grant of servitude rights, which could encompass a wide range of activities, and the sale of land for strategic development. Therefore the range of potential environmental effects on material assets is **uncertain**.

4.149 Investment objective 4 relates to capital release, the sale of agricultural units and the sale of non-core assets. These are likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. The sale of non-core assets to community bodies to support sustainable development could result in positive management of these assets. However, the significance and the nature of these effects are **uncertain**, depending on the future use of the asset in question.

4.150 Investment objective 5 relates to building improvements which could have a positive effect on material assets, however reflecting the scale and extent of these effects a **negligible** effect is identified.

Coastal

4.151 Investment objective 1 supports capital investment in Rhu marina infrastructure to support current rental income and maintain the fabric of the marina, the marina is already developed and although investment and maintenance will support the asset, the overall scale of effect is identified as **negligible**.

4.152 Investment objective 2 supports investment in infrastructure at Rhu Marina, with localised effects and feasibility studies to inform future investment in coastal infrastructure, and investment in

stewardship or community initiatives which deliver significant local economic, community and environmental benefit. The environmental effects of feasibility studies are identified as **negligible,** although it is recognised that they could subsequently lead to positive effects on material assets.

4.153 Investment objective 3 facilitates dredging around the coastline, and capitalisation of rent for long term leases which is an accounting measure. Dredging can help to support the viability of coastal infrastructure, and as such an indirect **minor positive** effect is identified for the three alternatives and the preferred strategy.

4.154 Investment objective 4 relates to identifying and disposing of non-core assets through facilitating sale of foreshore, occupied seabed and coastal infrastructure (pontoons) to communities or port authorities in line with agreed protocols. The effects on material assets are **uncertain**, reflecting the unknown management aims of the new landowners.

Marine

4.155 For investment objective 2, facilitating offshore renewable energy development is likely to result in positive effects on material assets through increasing the domestic capacity for renewable energy generation and reducing reliance on fossil fuels. However reflecting the role of the Draft Investment Strategy in facilitating the development of offshore renewable energy, the overall scale of effect is judged to be **minor positive** for the three alternatives and the preferred strategy.

4.156 For investment objective 2, facilitating CCS is likely to have a broadly positive effect on material assets through helping to mitigate the levels of greenhouse gases in the atmosphere. However the overall scale of effect arising from the investment strategy and facilitating role of the Draft Investment Strategy is judged to be **negligible** for the three alternatives and the preferred strategy.

4.157 Investment objective 2 supports expansion of aquaculture, working with stakeholders to improve marine coexistence and assisting with funding for research on bio-methane production are not identified as having impacts for material assets and a **negligible** effect is identified.

Urban

4.158 Investment objective 1 supports the quality of the built environment, however reflecting the scale of the Crown Estate Assets, a **negligible** effect is identified.

Investment objectives 6 and 7

4.159 Investment objectives 6 and 7 are relevant across all of the portfolios. Investment objective 6 relates to the development of criteria for appraising investment opportunities. This includes appraisal criteria for consideration of environmental benefits, but not specifically in relation to material assets and a **negligible** effect is identified.

4.160 Investment objective 7 seeks to ensure that decisions do not constrain future management of assets following new legislation. Investment objective 7 does not vary with the alternatives. No impacts on material assets are identified.

Cumulative, secondary and synergistic effects

4.161 Across the rural portfolio a diversity of minor positive and uncertain effects are identified reflecting forest restocking and enhancement of built assets. Overall this is likely to result in minor cumulative effects on material assets across the Crown Estate assets.

4.162 The coastal portfolio is identified as having a minor positive effect on material assets through indirect effects from dredging activities which facilitate the use of coastal infrastructure for shipping. Reflecting the overall scale of effect from the draft investment no cumulative, secondary or synergistic effects are identified.

4.163 No cumulative, secondary or synergistic effects are identified for the marine or urban portfolios.

Natural capital

4.164 Crown Estate Scotland includes a wide range of natural capital assets, including moorland, woodlands, rivers, lochs, farmland, coastal and inter-tidal zones together with the seabed and marine water column. These assets provide an even wider range of benefits or ecosystem services including:

- Provision of food, timber, drinking water and energy;
- Regulation of flood risk, air and water quality and climate;
- Cultural services such as sense of place, recreation, spiritual values or cultural heritage; and
- Support for natural processes such as water and nutrient cycling and creation of habitats.

4.165 These four types of service in turn underpin socio-economic benefits such as economic activity and employment.

4.166 Management of the Estate has the potential to affect the natural capital assets and the flow of benefits by:

- Enhancing natural capital assets (e.g. improving the condition of natural habitats);
- Impacting on natural capital assets (e.g. leading to development which results in the loss of natural habitats);
- Changes the range of natural capital assets (e.g. through asset disposal and acquisition);
- Enhancing the ecosystem services derived from natural capital assets (e.g. improving the biodiversity of productive forests); and
- Impacting the ecosystem services derived from natural capital assets (e.g. landscape impacts from new development)

4.167 In many cases, investment will alter the balance of services provided by an asset, with some increasing and others reduced. Crown Estate Scotland investment criteria should highlight where investment decisions could negatively or positively affect natural capital assets, and opportunities to protect and enhance the range of ecosystem services derived from them.

4.168 It is important to note that in many cases Crown Estate Scotland acts as facilitator, responsible for granting leases or undertaking research and development and feasibility studies. Land use and marine polices, spatial strategies, development and operation are the responsibility of different organisations and are subject to their own assessment and consenting regimes. This also means that it is not possible to predict the outcomes of many Crown Estate Scotland investment objectives since development will be delivered by third parties, and guided by statutory policies.

4.169 The following tables provide a high level assessment of the implications of the Crown Estate Scotland Draft Investment Strategy for natural capital assets and the services they provide. Given the significant differences in the character of the rural, coastal, marine and urban portfolios, and of the investment related actions in these areas, separate tables have been prepared for each portfolio.

Table 4.1: Natural Capital assessment – rural portfolio

Crown Estate Scotland Investment objectives	Rural
1. Maintain and enhance the rural coastal and urban assets through investment in infrastructure development and fixed equipment.	**Forest restocking** could enhance natural capital assets depending on species choice and inclusion of non-woodland habitats. This could maintain or enhance a range of ecosystem services including provision of timber, flood risk regulation, climate regulation and opportunities for recreation. **Investment in infrastructure and fixed equipment** could have minor impacts on natural capital assets, but should also enhance the provision of food and timber from the Crown Estate Scotland estate
2. Invest [in the development of offshore renewable energy, carbon capture and storage, and aquaculture (finfish, shellfish and seaweed).]	**Farm diversification** could have minor effects on natural capital assets but could enhance the delivery of benefits including food and fibre provisioning and a range of cultural services including recreation, education and sense of place. **Agro-forestry** could enhance natural capital assets by increasing biodiversity and delivering a wider range of benefits including provision of timber, habitat creation, flood risk regulation, climate regulation and enhanced food production. There could be mixed effects in terms of cultural services depending on landscape effects. **New forestry planting** could have mixed effects on natural capital assets and the services they currently provide. However, the new forest planting could deliver a range of benefits including provision of timber, habitat creation, flood risk regulation, climate regulation and opportunities for recreation.
3. Build a capital fund of £10m over 3 years.	The **granting of servitude rights** should have limited effects on natural capital assets. The **sale of land for strategic development** will result the loss of natural capital assets and the potential loss of services or benefits they currently provide. **Building a capital fund**, and the investment that this allows, could affect natural capital assets positively or negatively. The nature of such effects, and the impact on existing or potential services, will depend on the characteristics of investment supported by the capital fund. The consideration of natural capital issues within Crown Estate Scotland investment criteria should help ensure impacts are minimised and opportunities to enhance are maximised.
4. Identify and dispose of non-core assets.	The **sale of non-core assets** could reduce the stock of natural capital assets managed by Crown Estate Scotland, though should not directly result in the loss of natural capital assets or the services they provide. The importance of natural capital assets and the outputs of the Value Project could be a factor in identifying core Crown Estate Scotland assets.
5. Comply with lease obligations and manage liabilities.	**Meeting lease obligations and managing Crown Estate Scotland's liabilities** should ensure that ecosystem services such as the provision of food and timber are maintained, and natural hazards such as flood risk are addressed.
6. Develop criteria for appraising	Crown Estate Scotland **criteria for appraising investment decisions** and the outputs of the Value Project provide mechanisms to ensure that impacts

Crown Estate Scotland Investment objectives	Rural
investment opportunities.	on natural capital, services and benefits are taken fully into account in the Crown Estate Scotland decision-making process.
7. Ensure that decisions do not constrain future management of assets following new legislation.	This should ensure that Crown Estate Scotland has ability to manage natural capital assets and related services and benefits in the future.

Table4.2: Natural Capital assessment – coastal portfolio

Crown Estate Scotland Investment objectives	Coastal
Maintain and enhance the rural coastal and urban assets through investment in infrastructure development and fixed equipment.	**Investment in infrastructure and fixed equipment** could have minor impacts on natural capital assets, but should also enhance ecosystem services including recreation and provision of food.
Invest [in the development of offshore renewable energy, carbon capture and storage, and aquaculture (finfish, shellfish and seaweed).]	**Economic impact / feasibility studies** to inform future investment in coastal infrastructure will have no direct impact on natural capital assets and related services. However, by informing future investment decisions they could have an impact (positive or negative) on coastal natural capital assets and services or benefits they provide. There is, for example, a risk that new or improved coastal infrastructure could impact on important biodiversity, cultural heritage or landscape assets, though it is likely that investment would deliver other benefits such as recreation, climate regulation or food provisioning (indirectly via dredging activities). The consideration of natural capital issues within Crown Estate Scotland investment criteria should help ensure impacts are minimised and opportunities to enhance are maximised. **Investment at Rhu Marina** is unlikely to have impacts on natural capital assets but should enhance the delivery of benefits, particularly in terms of recreation. **Investment in stewardship or community initiatives** could have an impact (positive or negative) on coastal natural capital assets and services or benefits they provide. The consideration of natural capital issues within Crown Estate Scotland investment criteria should help ensure impacts are minimised and opportunities to enhance are maximised. Involvement of communities is likely to significantly enhance the range of cultural services provided by the assets in question.
Build a capital fund of £10m over 3 years.	**Facilitating or promoting dredging** could have impacts on marine natural capital assets. However, dredging is subject to marine licensing processes which take environmental impacts into account, and is likely to be concentrated in locations which have been previously dredged. Dredging facilitates offshore activities including fisheries, renewable energy development and carbon capture and storage, so is likely to deliver benefits in terms of food provisioning and climate regulation. **Capitalisation of rent for long term leases** is unlikely to have implications for natural capital assets or the services they provide.
Identify and dispose of non-core assets.	The **sale of non-core assets** including areas of foreshore, occupied seabed and coastal infrastructure to communities or port authorities could reduce the stock of natural capital assets managed by Crown Estate Scotland, though should not directly result in the loss of natural capital assets or the services they provide. The importance of natural capital assets could be factor in identifying core Crown Estate Scotland assets.
Comply with lease obligations and manage liabilities	**Meeting lease obligations and managing Crown Estate Scotland liabilities** should ensure that ecosystem services such as the provision of food and recreation opportunities are maintained, and natural hazards such as coastal flood risk are addressed.

Crown Estate Scotland Investment objectives	Coastal
Develop and criteria for appraising investment opportunities	Crown Estate Scotland **criteria for appraising investment decisions** provides a mechanism to ensure that impacts on natural capital, services and benefits are taken fully into account in the decision-making process.
Ensure that decisions do not constrain future management of assets following new legislation.	This should ensure that Crown Estate Scotland has ability to manage natural capital assets and related services and benefits in the future.

Table 4.3: Natural Capital assessment – marine portfolio

Crown Estate Scotland Investment objectives	Marine
Maintain and enhance the rural coastal and urban assets through investment in infrastructure development and fixed equipment	This investment objective does not apply to the marine portfolio
Invest [in the development of offshore renewable energy, carbon capture and storage, and aquaculture (finfish, shellfish and seaweed).]	**Capital funded staff and research studies** to develop future leasing for offshore wind, tidal and wave energy sector development and energy storage development will have no direct impact on natural capital assets and related services. However, by enabling the development of marine renewable sectors, they could have an impact (positive or negative) on marine natural capital assets and services or benefits they provide. There is, for example, a risk that marine renewables could impact on important biodiversity, cultural heritage or seascape assets, though it is likely that this will be managed by the statutory consenting processes that apply to these developments and that the investment would deliver climate regulation benefits. **Work with government and developers to facilitate future carbon capture and storage projects** will have no direct impact on natural capital assets and related services. However, by informing future leasing decisions and facilitating investment by developers, there could be impacts on marine natural capital assets and the services they provide. It is likely, however, that such development would deliver climate regulation benefits. Crown Estate Scotland is aligned with the Scottish Government approach to CCS. CCS developments would be subject to their own consenting processes, ensuring that potential effects are assessed. **Prioritising access to development space for finfish** by working with stakeholders to improve shared marine co-existence and supporting investment to improve the social license of the industry will have no direct impact on natural capital assets. This could however facilitate an increase in aquaculture activity. This activity could have impact on marine natural capital assets and the services or benefits they provide. Aquaculture development is subject to separate consenting processes, ensuring such effects are taken into account. **Supporting development of commercially viable shellfish projects** by encouraging investment and collaborating on industry insurance will have no direct impact on natural capital assets but could facilitate an increase in aquaculture activity. This activity could have impacts on marine natural capital assets and the services or benefits they provide. Aquaculture development is, however, subject to separate consenting processes, ensuring such effects are taken into account. **Assisting with funding for research** into biomethane production from co-digested seaweed and finfish waste streams will have no direct impact on natural capital assets but could facilitate new anaerobic digestion (AD) development. This may have local impacts on natural capital whilst delivering benefits in terms of climate regulation. It is possible that viable use of finfish waste streams could also support some increase in aquaculture activity which could also have implications for natural capital and related services. Development of AD schemes and aquaculture are, however, subject to separate consenting processes, ensuring such effects are taken into account.

Crown Estate Scotland Investment objectives	Marine
Build a capital fund of £10m over 3 years	This investment objective does not apply to the marine portfolio
Identify and dispose of non-core assets	This investment objective does not apply to the marine portfolio
Comply with lease obligations and manage liabilities	**Meeting lease obligations and managing Crown Estate Scotland liabilities** should ensure that ecosystem services such as the provision of food and recreation opportunities are maintained.
Develop and criteria for appraising investment opportunities	Crown Estate Scotland **criteria for appraising investment decisions** provides a mechanism to ensure that impacts on natural capital, services and benefits are taken fully into account in decision-making processes.
Ensure that decisions do not constrain future management of assets following new legislation.	This should ensure that Crown Estate Scotland has ability to manage natural capital assets and related services and benefits in the future.

Table 4.4: Natural Capital assessment – urban portfolio

CES Investment objectives	Urban
Maintain and enhance the rural coastal and urban assets through investment in infrastructure development and fixed equipment	**Investment in existing Crown Estate Scotland urban assets** is unlikely to affect natural capital assets but could maintain cultural services associated with historic buildings within the Edinburgh World Heritage Site whilst, for example, enhancing services such as climate regulation (e.g. through energy efficiency measures as part of renovation work).
Invest [in the development of offshore renewable energy, carbon capture and storage, and aquaculture (finfish, shellfish and seaweed).]	**Investment in additional Crown Estate Scotland urban assets** could present opportunities to enhance natural and cultural capital assets and enhance delivery of biodiversity, climate regulation (e.g. through energy efficiency measures or the use of micro-renewables), flood regulation (e.g. through Sustainable Drainage Systems measures, or tree planting) or cultural services, depending on the character and location of the assets in question. Development of new buildings could have impacts on natural capital and associated services but would be subject to a separate consenting process. Crown Estate Scotland criteria for appraising investment decisions provides a mechanism to ensure that impacts on natural capital, services and benefits are taken fully into account in the Crown Estate Scotland decision-making process.
Build a capital fund of £10m over 3 years	**Building a capital fund** through the sale of urban assets would have a negligible impact on the stock of natural capital assets managed by Crown Estate Scotland, and should not directly result in the loss of natural capital assets or the services they provide.
Identify and dispose of non-core assets	The **sale of non-core urban assets** would have a negligible impact on the stock of natural capital assets managed by Crown Estate Scotland, and should not directly result in the loss of natural capital assets or the services they provide.
Comply with lease obligations and manage liabilities	**Meeting lease obligations and managing Crown Estate Scotland liabilities** should ensure that cultural ecosystem services are maintained.
Develop and criteria for appraising investment opportunities	Crown Estate Scotland **criteria for appraising investment decisions** provides a mechanism to ensure that impacts on natural capital, services and benefits are taken fully into account in the Crown Estate Scotland decision-making process.
Ensure that decisions do not constrain future management of assets following new legislation.	This should ensure that Crown Estate Scotland has ability to manage natural capital assets and related services and benefits in the future.

5 Mitigation and enhancement

5.1 The 2005 Act states requires that 'the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme' are outlined within the Environmental Report. These measures are often referred to as mitigation measures.

5.2 The assessment has not identified significant adverse effects, however it has identified a range of potential environmental effects which may require mitigation, and has also identified opportunities for the Draft Investment Strategy to secure enhancement of the environment.

5.3 At a strategic level the potential for environmental impacts could be reduced by inclusion of a clear statement committing Crown Estate Scotland to:

- Appraisal of the social, economic and environmental costs and benefits of proposed investment decisions and strategic management decisions;
- Rejection of investment and strategic management decisions where the environmental costs clearly outweigh the social and/or economic benefits;
- Continue to ensure the granting of leases is conditional on developments obtaining all necessary consents through existing planning and consenting processes.

5.4 The identification of more detailed mitigation and enhancement measures reflects the role and influence of Crown Estate Scotland.

5.5 Rural – Crown Estate Scotland is responsible for:

- Managing land in rural Scotland, let for a variety of uses including farming, forestry, residential, commercial, sporting and mining operations;
- Leasing land and property to encourage a range of uses, helping to secure economic future for the communities they work with;
- Investing in conservation projects for biodiversity, public access, and educational work to attract visitors.

5.6 Coastal – Crown Estate Scotland is responsible for:

- Granting occupation rights to Crown foreshore and seabed for projects providing marine infrastructure, e.g. ports and harbours, marinas, bridges, cables, pipes, moorings and dredging;
- Helping coastal communities manage their local marine resource, for examples, through local authority regulating leases and mooring associations;
- Supporting marine leisure tourism by providing expertise and funding for strategic research at a local and national level.

5.7 Marine – Crown Estate Scotland is responsible for:

- leasing of the seabed out to 12 nautical miles;
- issuing consents for short-term activities that take place on the foreshore or seabed, such as site surveys;
- holding the rights to offshore renewable energy and carbon and gas storage out to 200 nautical miles from the shore;
- helping to build strong, sustainable marine industries - including offshore renewables - that will deliver economic benefits for Scotland through working with developers, investors and partners and leveraging sector expertise to support sustainable development of the seabed.

5.8 Urban – Crown Estate Scotland is responsible for:

- Owning and leasing premises at 39-41 George Street.

5.9 Mitigation measures which relate to the effect of the Investment Strategy on these areas of responsibility are outlined in Table 5.1 below:

Table 5.1 Potential mitigation and enhancement measures

SEA topic	Investment strategy objective	Investment strategy portfolio	Issue	Mitigation or enhancement measures
Biodiversity, flora and fauna	1, 2	Rural	Forestry rabbit and deer protection	Guidance to avoid potential impacts on habitats and species resulting from rabbit or deer control measures.
	1, 2	Rural, urban	Development and maintenance of buildings	Guidance about the requirement for compliance with legal requirements in relation to protected species when initiating building works.
				Incorporating design requirements for birds and European Protected Species within improvements to buildings.
	1	Rural	Forestry access	Implement mitigation measures in relation to access tracks during the location phase of the road and all the way through the construction, use and maintenance phase.
	1, 2	Rural	Forestry species choice	Encouraging restocking with native species
	1, 2	Coastal	Coastal infrastructure / Feasibility studies for coastal infrastructure	Ensure that infrastructure development does not result in adverse impacts on biodiversity and provides enhancement measures where appropriate, and ensure that these issues are identified in feasibility studies.
	4	Coastal	Disposal of non-core assets	Ensure that the identification of non-core assets takes biodiversity value and natural capital value into account in the decision making process.
	2	Marine	Investment in offshore renewable energy	Ensure that research in relation to investment in offshore renewable energy includes consideration of identifying and mitigating biodiversity issues.
	6			Ensure that the investment appraisal criteria include specific consideration of the natural capital value and potential impacts on biodiversity, flora and fauna from change in ownership and management.
Population and human health	1, 2	Rural	Health issues associated with chemical weed control	Guidance on safety measures in relation to chemical weed control
	6, 4	Coastal	Sale of non-core assets	Ensure that the investment appraisal criteria include specific consideration of impacts on population and human health
Soil	1, 2	Rural	Soil impacts from building works	Guidance or raising awareness in relation to the requirement for compliance with legal requirements in relation to soil quality when initiating building works.
	1, 2	Rural	Soil impacts from forestry activities	Best practice relating to coppice management. For instance, knowledge of the rooting habits, water requirements and the environmental chemistry under different tree species can also be used to reduce risks

SEA topic	Investment strategy objective	Investment strategy portfolio	Issue	Mitigation or enhancement measures
				of some potential adverse impacts on soil quality and soil chemistry. Careful design of ground preparation schemes for peats and peaty soils and avoidance of high carbon soils.
	1, 2	Rural	Soil impacts from chemical usage in forestry	Reducing the need for pesticides, for instance, through the use of biological control in the form of a virus against pests.
	1, 2	Rural	Soil erosion from planting	Use of site surveys to identify deeper, unconsolidated, erosion-prone materials to avoid erosion following replanting.
	1, 2	Rural	Soil impacts from forestry activities	Use of methods for the identification of sensitive sites e.g. materials sensitive to erosion, acidic sensitive areas, sites with low phosphate sorption capacity.
	6, 4	Coastal	Sale of non-core assets	Ensure that the investment appraisal criteria include specific consideration of impacts on soil
Water	1, 2	Rural	Water quality impacts from building works	Guidance or raising awareness in relation to the requirement for compliance with legal requirements in relation to water quality and quantity when initiating building works.
	1,2		Water impacts from forestry	Best practice relating to coppice management such as knowledge on rooting habits, water requirements and environmental chemistry under different tree species
	1,2		Water impacts from forestry	Development of improved catchment hydrology models to support operational decision-making in forestry
	1,2		Water impacts from forestry	Reducing the need for pesticides, for instance, through the use of biological control in the form of a virus against pests.
	2		Water impacts from forestry	Use of site surveys to identify deeper, unconsolidated, erosion-prone materials to avoid erosion following replanting.
	1,2		Water impacts from forestry	Use of methods that minimise the risk of contamination of drainage. For instance, hand spraying around individual trees has little risk of contamination of drainage waters, particularly compared with aerial spraying.
	1,2	Rural	Forestry planting	Catchment management planning systems for the protection, improvement and sustainable use of the water environment
	4	Marine	Offshore renewable energy	Ensure that the leasing process reflects environmental sensitivity to impacts on water quality
	6, 4	Coastal	Sale of non-core assets	Ensure that the investment appraisal criteria include specific consideration of impacts on the water environment
Air, Climatic	1	Rural	Forestry planting	Planting tree species that are known for their high potential for pollutant

SEA topic	Investment strategy objective	Investment strategy portfolio	Issue	Mitigation or enhancement measures
factors				scrubbing
	1, 2	Rural	Renewable and low carbon energy technologies on buildings	Guidance on planning consideration relating to the installation of renewable and low carbon energy technologies on buildings
	2	Marine	Carbon capture and storage	Support research into improving the efficiency of CCS
	6, 4	Coastal	Sale of non-core assets	Ensure that the investment appraisal criteria include specific consideration of impacts on air quality
Cultural and archaeological heritage	1	Rural	Renewable and low carbon energy technologies on buildings associated with farm diversification	Guidance on planning consideration relating to the installation of renewable and low carbon energy technologies on buildings (including buildings in the vicinity of Listed Buildings and areas for their historic significance.)
	2	Rural	Development	Good practice advice relating to the setting of heritage assets
	1,2	Rural	Forestry planting	Use of herbicides with a low potential for corrosion.
	2	Maine	Offshore renewable energy	Ensure that the leasing process takes archaeological sensitivity into account.
	6, 4	Coastal	Sale of non-core assets	Ensure that the investment appraisal criteria include specific consideration of impacts on cultural and archaeological heritage
Landscape and geodiversity	1,2	Rural	Forestry planting and restocking	Use of best practice and guidance for deer and rabbit fencing, such as the use of particular styles of fencing that may be less intrusive e.g. coloured net or marking with wooden pales instead of orange plastic mesh and/or a choice of fenceline that is sympathetic with natural contours
	1,2	Rural	Forestry planting and restocking	Use of tree species that reflect, or are sympathetic to, the character of the area
	2	Marine	Offshore renewable energy	Ensure that the leasing process takes landscape considerations into account.
	6, 4	Coastal	Sale of no-core assets	Ensure that the investment appraisal criteria include specific consideration of impacts on landscape and geodiversity.

6 Monitoring

6.1 Monitoring significant environmental effects is a statutory requirement within the 2005 Act. Monitoring seeks to ensure that plans avoid generating unforeseen adverse environmental effects, and enables the responsible authority to undertake appropriate remedial action. No significant adverse environmental effects have been identified through the SEA process.

6.2 Crown Estate Scotland is developing a tool to better understand, measure and monitor the social, economic and environmental value from land and property, known as the Value Project. The Value Project will identify all of the different types of benefits (social, economic, environmental) generated from the Scottish Crown Estate. Therefore the proposed monitoring and reporting mechanism for monitoring environmental effects is through this monitoring tool. Due to the early stages of development of the Value Project, this Environmental Report includes an outline of potential environmental monitoring which could be aligned with the Value Project.

6.3 It is recommended that the monitoring should focus on gathering data on the location and extent of activities associated with the investment strategy aims and objectives.

6.4 As outlined in Appendix 4, the objectives result in a range of activities on the ground. The link between objectives and activities provides a framework for recording the number/area (ha) and location of these activities across the Scottish Crown Estate. This information is currently available through the Crown Estate Scotland interactive map. Going forward, Crown Estate Scotland should continue to share the number/area of the range of activities in this way.

6.5 In order to link the monitoring to the consideration of Natural Capital the monitoring should also record the main natural capital asset that the activity affects e.g. rivers, wetlands and lochs, arable farmland. This will allow the monitoring to identify the quantity of change affecting specific natural capital assets, what that change is, and whether it is positive or negative.

6.6 The monitoring framework should include reference to:

- the investment strategy objectives;
- the strategy approach associated with each objective and what this means on the ground;
- the location within the Scottish Crown Estate;
- the natural capital asset to which it relates; and
- the area subject to that activity.

6.7 It is anticipated that the future development of the Value Project will provide the suitable framework for monitoring purposes of SEA.

7 Next Steps

7.1 The consultation on the Draft Investment Strategy will run for a ten-week period from 14 December 2018 to 22 February 2019. Comments on the Draft Investment Strategy and the Environmental Report can be submitted to:

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7.2 Following the consultation period, the consultation responses will be analysed and Crown Estate Scotland will finalise and publish the Investment Strategy.

7.3 After the Crown Estate Scotland Investment Strategy is adopted, a Post-Adoption Statement will be produced. This Statement will set out how the SEA and the views received in the consultation processes have been taken into account.

Appendix 1

Review of relevant Plans, Programmes and Strategies, and Environmental Protection Objectives

Relevant plans, programmes and environmental protection objectives

General

Source	Key objectives	Implications / comments
GENERAL		
International		
Aarhus Convention (1998)	To develop a number of rights of the public with regard to the environment. Local authorities should provide for: • The right of everyone to receive environmental information • The right to participate from an early stage in environmental decision making • The right to challenge in a court of law public decisions that have been made without respecting the two rights above or environmental law in general	Ensure that the public are involved and consulted at all relevant stages of SEA production.
Johannesburg Declaration on Sustainable Development (2002)	To make a significant commitment to building a humane, equitable and caring global society aware of the need for human dignity for all.	The SEA should reflect sustainability objectives to **promote the principles of sustainable development**
European		
EU Public Participation Directive Directive 2003/35/EC on providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC	Provides a legal framework for community involvement by requiring public participation in decision-making and regulation, including through access to information and consultation.	Ensure that the public are involved and consulted at all relevant stages of drawing up certain plans and programmes relating to the environment.
SEA Directive 2001 Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment	The key objective of the SEA Directive is to provide for a high level of protection of the environment and contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development.	**Requirements of the SEA Directive must be met in Strategic Environmental Assessments.**
National (Legislation)		
Town and Country Planning (Scotland) Act 1997 (as amended)	The Town and Country Planning (Scotland) Act governs the use and development of land within Scotland. The 1997 Act forms the basis of the Scottish planning system. It sets out the roles of Scottish Ministers and designates local authorities as 'planning authorities' with a responsibility for producing local development plans and handling most aspects of development management and enforcement. All planning applications in Scotland are required to be determined against the Town and Country Planning (Scotland) Ac 1997.	**The SEA should be mindful of the requirements set out in the 1997 Act.**

Source	Key objectives	Implications / comments
Planning etc. (Scotland) Act 2006	The Planning etc. (Scotland) Act 2006 formed a central part of the reform of the Scottish planning system. One of its key effects was the creation of Strategic Development Planning Authorities, which comprise several local planning authorities and are charged with producing long-term development plans.	**The SEA should be mindful of the requirements set out in the Planning etc. (Scotland) Act 2006**
Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2008 (as amended)	Sets out provisions for granting planning permission in accordance with the Town and Country Planning (Scotland) Act 1997.	**The SEA should be mindful of the requirements of the Town and Country Planning (Development Management Procedure) Scotland Regulations**
Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011	Sets out criteria for determining whether an Environmental Impact Assessment would be required for developments.	The SEA should reflect the objectives **to minimise the potential environmental impacts of development**
National (Policies, Plans, Programmes and Strategies)		
National Planning Framework 3 (the Scottish Government, 2014)	The National Planning Framework 3 sets out the Scottish Government's spatial development/investment priorities over the next 20-30 years. It is a long-term strategy to promote environmental sustainability, equality in opportunity, technological progress and human well-being and health. Key outcomes of the framework are as follows: • Creating sustainable places • Reducing carbon emissions and adapting to climate change • Protecting and enhancing Scotland's natural cultural assets as well as facilitating their sustainable use • Supporting better transport and digital connectivity	The SEA should reflect the objectives to make Scotland a **successful, sustainable** place; a **low carbon** place; a **natural, resilient** place; and, a **connected** place.
Scottish Planning Policy (The Scottish Government, 2014)	The purpose of the Scottish Planning Policy is to set out national planning policies on how to address land use matters across the country. It is non-statutory, however, it is in line with the Town and Country Planning (Scotland) • Creating sustainable places • Reducing carbon emissions and adapting to climate change • Protecting and enhancing Scotland's natural cultural assets as well as facilitating their sustainable use • Supporting better transport and digital connectivity	The SEA should reflect the objectives to make Scotland a **successful, sustainable** place; a **low carbon** place; a **natural, resilient** place; and, a **connected** place.
Crown Estate Bill	In 2014 the Smith Commission recommended devolution of The Crown Estate's management responsibilities and revenues in Scotland. The Scotland Act 2016 (section 36) made provision for a Treasury transfer scheme to transfer the functions of the existing Crown Estate Commissioners to Crown Estate Scotland (Interim Management). Provision was also made to amend Schedule 5 of the Scotland Act 1998 in which the Crown Estate was defined	The SEA should reflect the natural capital approach, to help draw clearer links between the health of natural assets & human health & economics.

Source	Key objectives	Implications / comments
	as the property, rights and interests under the management of the Crown Estate Commissioners. The transfer of management functions were put into effect on 1 April 2017 through: • the Crown Estate Transfer Scheme 2017 (to transfer management) and • the Crown Estate (Interim Management) Order 2017 (to establish a new interim body to operate until the long term arrangements as set out in the bill, come into effect) The duties, as set out in the Crown Estate Act 1961 (to secure a commercial return but with regard to the principles of good management) continue to apply to the new Scottish interim body following devolution. Section 7 of the Bill states that managers of the assets must maintain and seek to enhance the value of the assets and also the income they generate. Having said that they may do so in a way that is likely to contribute to a range of wider objectives including economic development, regeneration, social wellbeing, environmental wellbeing, and sustainable development	

Biodiversity, flora and fauna

Source	Key objectives	Implications/comments
BIODIVERSITY, FLORA AND FAUNA		
International		
Bern Convention (1979)	To ensure conservation and protection of wild plant and animal species and their natural habitats (listed in Appendices I and II of the Convention), to increase cooperation between contracting parties, and to regulate the exploitation of those species) listed in Appendix III. To this end the Convention imposes legal obligations on contracting parties, protecting over 500 wild plant species and more than 1,000 wild animal species.	The SEA should consider **the preservation and protection of the environment**.
Bonn Convention on the Conservation of Migratory Species of Wild Animals (1979)	To ensure that contracting parties work together to conserve terrestrial, marine and avian migratory species and their habitats (on a global scale) by providing strict protection for endangered migratory species. The overarching objectives set for the Parties are: • Promote, co-operate in and support research relating to migratory species • Endeavour to provide immediate protection for migratory species included in Appendix I • Endeavour to conclude Agreements covering the conservation and management of migratory species included in Appendix II	The SEA should reflect the objectives **protecting biodiversity and the natural environment.**
Ramsar Convention (1971)	To promote the wise use of wetlands and their resources. The Convention's mission is "*the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world*".	The SEA should take into account the **conservation of wetlands and their resources**.
The Convention on Biological Diversity (2010)	The Convention on Biological Diversity (CBD) is a multilateral treaty which served three main goals, including: • Conservation of biological diversity • Sustainable use of its components • Fair and equitable sharing of benefits arising from genetic	The SEA should reflect objectives **protecting biodiversity and sustainable use of its components.**
European		
The Habitats Directive 1992 Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora	To promote the maintenance of biodiversity taking account of economic, social, cultural and regional requirements. Conservation of natural habitats and maintain landscape features of importance to wildlife and fauna.	The SEA should reflect objectives to **protect and maintain the natural environment and important landscape features.**
The Birds Directive 2009 Directive 2009/147/EC is a codified version of Directive	The preservation, maintenance, and re-establishment of biotopes and habitats shall include the following measures:	The SEA should reflect objectives for the **protection of birds.**

Source	Key objectives	Implications/comments
79/409/EEC as amended	• Creation of protected areas. • Upkeep and management in accordance with the ecological needs of habitats inside and outside the protected zones. • Re-establishment of destroyed biotopes. • Creation of biotopes.	
EU Biodiversity Strategy to 2020 (European Commission, 2011)	The European Commission has adopted an ambitious new strategy to halt the loss of biodiversity and ecosystem services in the EU by 2020. The six targets cover: • Full implementation of EU nature legislation to protect biodiversity • Better protection for ecosystems, and more use of green infrastructure • More sustainable agriculture and forestry • Better management of fish stocks • Tighter controls on invasive alien species • A bigger EU contribution to averting global biodiversity loss	The SEA should reflect objectives to **value, protect and enhance biodiversity.**
EU Seventh Environmental Action Plan to 2020 (European Commission, 2013)	The EU's objectives in implementing the programme are: (a) to protect, conserve and enhance the Union's natural capital; (b) to turn the Union into a resource-efficient, green and competitive low-carbon economy; (c) to safeguard the Union's citizens from environment-related pressures and risks to health and wellbeing; (d) to maximise the benefits of the Union's environment legislation; (e) to improve the evidence base for environment policy; (f) to secure investment for environment and climate policy and get the prices right; (g) to improve environmental integration and policy coherence; (h) to enhance the sustainability of the Union's cities; (i) to increase the Union's effectiveness in confronting regional and global environmental challenges.	The SEA should reflect objectives to **protect and enhance the natural environment**.
National (Legislation)		
Wildlife and Countryside Act 1981 (as amended)	The Act implements the principles of the Bern Convention and the EU Birds Directive in the UK. Since it came into force, the Act has been amended several times. The act applies to the terrestrial environment and inland waters. According to the Act, Scottish Natural Heritage (SNH) is a regulator of the Wild and Countryside Act and is legally responsible for Sites of Special Scientific Interest (SSSIs) and	The SEA should reflect objectives to **value, protect and enhance biodiversity.**

Source	Key objectives	Implications/comments
	to enforce law when necessary. It is important to note that specific amendments, which only apply in Scotland due to devolution, have been made to the Act.	
The Conservation (Natural Habitats, &c.) Regulations 1994	The Act amends the Wildlife and Countryside Act 1981 for Scotland. The Act, together with the Nature Conservation (Scotland) Act 2004, implements the EU Birds and Habitats Directives.	The SEA should reflect objectives to **value, protect and enhance biodiversity.**
Nature Conservation (Scotland) Act 2004	The Act amends the Wildlife and Countryside Act 1981 for Scotland, and makes provision for the further conservation of biodiversity. The Act requires the Scottish Government to report on progress in relation to the Scottish Biodiversity Strategy	The SEA should reflect objectives to **protect biodiversity and the natural environment.**
Wildlife and Natural Environment (Scotland) Act 2011 (as amended)	The Act amends the Wildlife and Countryside Act 1981 for Scotland. The Act mainly changed the way land and the environment is managed in Scotland e.g. it made operational changes to how SSSIs are managed.	The SEA should reflect objectives to **protect and enhance designated biodiversity areas.**
The Conservation of Offshore Marine Habitats and Species Regulations 2017	The Regulations form the legal basis for the implementation of the Habitats Directive and the Bird Directive in terrestrial areas and territorial waters.	The SEA should reflect objectives to **value, protect and enhance marine habitats and species**.
National (Policies, Plans, Programmes and Strategies)		
UK Post-2010 Biodiversity Framework (JNCC, 2012)	The Framework shows how the work of the four UK countries joins up with work at a UK level to achieve the 'Aichi Biodiversity Targets' and the aims of the EU biodiversity strategy. The Framework identifies the following strategic goals: • Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society. • Reduce the direct pressures on biodiversity and promote sustainable use. • Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity. • Enhance the benefits to all from biodiversity and ecosystems. • Enhance implementation through participatory planning, knowledge management and capacity building.	The SEA should reflect objectives to **value, protect and enhance biodiversity.**
Scotland's Biodiversity: It's in Your Hands (Scottish Executive, 2004)	*Scotland's Biodiversity: It's in Your Hands* presents a 25 year strategy (until 2030) for the conservation and enhancement of Scotland's biodiversity. It sets out a number of outcomes in relation to; • Species and habitats • People • Landscapes and Ecosystems • Integration and Co-ordination	The SEA should reflect objectives to **value, protect and enhance biodiversity.**

Source	Key objectives	Implications/comments
	• Knowledge	
2020 Challenge for Scotland's Biodiversity – A Strategy for the conservation and enhancement of biodiversity in Scotland (The Scottish Government, 2013)	The aims of the *2020 Challenge* are in line with the targets set by the aforementioned United Nations Convention on Biological Diversity (20100 and the European Union's Biodiversity Strategy for 2020, and include: • Protect and restore biodiversity on land and in Scotland's SAs • Involve and engage people in decisions about the environment • Promote sustainable economic growth The 2020 Challenge and the 'Scotland's Biodiversity: It's in Your Hands' together make up the Scottish Biodiversity Strategy.	The SEA should reflect objectives to **value, protect and enhance biodiversity.**
Scotland's Biodiversity: A Route Map to 2020 (The Scottish Government, 2015)	The 'Six Big Steps for Nature' identified in the Route Map are: • Ecosystem restoration • Investment in natural capital • Quality greenspace for health and education benefits • Conserving wildlife in Scotland • Sustainable management of land and freshwater • Sustainable management of marine and coastal ecosystems	The SEA should reflect objectives to **value, protect and enhance biodiversity.**
SBS 2020 Challenge: Crown Estate Scotland Delivery Statement (Crown Estate Scotland, 2018)	Crown Estate Scotland's assets are significant in supporting the delivery of Scottish Government objectives relating to the environment. The 'Six Big Steps for Nature' inform Crown Estate Scotland's work and are integrated in their business planning. Crown Estate Scotland work with tenants on ecosystem restoration, woodland management, habitat and species management and the delivery of educational work on the Glenlivet estate. The Biodiversity Statement identifies Crown Estate Scotland's role and targets to meet the 'Six Big Steps for Nature'.	The SEA should reflect objectives to **value, protect and enhance biodiversity.**

Population and human health

Source	Key objectives	Implications / comments
POPULATION AND HUMAN HEALTH		
International		
International Health Regulations, 2007	The International Health Regulations provide a legal instrument for upholding global public health security by preventing and responding to acute public health risks. The Regulations require countries to report certain disease outbreaks and public health risks to the World	The SEA should reflect the objective that **acknowledges the potential health hazards** that could be caused

Source	Key objectives	Implications / comments
	Health Organisation.	by the different development types.
European		
The Bathing Water Quality Directive 2006 Directive 2006/7/EC on the quality of water intended for human consumption	The overall objective of the revised Directive remains the protection of public health whilst bathing.	The SEA should reflect the Directive requirements and **protect the quality of bathing waters**.
The Drinking Water Directive 1998 Directive 98/83/EC on the quality of water intended for human consumption	Protect human health from the adverse effects of any contamination of water intended for human consumption by ensuring that it is wholesome and clean.	The SEA should reflect objectives to **protect and enhance drinking water quality.**
The Noise Directive 2000/14/EC	• Monitor the environmental problem by drawing up strategic noise maps. • Informing and consulting the public about noise exposure, its effects and the measures considered to address noise. • Addressing local noise issues by requiring authorities to draw up action Plans to reduce noise where necessary and maintain environmental noise where it is good.	The SEA should reflect objectives to **reduce noise pollution.**
National (Legislation)		
Public Health etc. (Scotland) Act 2008	The Act updates the law on public health, enabling Scottish Ministers to protect public health. It also makes provision for law on statutory nuisances.	The SEA should reflect objectives to **protect public health.**
National (Policies, Plans, Programmes and Strategies)		
National Performance Framework (The Scottish Government, 2016)	The main purpose of the National Performance Framework is to promote sustainable economic growth by setting out a measurement set that can be used to determine the extent to which key targets are being fulfilled. It sets seven broad targets in relation to: • Growth – stimulating economic growth • Productivity – improving productivity • Participation – improving economic participation • Population – increase population growth • Solidarity – reduce income equality • Cohesion – reduce inequalities in economic participation • Sustainability – reduce greenhouse gas emissions	The SEA should reflect objective to **promote the principles of sustainable economic growth.**
Let's make Scotland more active A Strategy for Physical Activity (Physical Activity Task Force 2003)	The strategy seeks to improve the levels of physical activity in Scotland I order to achieve health benefits. The strategy includes a number of objectives to improve physical activity including the need to improve environments to support inactive people to become active, alongside education and information.	The SEA should reflect objectives which **support opportunities for physical activity.**
Cycling Action Plan for Scotland More people cycling more	The action plan includes the vision that by 2020, 10% of all journeys taken in Scotland will be	The SEA should reflect objectives which **support opportunities for**

Source	Key objectives	Implications / comments
often (Scottish Government, 2010) *http://www.gov.scot/resource/doc/316212/0100657.pdf*	by bike. It supports skills development, improvements to the cycle network, and active travel.	**active travel**.

Soil

Source	Key objectives	Implications / comments
SOIL		
European		
EU Management of Waste from Extractive Industries (2006/21/EC)	The purpose of the Directive is to prevent water and soil pollution from the deposition of waste into heaps or ponds and puts emphasis on the long-term stability of waste facilities to help avoid major accidents. The main elements of the Directive are: • Conditions for operating permits. • General obligations concerning waste management. • The obligation to characterise waste before disposing of it or treating it. • Measures to ensure the safety of waste management facilities. • A requirement to draw up closure plans. • An obligation to provide for an appropriate level of financial security.	The SEA should reflect objectives to **protect soil quality and minimise soil pollution.**
The Industrial Emissions Directive 2010 Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control)	This Directive lays down rules on integrated prevention and control of pollution arising from industrial activities. It also lays down rules designed to prevent or, where that is not practicable, to reduce emissions into land and to prevent the generation of waste, in order to achieve a high level of protection of the environment taken as a whole.	The SEA should reflect objectives to **protect soil quality and minimise soil pollution.**
Thematic Strategy for Soil Protection (European Commission, 2006)	Includes a thematic strategy which aims to: • Establish common principles for the protection and sustainable use of soils • Mitigate potential threats to soils • Preserve soil functions • Restore degraded and contaminated soils	The SEA should reflect objectives to **protect soils and minimise soil pollution.**
National Legislation		
Environmental Protection Act 1990 (as amended)	Sets out legislation for the management and remediation of contaminated land that, in its current states, is causing or has the potential to cause significant pollution of the environment.	The SEA should reflect objectives to **protect soil quality.**

Source	Key objectives	Implications / comments
Contaminated Land (Scotland) Regulations 2000	Provides a detailed framework for the definition, identification and remediation of contaminated land.	The SEA should reflect objectives to **protect soil quality.**
National (Policies, Plans, Programmes and Strategies)		
The Scottish Soil Framework (The Scottish Government, 2009)	The Soil Framework sets out a vision for the enhancement and protection of soil consistent with the economic, social and environmental needs of Scotland. The Framework identifies 13 key outcomes, as follows: • Protecting and enhancing soil organic matter • Reducing soil erosion • Maintaining soil structure • Reduce greenhouse gas emissions from soils • Protecting soil biodiversity • Ensuring that soils contribute to sustainable flood management • Enhancing water quality through sustainable soil management • Enhancing soil's productive capacity • Reducing soil contamination • Reducing pressure on greenfield land and redirect development to brownfield sites where appropriate • Protecting soils with significant historical and cultural features • Enhancing knowledge base • Promoting effective coordination between stakeholders	The SEA should reflect objectives to **protect soils and minimise soil pollution.**

Water

Source	Key objectives	Implications/comments
WATER		
International		
Convention on the Law of the Sea (1982)	Defines the rights and responsibilities of national in their use of the world's oceans, establishing guidelines for businesses, the environment, and the management of natural resources.	The SEA should reflect objectives to **protect and enhance the water environment**.

Source	Key objectives	Implications/comments
European		
The Water Framework Directive 2000 Directive 2000/60/EC establishing a framework for community action in the field of water policy	The main aim of the Directive is to protect of inland surface waters, transitional waters, coastal waters and ground waters.	The SEA should reflect objectives to **protect and minimise the impact on water quality.**
The Bathing Water Quality Directive 2006 Directive 2006/7/EC on the quality of water intended for human consumption	The overall objective of the revised Directive remains the protection of public health whilst bathing.	The SEA should reflect the Directive requirements and **protect the quality of bathing waters**.
The Floods Directive 2007 Directive 2007/60/EC on the assessment and management of flood risks	Establish a framework for the assessment and management of flood risks, aiming at the reduction of the adverse consequences for human health, the environment, cultural heritage and economic activity associated with floods.	The SEA should reflect objectives that relate to **flood management and reduction of risk.**
The Nitrates Directive 1991 Directive 91/676/EEC on nitrates from agricultural sources.	Reduce water pollution caused or induced by nitrates from agricultural sources and prevent further such pollution.	The SEA should reflect objectives to **reduce water pollution.**
Marine Strategy Framework Directive 2007	The MSFD extends the requirements of the Water Framework Directive (WFD) into seas beyond 1nm. The MSFD requires Member States to *"take necessary measures to achieve or maintain good environmental status in the marine environment by the year 2020 at the latest".*	The SEA should reflect objectives to **protect and enhance the water environment**.
National (Legislation)		
Marine (Scotland) Act 2010		
Bathing Waters (Scotland) Regulations 2008	The Act implements the EU Bathing Water Quality Directive.	The SEA should reflect objectives that relate to **flood management and reduction of risk.**
Flood Risk Management (Scotland) Act 2009	The Act requires local authorities to assess bodies of water to determine potential flood risk and carry out measures if required. The Act implements the EU Floods Directive.	The SEA should reflect objectives that relate to **flood management and reduction of risk.**
Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended)	Provides a regulatory framework for controlling activities which could have an adverse effect on Scotland's water environment including abstraction, impoundments, dredging, impoundments, surface water drainage and pollution. The primary objective of the Regulations is to protect and restore Scotland's water environment.	The SEA should reflect objectives to **protect and restore the water environment.**
Water Environment (Miscellaneous) (Scotland) Regulations 2017	The Regulations amend existing general binding rules and introduces requirements for particular projects to have a construction license in place before works can commence.	The SEA should reflect sustainability objectives to **protect the natural environment.**
National (Policies, Plans, Programmes and Strategies)		
National Marine Plan 2015	The plan covers the management of both Scottish inshore waters (out to 12 nautical miles)	The SEA should reflect sustainability

Source	Key objectives	Implications/comments
	and offshore waters (12 to 200 nautical miles). It also applies to the exercise of both reserved and devolved functions. It provides guidance to decision-makers and users within Scotland's marine environment.	objectives to protect the sustainable use of the marine environment.
SEPA Draft River Basin Management Plans Scotland River Basin District / Solway Tweed River Basin District 2008	Identifies key pressures and environmental impacts on Scottish water bodies, which may be exacerbated by climate change.	The SEA should reflect objectives that relate to **flood management and reduction of risk.**
Scotland's Bathing Waters: A Strategy For Improvement (Scottish Executive Environment Group, 2002)	The main purpose of this strategic document is to reduce water pollution in bathing waters by implementing changes to agricultural practices, ensuring compliance with controls on industrial discharges and making use of SUDs.	The SEA should reflect the Directive requirements and **protect the quality of bathing waters**.

Air

Source	Key objectives	Implications / comments
AIR		
International		
UNECE Convention on Long Range Transboundary Air Pollution (198	The purpose of the UNECE Convention was to address the environmental consequences of air pollution. The main aim of the Convention was to reduce and prevent air pollution in order to improve air quality on the local, regional and national levels. To achieve this, the Convention sets out measures to be taken by parties to cut their emissions of air pollutions. The UNECE Convention has been extended by eight other protocols that identify measures to be undertaken by Parties to cut their emissions of air pollutants. These eight protocols include the following: • EMEP Protocol on Long-Term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutions in Europe (1984) • Helsinki Protocol on the Reduction of Sulphur Emissions (1985) • Nitrogen Oxide Protocol (1988) • Volatile Organic Compounds Protocol (1991) • Oslo Protocol on Further Reduction of Sulphur Emissions (1994) • Protocol on Heavy Metals (1998) • Aarhus Protocol on Persistent Organic Pollutants (1998) • Gothenburg Protocol on Abate Acidification, Eutrophication and Ground-level Ozone (1999)	The SEA should reflect the objectives to **protect and enhance air quality** from factors such as eutrophication and acidification

Source	Key objectives	Implications / comments
European		
The National Emissions Ceiling Directive 2001 Directive 2001/81 EC on national emission ceilings for certain atmospheric pollutants	The Directives sets limits for the main causal factors of acidification, eutrophication and ground-level ozone.	The SEA should reflect the objectives to **protect and enhance air quality** from factors such as eutrophication and acidification.
The Air Quality Directive 2008 Directive 2008/50/EC on ambient air quality and cleaner air for Europe	Avoid, prevent and reduce harmful effects of air pollution on human health and the environment. The Directive Brings together existing legislation (at the time) on air quality, including objectives for key pollutants such as SO_2, NO_x, particulates, lead, benzene and ozone. The Directive sets out statutory limits for the concentration of different pollutants (Annex XI) and thresholds for human and environmental health (Annex II).	The SEA should reflect the objectives to **reduce harmful effects of air pollution.**
The Industrial Emissions Directive 2010 Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control)	This Directive lays down rules on integrated prevention and control of pollution arising from industrial activities. It also lays down rules designed to prevent or, where that is not practicable, to reduce emissions into air in order to achieve a high level of protection of the environment taken as a whole.	The SEA should reflect the objective for **reducing air pollution caused by industrial emissions.**
The Clean Air Policy Package and Clean Air Programme for Europe 2013	The Clean Air Policy Package and Clean Air Programme for Europe set targets up to 2030, and also introduces measures and proposals to reduce emissions and improve air quality across the EU.	The SEA should reflect the objectives to **protect and enhance air quality.**
National (Legislation)		
The Environment Act 1995	The Act requires the UK government and devolved administrations to produce a national air quality strategy. The most recent version of this national air quality strategy is The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, which defines the roles of the local and central government, as well as the Scottish Environment Protection Agency (SEPA), industry, business, transport, individuals and other groups. In addition, the Act sets objectives for specific emissions and measures for monitoring. Where limits are not met, the local authority must declare it an Air Quality Management Area (AQMA)	The SEA should reflect the objective for **reducing air pollution**.
The Air Quality (Scotland) Regulations 2000 *As amended by the Air Quality (Scotland) Amendment Regulations 2002 and the Air Quality (Scotland) Amendment Regulations 2016*	Sets out air quality objectives for several substances in line with the Environment Act 1995. In contrast to EU requirement, Scotland has set stricter levels for specific pollutants including PM_{10} and $PM_{2.5}$.	The SEA should reflect the objective for **reducing air pollution.**
The Air Quality Standards (Scotland) Regulations (2010)	Sets statutory targets for concentrations of pollutants in ambient air in accordance with EU Directives. The Act allows for Air Quality Management Zones to be identified and makes provision for the sharing of this information with the public. The Regulations were amended through The Air Quality Standards (Scotland) Amendment Regulations 2016.	The SEA should reflect the objective for **reducing air pollution**.
Pollution Prevention and Control (Scotland) Regulations 2012	Implements the requirements of the EU Industrial Emissions Directive in Scotland. The Act states that emissions to air, water and land must be considered together, and permits are	The SEA should reflect the objective for **reducing air pollution.**

Source	Key objectives	Implications / comments
	considered based on the nature of the activity. The Act has been amended several times since 2012.	
National (Policies, Plans, Programmes and Strategies)		
The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2011)	The key objective of the strategy is to improve and protect ambient air quality in the UK, with the overall aim of health protection. The strategy sets out key objectives and monitoring recommendations for specific emissions.	The SEA should reflect the objective for **reducing air pollution, particularly in relation to health protection.**
Cleaner Air for Scotland – The Road to a Healthier Future (the Scottish Government, 2015)	Presents a single framework which sets out further proposals for delivering improvements to air quality in Scotland. It summarises six broad types of key actions that could help to reduce air pollution and improve air quality; **Transport** – reducing transport emissions by promoting active travel and/or low and zero emission fuels **Legislation and Policy** – comply with European and Scottish legal requirements **Communication** – inform and engage citizens **Health** – protecting citizens from air pollution **Placemaking** – minimise air pollution through appropriate design **Climate Change** – achieve Scotland's renewable targets	The SEA should reflect the objective for **reducing air pollution and promote active/sustainable travel**.

Climatic factors

Source	Key objectives	Implications/comments
CLIMATIC FACTORS		
International		
IPCC's Fifth Assessment Report on Climate Change (2014)	To limit and/or reduce all greenhouse gas emissions which contribute to climate change	The SEA should reflect objectives to **support reduction in emissions of greenhouse gases.**
Paris Agreement (United Nations 2015)	The main aim of the Paris Agreement centres on keeping global temperature rise this century below 2°C above preindustrial levels. Frameworks are to be put in place to help achieve these goals.	The SEA should reflect objectives to **adapt and mitigate climate change.**
European		
Emissions Trading System Directive 2009 Directive 2009/29/EC to improve and extend the greenhouse gas emission allowance trading scheme of the Community	The main aim of the Directive is to improve and extend the greenhouse gas emission allowance trading scheme of the Community	The SEA should reflect objectives to **promote energy efficiency and reduce the emission of greenhouse**

Source	Key objectives	Implications/comments
		gases.
Renewable Energy Directive 2009 Directive 2009/28/EC on the use of energy from renewable sources	The Directive sets targets for renewable energy use within the EU, which requires that 20% of the energy consumed within the EU is renewable.	The SEA should reflect objectives to **promote renewable energy.**
Energy Efficiency Directive 2012 Directive 2012/30/EU on energy efficiency	The purpose of the Directive is to promote energy efficiency by establishing a set of binding measures to help the EU reach its 20% energy efficiency target by 2020.	The SEA should reflect objectives to **promote energy efficiency and prudent use of resources.**
National (Legislation)		
Climate Change (Scotland) Act 2009	The Act sets statutory targets for the reduction of greenhouse gas emissions and makes further provision about energy efficiency and about the reduction and recycling of waste. The Act sets an interim 42 percent reduction target by 2020 and an 80 percent reduction target for 2050. Secondary legislation has been made under the Climate Change (Scotland) Act 2009, including: • *The Climate Change (Annual Targets) (Scotland) Order 2010*: sets emission reduction targets for 2010-2022 • *The Climate Change (Limit on Carbon Units) (Scotland) Order 2010*: places a limit on the amount of carbon units that may be credited to net Scottish Emissions for the period 2010-2012 • *The Carbon Accounting Scheme (Scotland) Regulations 2010*: establish a scheme for monitoring compliance with annual reduction targets for 2010-22 (as amended in 2015 and 2016) • *The Climate Change (Annual Targets) (Scotland) Order 2011*: sets emission reduction targets for 2023-2027 • *The Climate Change (Limit on Carbon Units) (Scotland) Order 2011*: places a limit on the amount of carbon units that may be credited to net Scottish Emissions for the period 2023-2027 • *The Climate Change (Limit on Carbon Units) (Scotland) Order 2010*: places a limit on the amount of carbon units that may be credited to net Scottish Emissions for the period 2013-2017 • *The Climate Change (Additional Greenhouse Gas) (Scotland) Order 2015*: adds nitrogen trifluoride as an additional greenhouse gas listed in the Climate Change (Scotland) Act 2009 • *The Climate Change (Annual Targets) (Scotland) Order 2016*: sets annual reduction targets for 2028-2032 • *The Climate Change (Limit on Carbon Units) (Scotland) Order 2010*: places a limit on the amount of carbon units that may be credited to net Scottish Emissions for	The SEA should reflect the objective to **reduce the emission of greenhouse gases and mitigate climate change**

Source	Key objectives	Implications/comments
	the period 2018-2022 Part 5 of the Climate Change (Scotland) Act 2009 also includes secondary legislation in relation to the energy performance of buildings and the functions of forestry commissioners.	
National (Policies, Plans, Programmes and Strategies)		
A Low Carbon Economic Strategy for Scotland – Scotland, A Low Carbon Society (The Scottish Government, 2010)	The main purpose of the Low Carbon Economic Strategy is to achieve the targets as set out in the Climate Change (Scotland) Act 2009. The document provides a comprehensive framework for developing a low carbon economy across Scotland. The strategy sets out measures that could be undertaken by Parties to cut their greenhouse gas emissions. This vision relates to the energy sector, the built environment, Scotland's resources and businesses.	The SEA should reflect objectives to **support the reduction of greenhouse gas emissions**
Towards a Low Carbon Scotland – Smart Cities (The Scottish Government, 2012)	The purpose of the document is to highlight the ways in which Scotland can become a low carbon society by presenting a number of case studies about sustainable urban development in Scottish cities such as district heating development and a hydrogen bus project in Aberdeen, renewable energy projects in Edinburgh and the 'Energy from Waste' project in Glasgow.	The SEA should **support the reduction of greenhouse gas emissions.**
Climate Change Bill Consultation Paper (The Scottish Government, 2017)	The Climate Change Bill contains proposals to amend the Climate Change (Scotland) Act 2009 in relation to only those parts that relate to emission reduction targets (including associated reporting duties).	The SEA should reflect objectives to **support the reduction of greenhouse gas emissions.**
A nation with ambition: The Government's Programme for Scotland 2017-18	One of the key objectives of the Programme is to promote further investments in renewable energies, renewable technologies and sustainable modes of transport in order to tackle climate change.	The SEA should reflect objectives to **support renewable technologies, sustainable modes of transport.**
The Draft Climate Change Delivery Plan (The Scottish Government, 2017)	The Climate Change (Scotland) Act 2009 requires that Ministers publish a report setting out policies and proposals to meet annual targets. With the publication of the Climate Change Delivery Plan, the Scottish Government aims to meet its emission reduction targets over the period 2017-2032.	The SEA should reflect objectives to **adapt and mitigate climate change.**
The Scottish Energy Strategy (The Scottish Government, 2017)	Scotland's Energy Strategy sits alongside the aforementioned Climate Change Delivery Plan. Three key themes underpin the Strategy; • A whole-system view in which energy supply and consumption are seen as equal priorities • A stable energy transition towards renewable energies and sustainable transport • A smarter model of local energy provision which promotes local energy, community involvement and community ownership of energy generation	The SEA should reflect objectives to **adapt to and mitigate climate change.**
Scottish Emissions Targets 2028-2032 – The high ambition pathway towards a low-carbon economy (Committee on Climate Change, 2016)	Sets out recommendations by the Committee on Climate Change which involves the following; • Significant rollout of low-carbon heat pumps and heat networks	The SEA should reflect objectives to **reduce greenhouse gas emissions.**

Source	Key objectives	Implications/comments
	• Promoting sales of electric cars • Stimulating afforestation in Scotland • Expanding renewable power and shutdown of coal-fired power	
Climate Ready Scotland: Scottish Climate Change Adaptation Programme (The Scottish Government, 2014)	Addresses the impacts identified for Scotland in the UK Climate Change Risk Assessment (CCRA) published under section 56 of the UK Climate Change Act 2008. It aims to increase the resilience of Scotland's people, environment and economy to the impacts of a changing climate.	The SEA should reflect objectives to **mitigate the effects of climate change.**
Climate Change Plan (2018)	The Climate Change Plan sits alongside the Scottish Government's Energy Strategy, and provides the strategic framework for our transition to a low carbon Scotland. Building on previous reports on policies and proposals, the Plan sets out the path to a low carbon economy while helping to deliver sustainable economic growth and secure the wider benefits to a greener, fairer and healthier Scotland in 2032.	The SEA should reflect objectives to **reduce greenhouse gas emissions.**
Climate Change Plan – the Third Report on Proposals and Policies 2018-2032.	The report details how the Scottish Government will continue to drive progress towards the current emissions reduction target of 80% by 2050, The 2020 target is for restoring 50,000 hectares of degraded peatland, and by 2030 this target will have increased to 250,000 hectares.	The SEA should reflect objectives to reduce greenhouse gas emissions.
Renewables Action Plan (2009)	Set out short term actions towards the delivery of 2020 targets for renewable energy	The SEA should reflect objectives to **reduce greenhouse gas emissions.**
2020 Routemap for Renewable Energy in Scotland (2011), updated 2013	Reflects the new target to meet an equivalent of 100% demand for electricity from renewable energy by 2020, as well as our target of 11% renewable heat.	The SEA should reflect objectives to **reduce greenhouse gas emissions.**
Blue Seas, Green Energy: A Sectoral Marine Plan for Offshore Wind Energy in Scottish Territorial Waters (2011)	Sets out the Scottish Government's approach to offshore wind energy in territorial waters.	The SEA should reflect objectives to **reduce greenhouse gas emissions**
Seaweed Cultivation Policy Statement 2017	The policy statement aims to help facilitate the growth of this sector by setting out Scottish Government Policy on the suitability of seaweed cultivation in different scenarios, while ensuring that activities which may have an environmental impact are understood and mitigated.	The SEA should reflect objectives to protect the natural environment.
Marine Litter Strategy (2014)	The marine litter strategy seeks to maximise opportunities and minimise threats in addressing the levels of litter present.	The SEA should reflect objectives to protect the natural environment.

Cultural heritage and the historic environment

Source	Key objectives	Implications/comments
CULTURAL HERITAGE AND THE HISTORIC ENVIRONMENT		

Source	Key objectives	Implications/comments
International		
European Convention on the Protection of the Archaeological Heritage (Valletta, 1992) *Revision of the 1985 Granada Convention*	Protection of the archaeological heritage, including any physical evidence of the human past that can be investigated archaeologically both on land and underwater. Creation of archaeological reserves and conservation of excavated sites.	The SEA should reflect objectives to **protect the archaeological heritage**.
European		
European Spatial Development Perspective (1999)	Economic and social cohesion across the community. Conservation of natural resources and cultural heritage. Balanced competitiveness between different tiers of government.	The SEA should reflect objectives to **conserve natural resources and cultural heritage.**
National (Legislation)		
Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997	Provides main legislation to: • list buildings of special architectural or historic interest • providing requirements in relation to changes affecting listed buildings and conservation areas • setting out a framework for designating and managing Conservation Areas	The SEA should reflect objectives to **conserve cultural heritage, particularly in relation to Listed Buildings, Conservation Areas and buildings of special architectural or historic interest.**
National Parks (Scotland) Act 2000	Sets out for main aims for the National Parks of Scotland: • Conserving and enhancing the natural and cultural heritage of the area • Promoting sustainable use of the natural resources of the area • Promoting understanding and enjoyment of the area by the public • Promoting sustainable economic and social development of the area's communities	The SEA should reflect objectives to **conserve cultural heritage in National Parks.**
Historic Environment Scotland Act 2014	The Act established Historic Environment Scotland (HES) as a Non Departmental Public Body (NDPB). Under the Act, HES will be a statutory consultee in relation to listed buildings and conservation area consents, as well as in relation to EIA. The Act also amended statutory processes in relation to the historic environment by changing the processes for the designation of sites and buildings (by scheduling and listing) and for consents relating to scheduled monuments, listed buildings and conservation areas.	The SEA should reflect objectives to **conserve cultural heritage and the wider historic environment.** In addition, the role of Historic Environment Scotland should be taken into account.
The Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013 *The Town and Country Planning (Neighbouring Planning Authorities and Historic Environment) (Scotland) Direction 2015*	Both Acts state that Historic Environment Scotland must be consulted on any development affecting a UNESCO World Heritage Site in Scotland.	The SEA should reflect objectives to **conserve cultural heritage and the wider historic environment.**
National (Policies, Plans, Programmes and Strategies)		
Our Place in Time – The Historic Environment Strategy for	The Strategy provides a high level framework which sets out a 10-year vision for safeguarding the cultural, social, environmental and economic value of Scotland's heritage	The SEA should reflect objectives to

Source	Key objectives	Implications/comments
Scotland (The Scottish Government, 2014)	assets. The Strategy sets out three main aims: • Investigating and recording the assets that make up Scotland's historic environment • Protecting Scotland's historic environment • Sharing information on the significance of Scotland's historic environment Each ambition is underpinned by a number of strategic priorities e.g. application of new technologies.	**conserve the historic environment.**
Scottish Historic Environment Policy Statement (2016)	The policy statement supports the protection and enhancement of the historic environment, and sets out the principles for designation.	The SEA should reflect the principles of the protection and enhancement of the historic environment.

Landscape and geodiversity

Source	Key objectives	Implications / comments
LANDSCAPE AND GEODIVERSITY		
European		
European Landscape Convention (Florence, 2002)	The convention promotes landscape protection, management and planning.	The SEA should reflect objectives **to protect, manage and plan for landscape provision.**
National (Policies, Plans, Programmes and Strategies)		
Getting the best from our land A Land Use Strategy for Scotland 2016-2021	The Strategy supports sustainable land use, and recognises the interactions between different interests and land use. The objectives of the strategy include: • Land-based businesses working with nature to contribute more to Scotland's prosperity. • Responsible stewardship of Scotland's natural resources delivering more benefits to Scotland's people. • Urban and rural communities better connected to the land, with more people enjoying the land and positively influencing land use.	The SEA should reflect the need to support **sustainable land use**.

Material assets

Source	Key objectives	Implications/comments
MATERIAL ASSETS – WASTE		
European		
The Landfill Directive 1999 Directive 99/31/EC on the landfill of waste	Prevent or reduce negative effects on the environment from the landfilling of waste by introducing stringent technical requirements for waste and landfills.	The SEA should reflect objectives to **increase recycling and reduce the amount of waste**.
The Waste Framework Directive 2008 Directive 2008/98/EC on waste	Prevention or reduction of waste production and its harmfulness. The recovery of waste by means of recycling, re-use or reclamation. Recovery or disposal of waste without endangering human health and without using processes that could harm the environment.	The SEA should reflect objectives that **minimise waste production as well as promote recycling**.
The Urban Waste Water Directive 1991 Directive 91/271/EEC concerning urban waste water treatment	Protect the environment from the adverse effects of urban waste water collection, treatment and discharge, and discharge from certain industrial sectors.	The SEA should reflect objectives to **reduce water pollution.**
The Packaging and Packaging Waste Directive 1994 Directive 94/62/EC on packaging and packaging waste	Harmonise the packaging waste system of Member States and promote recycling.	The SEA should reflect objectives to **minimise the environmental impact of waste and promote recycling**.
EU Management of Waste from Extractive Industries (2006/21/EC)	The purpose of the Directive is to prevent water and soil pollution from the deposition of waste into heaps or ponds and puts emphasis on the long-term stability of waste facilities to help avoid major accidents. The main elements of the Directive are: • Conditions for operating permits. • General obligations concerning waste management. • The obligation to characterise waste before disposing of it or treating it. • Measures to ensure the safety of waste management facilities. • A requirement to draw up closure plans. • An obligation to provide for an appropriate level of financial security.	The SEA should reflect objectives to **protect soil quality and minimise soil pollution.**
National (Legislation)		
Environmental Protection Act 1990	The Act implements the EU Waste Framework Directive (2008) and includes provisions for improved control of pollution and waste generation arising from certain industrial processes Moreover, the Act places a duty on local authorities, as the primary regulators, to identify and	The SEA should reflect objectives to **reduce pollution**.

Source	Key objectives	Implications/comments
	secure the remediation of contaminated land in their respective areas. The Environmental Protection Act comprises the following parts: Part I: Integrated Pollution and Control Part II: Waste Management Licencing Part III: Statutory Nuisances Part IV: Criminal Offences Concerning Litter Part VI: Statutory Notification and Risk Assessment for Genetically Modified Organisms (GMOs) Part VII: Creation of Nature Conservancy Council for England, the Nature Conservancy Council for Scotland and the Countryside Council for Wales.	
The Management of Extractive Waste (Scotland) 2010 Regulations	EU directive 2006/21/EC was transposed in the form of the Management of Extractive Waste (Scotland) 2010 Regulations, also known as 'MEW'. It sets out conditions for granting planning permission for extractive waste areas and waste facilities, along with additional requirements for category A (high risk) waste facilities.	The SEA should reflect objectives to **minimise the environmental impact of waste.**
Waste Management Licencing (Scotland) Regulations 2011 (as amended)	Sets out requirements for the management of waste and related activities with regard to granting site licences and consolidating existing licences.	The SEA should reflect objectives to **minimise the environmental impact of waste.**
National (Policies, Plans, Programmes and Strategies)		
Scotland's Zero Waste Plan (2010)	The Zero Waste Plan presents a vision to minimise waste transport to landfills, promote recycling and enhancing collection methods. The key objective of the Plan is to maximise the economic and environmental opportunities of waste reduction and reuse.	The SEA should reflect objectives to **minimise the environmental impact of waste and promote recycling**.
Planning Advice Note 63: energy from waste (2013)	Sets out guidance for planning authorities on proactively planning for waste management	The SEA should reflect objectives to **minimise the environmental impact of waste and promote recycling**.
A strategy for improving waste data in Scotland (2017)	Sets out a strategy to improve the relevance, quality and availability of data on waste from all sources (e.g. households, commerce and industry). The primary objective of the strategy is to improve waste data strategies in order to enhance Scotland's waste and resources sector.	The SEA should reflect objectives to **minimise the environmental impact of waste and promote recycling**.
National (Legislation)		
Pollution Prevention and Control (Scotland) Regulations 2012 (as amended)	Implements the requirements of the EU Industrial Emissions Directive in Scotland. The Act states that emissions to air, water and land must be considered together, and permits are considered based on the nature of the activity.	The SEA should reflect objectives for **reducing air/water/soil pollution.**

Source	Key objectives	Implications/comments
	The Act has been amended several times since 2012.	
Scotland Rural Development Programme (SRDP) 2014-2020	The key purpose of the SRDP 2014 - 2020 is to help achieve sustainable economic growth in Scotland's rural areas and the priorities remains broadly the same as the previous programme: The main priorities are: • Enhancing the rural economy • Supporting agricultural and forestry businesses • Protecting and improving the natural environment • Addressing the impact of climate change • Supporting rural communities	The SEA should reflect objectives for **protecting the environment.**

Appendix 2

Consultation Authorities responses' to the Screening Report

Consultation Authority	Response
Scottish Environmental Protection Agency (SEPA)	We note from the screening report that you consider the Crown Estate Scotland Investment Strategy will have no significant environmental effects and as such your intention is to screen it out of requiring SEA. In accordance with Section 9(3) of the Environmental Assessment (Scotland) Act 2005 we have considered your screening report using the criteria set out in Schedule 2 for determining the likely significance of effects on the environment and it is our view that there is the potential for significant effects on the environmental issues which fall within our remit (air, soil, water, material assets, climatic factors and human health). Our understanding is that the strategy will contain aims and objectives relating to the management, development and disposal of assets including in the fields of renewable energy, aquaculture and rural land. As such the strategy will directly influence the direction of the future management of aspects of the estate which have the potential to interact in both positive and negative ways with environmental issues such as soil and water quality, carbon emissions, and the ecological status of waterbodies. Consideration of environmental issues in a systematic manner during the preparation of the strategy (by application of SEA methodology) will ensure that the resulting strategy is robust and that unintended or unforeseen consequences are minimised. We consider that applying SEA to the Investment Strategy will not only help to identify and address environmental issues at a strategic level thereby ensuring a more sustainable management strategy but that it may also minimise the need for SEA at lower tiers in the management process. In addition to this, whilst some activities which the strategy will contain are the subject of existing environmental or planning regulations this is not the case for all. The cumulative effect of a number of relatively small-scale activities which individually do not require regulation can be significant at a local and / or national level. A strategic-level assessment of potential cumulative effects is particularly important when management activities on-the-ground are mostly devolved to local managers or tenants as in this case. SEA is an extremely useful tool in the consideration of such effects.
Historic Environment Scotland (HES)	The Investment Strategy will set out how Crown Estate Scotland will develop the estate in areas such as wind energy, aquaculture, rural land, etc. The strategy itself will contain aims and objectives relating to the raising of capital and the management, development and disposal of assets. It is likely that the strategy will strongly influence the management of the estate going forward and as such set the course for its sustainable management focused on maintaining and enhancing its value and income return. It is our view that the strategy and the choices that Crown Estate Scotland will make regarding investment priorities have the potential significantly to affect the historic environment, both positively and negatively. We note that other high level plans in the hierarchy (such as the Corporate Plan) have not been subject to a full environmental assessment. Such an assessment may have captured the potential significant environmental effects at that level and negated the need for an assessment of this strategy. However, in the absence of such an assessment we consider that this would be the appropriate level at which to test the environmental performance of the strategy and to influence and inform it. An assessment at this level may also assist with mainstreaming environmental considerations and where necessary, incorporating mitigation measures, in such a way that reduces the need for further assessment elsewhere in the hierarchy.
Scottish Natural Heritage (SNH)	In terms of our interests and from the information provided in the screening report, we are unable to agree that the above Plan *is not* likely to have significant environmental effects. Although we acknowledged that the Crown Estate Scotland (CES) Corporate Plan was pre-screened, this was done on the understanding that future plans and legislation arising from it, that are likely to set a framework for development, would be subject to environmental assessment. We also understand that CES think that a phased approach to identifying opportunities for further devolution of the Crown Estate represents the best approach to assessing the environmental effects arising from such proposals. However, the screening report details a number of activities and components, including development management and asset management, and it is unclear how a phased approach of assessment later down the line will pick up the likely significant effects which will be set at this higher lever strategy. For example, how will the suggested phased approach of devolution of management responsibilities allow for the consideration of alternatives, if the direction is already set at the Investment Strategy stage? Accordingly, at this time, we cannot accept

Consultation Authority	Response
	the suggestion for SEA at that later stage as a substitute for SEA at this plan level. Table 3 points out: 'Development of Crown Estate Scotland assets has the potential for environmental impacts in the area of offshore renewable energy, CCS and aquaculture' However, in terms of the explanation for the significance of environmental effects, the reasoning for not carrying out environmental assessment is not clearly demonstrated. In terms of the sale of non-core assets this will be done only where there is 'no significant negative impact on the provision of wider public benefits', but this is not clearly defined in terms of environmental outcomes. Also, as we are unsighted on the content of the Investment Strategy, it is difficult to ascertain what its relationship is with the Marine Sectoral Plans, particularly where these are in preparation, or have yet to be prepared. While we appreciate that some activities falling under the development of Crown Estate assets will be subject to regulatory control, for others (like some aspects of aquaculture, such as shellfish and seaweed harvesting) this is less clear. It is difficult to ascertain no significant environmental effect on that basis. We think that it is particularly important for the environmental effects of non-regulated activities to be assessed strategically.

Appendix 3
Consultation Authorities responses to the Scoping Report

General comments

Consultation authority comments relating to the SA Scoping Report for Extending Permitted Development Rights in Scotland: A Sustainability Appraisal			
Section	Consultation authority	Comment	Action (how comments have been addressed in this SA Report)
General comments	**Historic Environment Scotland (HES)**	No further comments	
	SNH	We welcome that "The Crown Estate Scotland Draft Investment Strategy seeks to improve the environmental impacts derived from the assets". We note that the Crown Estate Bill "seeks to recognise a different ethos in Scotland and so moves beyond a focus on profitability, to encompass other factors such as regeneration, social wellbeing, environmental wellbeing and sustainable development when considering how an asset should be managed". As it was indicated at our meeting on 28 May, and according to wording in Table 4.1, the Investment Strategy does not strongly influence the management of CES assets. This seems to suggest that the strategy itself has limited scope for delivering on the expectations of the Bill. We also note in section 1.9 that the Investment Strategy only relates to 'capital' activities. Given the breadth of revenue and capital activities undertaken by CES, we would welcome clarification of when and how the environmental effects of all of these activities can be meaningfully assessed. SEA is at its most useful if it is allowed to shape the plan by keeping environmental effects and benefits in mind throughout the drafting process. For example, SEA can provide a robust and systematic input into drawing out environmental criteria for the investment appraisal methodology. We hope that this can be incorporated into this strategy and assessment process and would be very happy to provide further input into this.	Additional text included in introduction which explains context.
	SEPA	No further comments	

Section 1: General approach

Consultation authority comments relating to the SA Scoping Report for Extending Permitted Development Rights in Scotland: A Sustainability Appraisal			
Section	Consultation authority	Comment	Action (how comments have been addressed in this SA Report)

Consultation authority comments relating to the SA Scoping Report for Extending Permitted Development Rights in Scotland: A Sustainability Appraisal			
	Historic Environment Scotland (HES)	No further comments	Noted.
	SNH	We recognise that the Investment Strategy does not strongly influence management of CES assets. However, we would reiterate the benefits in assessing the environmental criteria of the investment appraisal methodology as part of this SEA process. There is clearly scope for environmental impacts from these activities and the environmental criteria drawn up to accompany; for example, sale of assets could be developed as clear mitigation to any potential adverse effects from this process. Section 1.4 could also mention the move to balancing business/economic considerations with society and environment. We appreciate that the drafting of the Investment Strategy is already well progressed, but we would hope that, in the process of the Strategic Environmental Assessment, the environmental credentials of the strategy will be further strengthened. For example, the objective to "improve environmental impacts derived from the assets" could perhaps be better worded, such as: "reduce impacts on natural assets and the wider environment, and enhance sustainable benefits derived from these assets". Similarly, as part of the assessment process, the opportunity could be taken to look for prospects, through the Investment Strategy, to enhance the environmental, non-monetary value of the natural assets such as those related to biodiversity, landscape, human health, etc. SEA provides the opportunity to enhance the environmental benefits, and therefore CES's long term investment benefits from, in particular: • Coastal landscape – coastal and river geomorphology, flood management • Mineral resources • Agricultural soil • Carbon rich soil / peatland restoration and carbon accounting The Investment Strategy could consider the implication that investment and management decisions will have for enhancing the current values of these assets to the CES' building on capacity and resilience, e.g. carbon accounting, natural flood management and ecological tourism.	Environmental criteria of the investment appraisal methodology have been reviewed as part of the SEA. Request for more positive wording of the Investment Strategy noted. Opportunities to enhance environmental benefits are identified through the assessment. Noted. This aligns with the Value Project.
	SEPA	No further comments	Noted.

Section 2: Relevant PPS and environmental protection objectives

Consultation authority comments relating to the SA Scoping Report for Extending Permitted Development Rights in Scotland: A Sustainability Appraisal				
Section	Consultation authority	Topic of interest	Comment	Action (how comments have been addressed in this SA Report)
	Historic Environment Scotland (HES)	General	Simply for clarification the correct title is the Historic Environment Policy Statement 2016 and should not be confused with its predecessor Scottish Historic Environment Policy.	This has been clarified in the section relating to relevant plans, programmes and strategies and environmental protection objectives.
	SNH	*General*	We find the listing of policies under SEA topic areas a little confusing, as it results in much repetition and/or omissions. For instance, investment in seabed assets (and the relevant National Marine Plan policies) is relevant to several different SEA topic areas, so the relevant links could be made with the blue carbon and climate change and geodiversity and coastal processes policies. According to the Crown Estate Bill, a natural capital approach should be applied, to help draw clearer links between the health of natural assets & human health & economics. The Climate Change Plan: Third Report on Policies and Proposals 2018-2032 details how the Scottish Government will continue to drive progress towards the current emissions reduction target of 80% by 2050, and should be included in the policies shaping the plan The 2020 target is for restoring 50,000 hectares of degraded peatland, and by 2030 we will have increased this to 250,000 hectares, which is relevant to CES land holdings. 2.22 There is the *potential* for up to 11 regional Marine Planning Partnerships (& therefore regional marine plans). Shetland and Clyde Marine Plan preparations are underway (but not complete). 2.46 (and 3.97) A reference to Coastal Character Assessments could be included here. 2.49 The foreshore and the seabed are key natural assets that are not included in the list. Table 5.2 – Marine Scotland - the Proposed MPA SEA scoping report, and Forestry Commission Scotland – Scottish Forestry Strategy Review scoping report, have been published and should be included here.	Noted, however this approach seeks to align documents with the principle relevant SEA topic. Noted. Natural capital approach is integrated into the assessment. Crown Estate Bill added to PPS review. The Climate Change Plan: Third Report on Policies and Proposals 2018-2032 added to PPS review. Text amended. Text added on Coastal Character Assessments. Text added. Table updated with the two documents.

Consultation authority comments relating to the SA Scoping Report for Extending Permitted Development Rights in Scotland: A Sustainability Appraisal				
	SEPA	*Climatic factors*	This section deals comprehensively with targets to reduce greenhouse gas emissions but fails to discuss the source of these emissions. In order to assess the potential effect of the investment strategy on climatic factors will be important to have an understanding of the key sources of emissions which are relevant to the strategy.	Information on sources of emissions included.
		Material assets	This section provides a comprehensive discussion of relevant material assets; we would expect this level of detail to be carried through into Table 4.1.	Text updated to reflect detail.

Section 3: Baseline information

Consultation authority comments relating to the SA Scoping Report for Extending Permitted Development Rights in Scotland: A Sustainability Appraisal				
Section	Consultation authority	Relevant section	Comment	Action (how comments have been addressed in this SA Report)
	Historic Environment Scotland (HES)	Development of the Environmental Baseline	We welcome the recognition here of the existing pressures on Scotland's historic environment assets. In relation to the challenges posed by climate change in January 2018, Historic Environment Scotland published a study representing the first step in a comprehensive and ongoing exercise to understand, monitor and manage environmental risk to our Estate. This project was carried out with the principle aims of identifying the range of current climate threats to the HES estate, the compilation of a baseline national risk register for the estate and to identify priority sites to allow more in-depth appraisal of risks and mitigating actions at a more local scale. Underpinning this assessment is a methodology for assessing the impacts of climate change on heritage assets. In this regard it is hoped that the methodology can be utilised across Scotland's historic environment assets.	Noted.
	SNH	General	The baseline information is generally accurate, but it is not clear how this relates specifically to CES. This is a general presentation of Scotland's state of environment, but as mentioned below in Level of Detail, in part, this could be more specific and therefore relevant to the SEA.	Baseline amended to ensure relevance to CES.
		Biodiversity (Section 3.6 in Scoping Report)	There is reference to "offshore SACs" here, but not inshore SACs (between 0 and 12nm) and marine SPAs. For biodiversity flora, & fauna this chapter has focussed on designated sites, with no mention of wider seas biodiversity or the use of data on the various pressures (from activities/developments) acting upon the environment as a proxy for state of the environment. There should be reference to MSFD, OSPAR, Scotland's Marine Atlas and the State of Seas assessments now completed for Clyde & Shetland.	Baseline amended with relevant information.

Consultation authority comments relating to the SA Scoping Report for Extending Permitted Development Rights in Scotland: A Sustainability Appraisal				
		Biodiversity (Section 3.16 in Scoping Report)	Marine developments should be recognised as a relevant issue for invasive non-native species.	Baseline has been updated with relevant information from the SNH website
		Water (Section 3.55 in Scoping Report)	Dynamic Coast information appears relevant for inclusion here http://www.dynamiccoast.com/	Baseline has been updated, included relevant information from Scotland's National Coastal Change Assessment (NCCA)
		Climatic factors (Section 3.77 in Scoping Report)	This text on climate change is mostly referring to the effects of climate change, not what is causing/exacerbating it. Given the relevance to CES functions, reference to offshore oil and gas exploration and extraction seems indispensable here. There is reference to Scotland's emissions, but note that Scotland's carbon inventory does not account for fossil fuel extraction from Scotland if it is exported and combusted elsewhere. Inclusion of data on exported subsea fossil fuels would allow for a more accurate representation of how Scottish decisions affect the climate.	Text on offshore oil and gas exploration included. Reference to carbon emissions noted, however no reference to oil and gas exploitation within the Draft Investment Strategy.
		Climatic factors (Section 3.81 in Scoping Report)	The risks posed by climate change to Scotland's soils, wildlife, agriculture, aquaculture and natural carbon resources are more widespread than stated. For example, 'Farming for a Better Climate' helps the farming sector to move toward a low carbon sustainable future, potentially increasing profitability and assets values. (http://www.gov.scot/Topics/farmingrural/Agriculture/Environment/climatechange/Advice)	Updated baseline information to include information from the 'Farming for a Better Climate' document
		Landscape and geodiversity (Section 3.91 in Scoping Report)	Under "landscape and geodiversity" and "material assets", the Investment Strategy should seek to incorporate geodiversity, particularly where protected geological and geomorphological features (SSSI, GCR sites) are associated with the assets. However, this is also important where the CES assets work with natural processes for the benefit of e.g. coastal defence and flood and river management (see Scottish Geodiversity Charter (2018- 2023) https://scottishgeodiversityforum.files.wordpress.com/2011/12/scotlands-geodiversitycharter2018-2023.pdf).	Baseline amended to ensure relevance to CES.

Consultation authority comments relating to the SA Scoping Report for Extending Permitted Development Rights in Scotland: A Sustainability Appraisal				
	SEPA	*No further comments*		N/A – no further comments from SEPA in relation to section 3.

Section 4: Key environmental issues

Consultation authority comments relating to the SA Scoping Report for Extending Permitted Development Rights in Scotland: A Sustainability Appraisal				
Section	Consultation authority	Topic of interest	Comment	Action (how comments have been addressed in this SA Report)
4: Key environmental issues	**Historic Environment Scotland (HES)**	*General*	We note the comments here in relation to the likely evolution of the environment without the draft strategy. The mitigation and enhancement that is identified through the assessment should serve to inform the good management requirement and add further value to this.	Noted.
	SNH	*General*	The above omission on climate change (the role of exported fossil fuels) is also relevant here. (Section 4.1) As the baseline information is provided at Scotland-wide scale, it is unclear how the analysis will be made relevant to specific elements of the Investment Strategy. Emission on climate change mentioned: 'This text on climate change is mostly referring to the effects of climate change, not what is causing/exacerbating it. Given the relevance to CES functions, reference to offshore oil and gas exploration and extraction seems indispensable here. There is reference to Scotland's emissions, but note that Scotland's carbon inventory does not account for fossil fuel extraction from Scotland if it is exported and combusted elsewhere. Inclusion of data on exported subsea fossil fuels would allow for a more accurate representation of how Scottish decisions affect the climate.'	Noted. The Draft Investment Strategy does not refer to fossil fuel development and this is reflected in the wording of the assessment.
		Landscape and geodiversity	The Landscape and geodiversity text should recognise influence of CES investment on the foreshore, particularly in light of natural coastal change and climate change impacts. This is an opportunity to consider whether investment could encourage more human health benefits from the enjoyment/recreational use of crown assets, such as investment in responsible access to and along the shore and on upland estates, and conversely what impact the sale of these assets would mean for their amenity value if sold to a new owner applying	Additional text added to baseline. Assessment seeks to explore opportunities for enhancement.

Consultation authority comments relating to the SA Scoping Report for Extending Permitted Development Rights in Scotland: A Sustainability Appraisal				
			different management (i.e. assuming a worst case-scenario of losing the amenity value through the sale). The assessment process could explore the environmental effects of the Investment Strategy in terms of the requirements it places on its tenants to ensure effective management of soil carbon resource and reduction GHG emission from soil system in both agricultural system and peatland habitats.	
		Material assets	The text on material assets notes ecosystem services from agriculture and forestry, but should also include those from the foreshore, seabed and upland habitats. The assessment process could give consideration to possible mitigation measures where these habitats (and therefore their services) are degraded.	Baseline text in relation to material assets has been updated.
	SEPA	*Material assets*	We note that agriculture and forestry land and energy infrastructure are identified as material assets in Table 4.1. Given the nature of the CES portfolio we would expect that the description of material assets in Table 4.1 should also include residential and commercial property, the seabed, the foreshore, moorings, ports and harbours.	Table 4.1 has been updated to reflect these comments.

Section 5: Approach to the assessment

Consultation authority comments relating to the SA Scoping Report for Extending Permitted Development Rights in Scotland: A Sustainability Appraisal				
Section	Consultation authority	Topic of interest	Comment	Action (how comments have been addressed in this SA Report)
5: approach to the assessment	**Historic Environment Scotland (HES)**	*Scoping of SEA topics*	We note that the historic environment has been scoped into the assessment and we are content to agree with this.	Noted.
		SEA Framework	The inclusion of the two SEA objectives for the historic environment are welcomed and we consider these to be appropriate to test the strategy against. We note it is the intention to adopt a matrix approach to reporting the assessment and that this will contain commentary to explain the reasoning behind identified effects. When using a matrix approach it is important for the assessment to report the findings both before mitigation/enhancement and the predicted residual effect after the successful delivery of mitigation/enhancement where appropriate.	Noted.

Consultation authority comments relating to the SA Scoping Report for Extending Permitted Development Rights in Scotland: A Sustainability Appraisal				
		Consideration of reasonable alternatives	We note the approach outlined for reasonable alternatives is to be three scenarios of differing levels of capital reserve and are content with this.	Noted.
		Identifying mitigation and monitoring proposals and opportunities for enhancement	As noted in the scoping report, monitoring should be driven by the identification of significant environmental effects.	Noted.
	SNH	*Reasonable alternatives*	Although there is reference to a natural capital approach in the document, it is not always clear whether the strategy is considering investment in *natural* capital. A natural capital approach for CES would include investing in the quantity and quality of natural assets themselves, not just the sectors that benefit from those natural assets. While sectoral investment brings short-medium term revenue, it is natural capital investment that will sustain long-term stability of that revenue (i.e. helping keep the sectoral investment within the bounds of sustainability), and as such we would recommend considering this approach as a reasonable alternative to the current one detailed in the Investment Strategy. The ER would also benefit from an acknowledgement of CES' likely future Biodiversity Duty and drawing out the links with a natural capital approach.	The assessment of effects on natural capital is incorporated into the SEA findings. CES does not invest directly into natural capital. Reference to biodiversity duty included in assessment.
		Level of detail	The discrepancy of scale between the terrestrial and the marine assets probably calls for different assessment methodologies. For example, the terrestrial assets are site-specific and would benefit from a more detailed identification of baseline data, specific environmental concerns and opportunities, and therefore more detailed level of assessment.	The proposed approach to the assessment relates investment priorities to each portfolio, which allows issues to be drawn out for the different assets.
		Assessing likely significant effects	Table 5.3 - criteria for assessing likely significant effects (a) duration – 2 years may be considered as short-term for many natural assets (b) scale – this needs also to include an irreversible effect category (i.e. destruction of non-renewable resources) (e) Spatial extent only considers national and transboundary, but not local & regional effects. Regional effects in the context of marine should relate to the 11 Scottish Marine Regions. (f) intensive land-use – will this also include land under long-term	The duration has been updated to reflect timescales beyond the lifetime of the strategy. Irreversible effect included. Spatial extent updated. Noted.

Consultation authority comments relating to the SA Scoping Report for Extending Permitted Development Rights in Scotland: A Sustainability Appraisal				
			improvement schemes (i.e. peatland restoration areas)?	
		SEA Framework and objectives	Table 5.4 – As indicated above, we welcome the intention in section 5.14 to build in natural capital thinking, however, it is not yet clear how this will be delivered in the Environmental Report and ultimately how it will influence the Investment Strategy. The SEA objectives set are non-specific, relating to 'protection', 'maintenance' and sometimes 'enhancement', and will be difficult to monitor. We recommend the introduction of realistic and measurable targets, especially where they can be quantified relatively easily (e.g. increase natural spaces by an area of 10%). Again, the environmental effects will be more easily measured against these objectives where the strategy relates to the site-specific terrestrial assets, and the assessment process should reflect this level of detail. We consider that reference to CES's likely future Biodiversity Duty would be appropriate here. Similarly, CES's rural and urban assets provides a great opportunity for using green infrastructure and nature-based solutions for existing or new developments, so suitable measurable objectives and targets could be set. The London Ecology Masterplan has transformed The Crown Estate's St James Palace and Regent St portfolios and could serve as an example for Scottish projects as well.	Noted, however SEA objectives are retained. Reference to Crown Estate Scotland's biodiversity duty included in assessment.
	SEPA	*SEA topics scoped into the assessment*	The purpose of the assessment is to investigate potentially significant environmental effects which may arise from the strategy. The information presented in Table 4.1 suggests that given the nature of the strategy, the environmental baseline and existing environmental issues air quality is not a significant issue; it is therefore difficult to see any value in scoping the topic of air into the assessment (Table 5.1). We encourage focused assessments which investigate those issues where there is the potential for a significant effect; we would therefore suggest you re-consider the inclusion of air as a topic in this assessment.	Noted, however the inclusion in the assessment will ensure any air quality issues are identified.
		Relationship with other SEAs	More recent work on Proposed MPAs (Marine Scotland, June 2018 scoping) and the review of the Scottish Forestry Strategy (FCS, June 2018 scoping) should also be considered as relevant.	Added.
		Assessing likely significant effects	Table 5.3 offers a "breakdown and description" of the criteria for assessing likely significant effects which is set out in Schedule 2 of the Act. If this is intended as the basis for the assessment then it should be extended to include local and regional effects as well as national / transboundary and international effects.	Updated.
		Cumulative effects	The Crown Estate covers both terrestrial and marine interests but there appears to be little discussion in the scoping report around the consideration of	Noted.

Consultation authority comments relating to the SA Scoping Report for Extending Permitted Development Rights in Scotland: A Sustainability Appraisal				
			the interaction of these two interests. At project implementation level it will be important for terrestrial considerations to be integrated with coastal and marine issues. We would therefore recommend that the SEA is used to identify and discuss these issues at a strategic level. This will help to ensure better linkage between policy and investment decisions, for example where licensing and consenting will be required (for civil engineering works or similar activities). We would also encourage you to use the SEA to help to draw out criteria for resolving any effects of a cumulative or inter-related nature at local, regional and national levels. This will be particularly important where there is overlap with other sectors / responsibilities e.g. Marine Planning Partnerships.	
		SEA framework	The objectives set out in Table 5.4 are very broad and as such may lead to a large number of effects being classed as "uncertain what effect the option will have on the SEA objective". Where location or scale (e.g. local or regional) of a proposal is known then a refined set of objectives should be used in order to enable a more detailed assessment to be made. Where the option covers a wider area (geographic or policy) then a more strategic level of assessment is acceptable. In either case, where the effects are classed as "uncertain" we would recommend that these issues could be taken forward and addressed in CES's on-going work to establish criteria for investment and management decisions. In this way the SEA could be used to effectively flag up key issues at a strategic level and ensure that they are dealt with at the appropriate local or regional level where more detail on the investment opportunity or management requirement is available.	Noted. Where an effect is relevant to a location this is identified.
		Mitigation	We are concerned with the lack of detail provided in relation to identifying mitigation and enhancement measures. One of the key outcomes which can be achieved through SEA is ensuring that consideration of environmental issues is embedded into the implementation of a strategy. In many instances this is likely to be achieved through mechanisms outwith the strategy itself and so we encourage those responsible for the strategy to consider how they can use the SEA process to not only draw out key environmental issues but also consider the mechanisms by which they will be addressed. As such, the SEA could be an important source of information for the development of criteria for appraising future investment and management proposals.	Noted.

Section 6: Programme of works

Consultation authority comments relating to the SA Scoping Report for Extending Permitted Development Rights in Scotland: A Sustainability Appraisal				
Section	Consultation authority	Topic of interest	Comment	Action (how comments have been addressed in this SA Report)
	Historic Environment Scotland (HES)	*Consultation period*	The scoping report states that the draft Investment Strategy and its accompanying Environment Report will be subject to a 6 week public consultation. We can confirm that we are content with this timescale. Please note that, for administrative purposes, we consider that the consultation period commences on receipt of the relevant documents by the SEA Gateway.	Noted. Further correspondence with the SEA gateway confirmed an 8 week period. This was subsequently re-extended to 10 weeks to allow for the Christmas period.
	SNH	*Consultation period*	SNH notes that the period of for consultation on the Environmental Report has not been defined yet and would recommend a minimum of 10 weeks.	As above.
	SEPA	*Consultation period*	We note that no detail has been provided on the proposed consultation period for the ER and draft strategy; we would recommend a minimum of 10 weeks.	As above.

Appendix 4
Investment Strategy aims and objectives presented across the portfolios

Table 1 Investment Strategy: aims and objectives presented across the portfolios

CES Investment objectives	Rural	Coastal	Urban	Marine
Maintain and enhance the rural coastal and urban assets through investment in infrastructure development and fixed equipment	• Forest restocking as required under the terms of felling licences and as part of a phased restocking programme. • Continuing to meet investment obligations for fixed equipment on agricultural holdings as part of a prioritised, phased, annual programme of works. • Raise the overall standard of residential assets and to increase revenue returns.		• Refurbishment of vacant space (taking into account likely dilapidation receipts from tenants), required mechanical and electrical upgrade works and planning consultancy advice	
Invest [in the development of offshore renewable energy, carbon capture and storage, and aquaculture (finfish, shellfish and seaweed).]	• Promote and support partnerships which drive third-party investment, generate public benefits and future revenue and/or capital growth • Work with tenants to identify improvement works and investment. Support farm diversification, agroforestry, farm business consolidation/restructuring, tourism and other non-agricultural commercial enterprises. • Facilitate voluntary lease	• Economic impact/feasibility studies to inform future investment in coastal infrastructure which will drive future revenue streams and assist wider objectives to develop marine tourism and coastal business activity. • Infrastructure at Rhu Marina in partnership with other agencies to drive long-term economic growth	• Opportunities for further investment in this sector – which could include office, industrial, retail or other commercial property – on a more modest scale, or if additional capital funds become available, are considered worthy of consideration due to the attractive returns and asset and risk diversification	**Marine renewables** • Capital funded staff resources and research studies to support; ○ Further offshore wind development. This will include a new offshore wind leasing round which will align with areas identified in Marine Scotland's sectoral plan for offshore wind following their strategic planning process (including their SEA)

CES Investment objectives	Rural	Coastal	Urban	Marine
	restructures or surrenders to allow for (a) commercial or residential development planning), (b) opportunities for expansion or restructuring of existing tenants' businesses, (c) open market re-letting, (d) opportunities for new entrants, (e) sales or (f) alternative uses. • Develop and enhance local economic activity (such as tourism), and natural and cultural heritage, to promote long-term sustainable development. • New forestry planting	opportunities. • Investment in stewardship or community initiatives which deliver significant value for local economic development, community viability and environmental benefit		○ Tidal and wave energy to help create a strategic opportunity for community value via industrialisation and ownership of a sector. ○ Power storage and infrastructure. This has the potential to unlock resource in Scotland, principally around the west coast and islands. CES role is a) working with economic development agencies to explore socio-economic benefits, b) investing in strategic R&D and c) ensuring seabed is available at the right time and on the right terms to help attract investment in new energy assets. **Carbon Capture and Storage** • Crown Estate Scotland will work with governments and developers to facilitate future CCS projects. This includes supporting project proposals through the leasing process, including the proposed Acorn Project in Aberdeenshire, to

CES Investment objectives	Rural	Coastal	Urban	Marine

				facilitate a first step in establishing CCS in the North Sea.
				
				Aquaculture
				
				• Opportunities for securing business growth, and increased capital value, include:
				  ○ Prioritising access to development space for finfish (primarily salmon) by:
				  a) Working with stakeholders to improve shared marine co-existence and
				  b) Supporting business partners to invest more in improving the social licence of the industry to aid further expansion.
				  ○ Supporting development of commercially viable shellfish projects, by working with the finfish sector (to encourage investment for economic stewardship purposes),

CES Investment objectives	Rural	Coastal	Urban	Marine
				with strategic (non-financial) input, through collaboration on an industry insurance scheme with the Scottish Shellfish Management Group. ○ Assisting with funding for research to investigate and confirm biomethane production potential of co-digested seaweed and finfish production waste-streams, to demonstrate feasibility and offer a more sustainable disposal route for salmon waste-streams. This could result in the provision of biogas for communities from local Anaerobic Digestion plants – a potentially strong community benefit that salmon industry may finance, especially if current disposal costs are mitigated. • Seaweed harvesting
Build a capital fund of	• Granting of servitude rights for use of assets for	• Facilitating or promoting dredging		

CES Investment objectives	Rural	Coastal	Urban	Marine
£10m over 3 years	infrastructure/access. • Capitalisation of long-term rental income from long leases (commercial, non-agricultural), where appropriate and where this may suit Crown Estate Scotland and the occupier. • Facilitate voluntary lease restructures or surrenders to allow for (a) commercial or residential development planning)	activities around the coastline (subject to marine licences). • Investigating opportunities for the capitalisation of rent for long term leases.		
Identify and dispose of non-core assets	• Capital release from non-core rural assets, where this can be done without impact on the integrity of the estate or a significant negative impact on the provision of wider public benefits. • Sale of agricultural units in line with the farm sales framework. • Sale of land for strategic development – commercial and residential. • Sale of assets (forests, residential property, fishing rights etc.) with a high capital investment liability and/or limited prospect of revenue growth in the	• Facilitating sale of foreshore, occupied seabed and coastal infrastructure (pontoons) to communities or port authorities in line with agreed protocols.		

CES Investment objectives	Rural	Coastal	Urban	Marine
	medium or long term. • Sale of non-core assets to community bodies to support sustainable development, where this does not compromise the integrity of the estate or impact capital value.			
Comply with lease obligations and manage liabilities	• Continuing to meet investment obligations for fixed equipment on agricultural holdings as part of a prioritised, phased, annual programme of works. • Prioritising works required to meet regulatory requirements for electrical safety, asbestos management, water supply quality and other property infrastructure • Ensuring the fabric of the rural estate (roads, roofs, forest fencing, bridges, culverts, flood defences etc.) is maintained and enhanced, managing health and safety obligations, mitigating against future risks and maintaining the capital value of the asset base.			

CES Investment objectives	Rural	Coastal	Urban	Marine
Develop and criteria for appraising investment opportunities				
Ensure that decisions do not constrain future management of assets following new legislation.				

Table 2a Example of information required to inform assessment process for the rural portfolio

Rural Portfolio investment objectives	Rural	What does this mean on the ground?	Relevant SEAs	Regulatory processes
Maintain and enhance the rural coastal and urban assets through investment in infrastructure development and fixed equipment	• Forest restocking as required under the terms of felling licences and as part of a phased restocking programme.	• Felling and restocking of existing forests • Diversification of age and species structure, increase in open space and non-forest habitats	• Scottish Forestry Strategy 2006, Environmental Report • Scotland Rural Development Programme (SRDP) 2014-2020, Environmental Report was published in June 2015.	• Long term forest plans and related EIA • Forestry Grant requirements
	• Continuing to meet investment obligations for fixed equipment on agricultural holdings as part of a prioritised, phased, annual programme of works.	• Typically, building repairs, bridge repairs, roof replacement – like for like with some upgrading • Replacement of farm buildings – may be with larger buildings where required		• Replacement of farm buildings through the planning process or with PD rights where these apply
	• Raise the overall standard of residential assets and to increase revenue returns.	• Improving quality of residential buildings, including through enhancements in energy efficiency		• Planning process where relevant
Invest [in the development of offshore renewable energy, carbon capture and storage, and aquaculture (finfish, shellfish and seaweed).]	• Promote and support partnerships which drive third-party investment, generate public benefits and future revenue	• Partnership working e.g. Tomintoul and Glenlivet Landscape Partnership (with CNPA, local community, HIE, Moray	• Scotland Rural Development Programme (SRDP) 2014-2020, Environmental Report was published in June	• Planning process where relevant

Rural Portfolio investment objectives	Rural	What does this mean on the ground?	Relevant SEAs	Regulatory processes
	and/or capital growth	Council, RSPB etc)	2015.	
	• Work with tenants to identify improvement works and investment. Support farm diversification, agroforestry, farm business consolidation/restructuring, tourism and other non-agricultural commercial enterprises.	• Partnership working with tenants – investment to support: • Diversification into other forms of agriculture, or into non-agricultural activities e.g. tourism • Consolidation and restructuring of existing farm tenancies to make them more efficient – potential changes in the way that land is managed and the requirement for farm buildings.		• Planning process where relevant
	• Facilitate voluntary lease restructures or surrenders to allow for (a) commercial or residential development planning), (b) opportunities for expansion or restructuring of existing tenants' businesses, (c) open market re-letting, (d) opportunities for	• Release of land for residential or commercial development • Consolidation and restructuring of existing farm tenancies • Re-letting farms or dwellings on the open market • Encouraging new	•	• Release of land subject to development planning and development management processes • Diversification of farm businesses subject to planning process where relevant

Rural Portfolio investment objectives	Rural	What does this mean on the ground?	Relevant SEAs	Regulatory processes
	new entrants, (e) sales or (f) alternative uses.	entrants to farming and change of ownership as part of negotiated surrender agreement • Supporting diversification initiatives • Release land and property for sale on the open market to tenants.		
	• Develop and enhance local economic activity (such as tourism), and natural and cultural heritage, to promote long-term sustainable development.	• e.g. Tomintoul and Glenlivet Landscape Partnership (with CNPA, local community, HIE, Moray Council, RSPB etc) • Infrastructure investment into e.g. buildings.	• Scotland Rural Development Programme (SRDP) 2014-2020, Environmental Report was published in June 2015.	
	• New forestry planting	• Identification and implementation of new opportunities for forestry expansion – either on tenanted land where proposals come forward, or on land taken back in hand	• Scottish Forestry Strategy 2006, Environmental Report • Scotland Rural Development Programme (SRDP) 2014-2020, Environmental Report was published in June 2015.	• Long term forest plans and related EIA • Forestry Grant requirements
Build a capital fund of £10m	• Granting of servitude rights for use of assets	• Responsive facilitation of access and use of land		

Rural Portfolio investment objectives	Rural	What does this mean on the ground?	Relevant SEAs	Regulatory processes
over 3 years	for infrastructure/access.	for infrastructure e.g. electricity connection for wind farms (off estate); major road routes; interconnectors (gas, electric)		
	• Sale of land for strategic development – commercial, employment and residential users.	• Work with local planning authorities to identify potential development sites for inclusion in local development plans, disposal with benefit of uplift in value		• Local Development Plan Process including SEA • Planning process as individual proposals come forward
Identify and dispose of non-core assets	• Capital release from non-core rural assets, where this can be done without impact on the integrity of the estate or a significant negative impact on the provision of wider public benefits.	• Sale of buildings and land – must be non-core, not affect integrity of the estate– change in ownership – further physical change governed by the planning system • Purchaser to take on planning aspects		• Planning process where relevant
	• Sale of agricultural units in line with the farm sales framework.	• Change in ownership of agricultural units. This is a move away from tenanted to direct ownership		

Rural Portfolio investment objectives	Rural	What does this mean on the ground?	Relevant SEAs	Regulatory processes
	• Sale of assets (forests, residential property, fishing rights etc.) with a high capital investment liability and/or limited prospect of revenue growth in the medium or long term.	• Change in ownership. • Removal from letting market is a possibility		
	• Sale of non-core assets to community bodies to support sustainable development, where this does not compromise the integrity of the estate or impact capital value.	• Change in ownership, facilitation of locally driven sustainable development – e.g. community facilities, community woodlands etc.		• Planning process where relevant
Comply with lease obligations and manage liabilities	• Continuing to meet landlord liability investment obligations for fixed equipment on agricultural holdings as part of a prioritised, phased, annual programme of works.	• Building renewals and replacement, bridge and culvert repairs, fences, tracks etc. some like-for-like, though with some enhancement to reflect changes in regulations, construction methods or future risks (e.g. flood risk associated with climate change, roof pitches to withstand greater snow load).		• Planning process where relevant

Rural Portfolio investment objectives	Rural	What does this mean on the ground?	Relevant SEAs	Regulatory processes
	• Prioritising works required to meet regulatory requirements for electrical safety, asbestos management, water supply quality and other property infrastructure	• Building renewals and upgrades to meet current regulations. • Infrastructure renewals and upgrades to electrical wiring for example to match best practice.		• Building regs
	• Ensuring the fabric of the rural estate (roads, roofs, forest fencing, bridges, culverts, flood defences etc.) is maintained and enhanced, managing health and safety obligations, mitigating against future risks and maintaining the capital value of the asset base.	• Building repairs and replacement, bridge and culvert repairs, fences, tracks etc. Mainly like-for-like, though with some enhancement to reflect changes in regulations, construction methods or future risks (e.g. flood risk and storm risk associated with climate change). • Road upgrades (private) where required to assist development aims.		• Planning process where relevant
Develop and criteria for appraising investment opportunities				
Ensure that decisions do not constrain future management of assets following new				

Rural Portfolio investment objectives	Rural	What does this mean on the ground?	Relevant SEAs	Regulatory processes
legislation.				

Table 2b Example of information required to inform assessment process for the coastal portfolio

Coastal Portfolio Investment objectives	Coastal	What does this mean on the ground?	Relevant SEAs	Regulatory processes
Maintain and enhance the rural coastal and urban assets through investment in infrastructure development and fixed equipment		• Capital investment in Rhu Marina infrastructure to support current rental income and maintain fabric of the marina		
Invest [in the development of offshore renewable energy,1 carbon capture and storage, and aquaculture (finfish, shellfish and seaweed).]	• Economic impact/feasibility studies to inform future investment in coastal infrastructure which will drive future revenue streams and assist wider objectives to develop marine tourism and coastal business activity.	• Feasibility and economic impact studies only – no physical works	• National Marine Plan 2015, Environmental report was published in July 2013	
	• Infrastructure at Rhu Marina in partnership with other agencies to drive long-term economic growth opportunities.	• New floating breakwater • Fixed breakwater • Shore front protection works	• National Marine Plan 2015, Environmental report was published in July 2013	• Planning process where relevant

Coastal Portfolio Investment objectives	Coastal	What does this mean on the ground?	Relevant SEAs	Regulatory processes
	• Investment in stewardship or community initiatives which deliver significant value for local economic development, community viability and environmental benefit	• Installation of coastal infrastructure to support sustainable local projects – moorings, jetties, visitor facilities etc.	• National Marine Plan 2015, Environmental report was published in July 2013	• Planning process where relevant
Build a capital fund of £10m over 3 years	• Facilitating dredging activities around the coastline (subject to marine licences).	• Dredging to maintain access to ports and harbours	• National Marine Plan 2015, Environmental report was published in July 2013	• Marine licenses
	• Investigating opportunities for the capitalisation of rent for long term leases.	• Accounting measure	• National Marine Plan 2015, Environmental report was published in July 2013	
	• Capitalisation of long-term rental income from long leases (commercial, non-agricultural), where appropriate and where this may suit Crown Estate Scotland and the occupier.	• Accounting measure	•	
Identify and dispose of non-core assets	• Facilitating sale of foreshore, occupied seabed and coastal infrastructure (pontoons) to communities or port	• Change in ownership	• National Marine Plan 2015, Environmental report was published in July 2013	

Coastal Portfolio Investment objectives	Coastal	What does this mean on the ground?	Relevant SEAs	Regulatory processes
	authorities in line with agreed protocols.			
Comply with lease obligations and manage liabilities				
Develop and criteria for appraising investment opportunities				
Ensure that decisions do not constrain future management of assets following new legislation.				

Table 2c Example of information required to inform assessment process for the urban portfolio

Urban Portfolio Investment objectives	urban	What does this mean on the ground?	Relevant SEAs	Regulatory processes
Maintain and enhance the rural coastal and urban assets through investment in infrastructure development and fixed equipment	• Refurbishment of vacant space (taking into account likely dilapidation receipts from tenants), required mechanical and electrical upgrade works, energy efficiency and planning consultancy advice	• Refurbishment of existing property likely on a phased programme in line with lease events • Energy efficiency improvement • Repairs and upgrades to mechanical and electrical systems • Optimum use of common		

Urban Portfolio Investment objectives	urban	What does this mean on the ground?	Relevant SEAs	Regulatory processes
		space. Secure entry system.		
	• Opportunities for further investment in this sector – which could include office, industrial, retail or other commercial property – on a more modest scale, or if additional capital funds become available, are considered worthy of consideration due to the attractive returns and asset and risk diversification	• Most likely to take the form of modest acquisition of existing properties • Possible for more extensive programme of acquisition but limited by funding and timescale. • Little or no impact on the ground.		
Build a capital fund of £10m over 3 years				
Identify and dispose of non-core assets				
Comply with lease obligations and manage liabilities				
Develop and criteria for appraising investment opportunities				
Ensure that decisions do not constrain future management of assets following new legislation.				

Table 2d Example of information required to inform assessment process for the marine portfolio

Marine Portfolio Investment objectives	marine	What does this mean on the ground?	Relevant SEAs	Regulatory processes
Maintain and enhance the rural coastal and urban assets through investment in infrastructure development and fixed equipment				
Invest [in the development of offshore renewable energy,1 carbon capture and storage, and aquaculture (finfish, shellfish and seaweed).]	**Marine renewables** • Capital funded staff resources and research studies to support; ○ Further offshore wind development. This will include a new offshore wind leasing round which will align with areas identified in Marine Scotland's sectoral plan for offshore wind following their strategic planning process (including their SEA)	• Research studies to help ensure off-shore wind is brought forward in sustainable way (e.g. contribution to bird strike studies) • Facilitating off-shore wind development, but only granting new leases in areas identified by Marine Scotland and assessed through SEA.	• Scotland's Climate Change Plan and Energy Strategy 2018, Environmental Report was published in May 2017 • Renewables Action Plan 2009 • Renewable Energy Roadmap and Electricity Generation Policy Statement 2013 • Scotland's 2nd Sectoral Marine Plan for Offshore Wind Energy, Environmental Report was published in July 2013 • Blue seas – Green Energy: A Sectoral Marine Plan for Offshore Wind Energy in Scottish Territorial Waters, Environmental Report was published in 2010.	
	○ Tidal and wave energy to help create a strategic opportunity for community value via industrialisation and ownership of a sector.	• Facilitating demand for tidal and wave projects – all tend to be small scale at present e.g. likely to be one or two over course of year • Ad hoc leasing process		

Marine Portfolio Investment objectives	marine	What does this mean on the ground?	Relevant SEAs	Regulatory processes
			• Sectoral Marine Plan for Wave and Tidal Energy in Scotland's Renewable Energy Zone at scoping stage, Scoping report published 2012	
	○ Power storage and infrastructure. This has the potential to unlock resource in Scotland, principally around the west coast and islands. • CES role is a) working with economic development agencies to explore socio-economic benefits, b) investing in strategic R&D	• Research studies to support power storage developments (batteries? Pumped storage?, compressed gas? Etc.?)	•	•
	Carbon Capture and Storage • Crown Estate Scotland will work with governments and developers to facilitate future CCS projects. This includes supporting project proposals through the leasing process, including the proposed Acorn Project in Aberdeenshire, to facilitate a first step in establishing CCS in the North Sea.	• Facilitation of projects brought forward by third parties – assisting leasing process. • See Acorn Project for example detail of what CCS could comprise	• Renewable Energy Roadmap and Electricity Generation Policy Statement 2013	•

Marine Portfolio Investment objectives	marine	What does this mean on the ground?	Relevant SEAs	Regulatory processes

	Aquaculture
	• Opportunities for securing business growth, and increased capital value, include:
	  ○ Prioritising access to development space for finfish (primarily salmon) by:
	  a) Working with stakeholders to improve shared marine co-existence and
	  b) Supporting business partners to invest more in improving the social licence of the industry to aid further expansion.
		• Facilitation through leasing, no direct investment on the ground
		• Partnership work to address sustainability issues
			• National Marine Plan 2015, Environmental report was published in July 2013
			• Aquaculture and Fisheries Bill – Consultation Document, Environmental Report was published in February 2012
			• Amendments to permitted development rights for finfish and shellfish developments Screening report, March 2017
				• Planning process

Marine Portfolio Investment objectives	marine	What does this mean on the ground?	Relevant SEAs	Regulatory processes
	○ Supporting development of commercially viable shellfish projects, by working with the finfish sector (to encourage investment for economic stewardship purposes), with strategic (non-financial) input, through collaboration on an industry insurance scheme with the Scottish Shellfish Management Group.	• Facilitation through leasing, no direct investment on the ground • Partnership work to address sustainability issues	• National Marine Plan 2015, Environmental report was published in July 2013 • Aquaculture and Fisheries Bill – Consultation Document, Environmental Report was published in February 2012 • Amendments to permitted development rights for finfish and shellfish developments Screening report, March 2017	•
	○ Assisting with funding for research to investigate and confirm biomethane production potential of co-digested seaweed and finfish production waste-streams, to demonstrate feasibility and offer a more sustainable disposal route for salmon waste-streams. This could result in the provision of biogas for communities from local Anaerobic Digestion plants – a potentially	• R+D funding on sustainable waste management to create renewable energy from biogas. • No investment on the ground	• National Marine Plan 2015, Environmental report was published in July 2013 • Aquaculture and Fisheries Bill – Consultation Document, Environmental Report was published in February 2012 • Amendments to permitted development rights for finfish and shellfish developments Screening report, March 2017	•

Marine Portfolio Investment objectives	marine	What does this mean on the ground?	Relevant SEAs	Regulatory processes
	strong community benefit that salmon industry may finance, especially if current disposal costs are mitigated.			
	• Seaweed harvesting	• License seaweed harvesting to ensure practiced sustainably. • R+D into seaweed farming in line with SG National Marine Plan • policy not to licence harvesting of natural seaweeds in designated conservation areas unless there is clear confirmation of no potential risk posed to qualifying features.	• National Marine Plan 2015, Environmental report was published in July 2013 • SG Seaweed Policy Statement 2017, Environmental Report was published in August 2013 • Marine Scotland SEA of wild seaweed harvesting, Environmental Report published November 2016	• proposals are only licenced if SNH confirm their satisfaction with its sustainability
Build a capital fund of £10m over 3 years				

Marine Portfolio Investment objectives	marine	What does this mean on the ground?	Relevant SEAs	Regulatory processes
Identify and dispose of non-core assets				
Comply with lease obligations and manage liabilities				
Develop and criteria for appraising investment opportunities				
Ensure that decisions do not constrain future management of assets following new legislation.				

Appendix 5
Assessment tables

Rural portfolio

Investment objective 1

Maintain and enhance the rural, coastal and urban assets through investment in infrastructure development and fixed equipment.

- Forest restocking as required under the terms of felling licences and as part of a phased restocking programme
- Continuing to meet investment obligations for fixed equipment on agricultural holdings as part of a prioritised, phased, annual programme of works
- Raise the overall standard of residential assets and to increase revenue returns.

SEA Topic Area	SEA Objective	Alternative 1 –£30m	Alternative 2 –£15m	Preferred Strategy–	Alternative 3 - £5m	Justification
Biodiversity, flora and fauna	Protect and enhance terrestrial and aquatic habitats and species of international, national, regional or local importance. Maintain and expand wildlife corridors and minimise fragmentation of ecological areas and green spaces	-	-	-	-	**Environmental effects** The environmental effects of forest restocking relate to the replacement of trees following felling activities. This can include nursery restocking, natural regeneration or coppice management. These activities are likely to have varying impacts on protected habitats and species. Species choice can be more favourable for different species. For instance, planting native trees could help to restore local ecosystems and promote local biodiversity. However, forest restocking could also have the potential to adversely impact on protected habitats and species. Impacts of rabbit and deer protection measures, such as fencing create barriers to species movements, or hazards to bird species. The environmental impacts of chemical weed control activities can also impact on habitats and species. Furthermore, the construction of forestry access tracks could have adverse impacts on local wildlife, principally through the disturbance of species (e.g. through traffic noise), vehicle strikes and the potential introduction of invasive species. The duration of effects from fencing and access tracks is short to medium term, and the impacts of weed control activity is only during the first few years and short term in effect. The extent of these impacts is local to the area of forest restocking. The environmental effects of continuing to meet investment obligations for fixed equipment on agricultural holdings relates to building repairs and some replacement of farm buildings. Such works to improve the overall standard of residential assets and to increase residential returns is likely to involve building improvements. This could result in local effects on birds and bats which may be present in these buildings. The significance of these effects is highly uncertain, depending on factors such as building standards and the level of biodiversity at the existing site. **Regulatory controls** Forest restocking is regulated through long term forest plans, which are required for woodlands of over 100 ha or more in order to be eligible for grants within the Forestry Grant Scheme. Long term forest plans require consideration of biodiversity issues. Before deciding whether to approve a Long Term Forest Plan, Forestry Commission Scotland has a formal consultation process with local Planning Authorities and other organisations with statutory powers such as Scottish Natural Heritage in particular for designated sites and European Protected species. Forestry Grants require consideration of other licenses and permissions which include those related to protected species and planning permission / prior notification requirements for access tracks. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. In addition, forest roads are also subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. Prior approval provides further scrutiny of the proposals by key agencies and an additional level of environmental control that would not otherwise have been actioned. The Habitats Directive and Birds Directive provide legal protection for animals and birds. **Residual effects** The residual effects on biodiversity, flora and fauna are judged to be very low. This reflects the role of the regulatory requirements and the limited extent of building works and forest restocking. The environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in forest restocking and the associated environmental effects over a wider geographic area. It could also result in building works to a greater number of agricultural buildings and structures and residential buildings, or a greater scale of building work. This could result in potential impacts on habitats and species across a wider area and a greater number of properties. A **minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from forest restocking would extend over a more limited area of the Crown Estate Scotland assets. The scale and nature of buildings works would be most limited under this alternative. However although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **minor negative** effect is identified.
Population and	Avoid adverse effects on	+/-	+/-	+/-	+/-	**Environmental effects**

SEA Topic Area	SEA Objective	Alternative 1 –£30m	Alternative 2 –£15m	Preferred Strategy–	Alternative 3 - £5m	Justification
human health	health and quality of life. Improve the health and living environment of people and communities. Retain and improve quality, quantity and connectivity of publicly accessible open space.					The environmental effects of forest restocking relate to the replacement of trees following felling activities. This can include nursery restocking, natural regeneration or coppice management. The impacts of this on population and human health could include temporary local negative impacts on access and recreation as a result of fencing to control rabbits and deer affecting access routes which were previously used. The use of chemical weed control can have direct impacts on human health for workers using the chemicals. The duration of effects from fencing is short to medium term, and the impacts of weed control activity is only during the first few years and short term in effect. The extent of these impacts is local to the area of forest restocking. The environmental effects of continuing to meet investment obligations for fixed equipment on agricultural holdings relate to building repairs and some replacement of farm buildings. Works to improve the overall standard of residential assets and to increase residential returns is likely to involve building improvements. This could result in local effects on population and human health through improving the quality and energy efficiency of residential properties, with associated positive effects on health and quality of life. Improving the quality of agricultural buildings could have indirect effects on the quality and safety of the working environment for agricultural tenancies, with associated positive effects for human health. **Existing regulatory controls** Forest restocking is regulated through long term forest plans, which are required for woodlands of over 100 ha or more in order to be eligible for grants within the Forestry Grant Scheme. Forestry Grants require consideration of other licenses and permissions which include those related to planning permission / prior notification requirements for access tracks. Building regulations ensure that buildings are safe, efficient and sustainable. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. In addition, forest roads are also subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. Prior approval provides further scrutiny of the proposals by key agencies and an additional level of environmental control that would not otherwise have been actioned. **Residual effects** The residual effects on population and human health are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and forest restocking. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in forest restocking, natural regeneration and coppice management over a wider geographic area. It could also result in building works to a greater number of agricultural buildings and structures and residential buildings, or a greater scale of building work. Overall, a **mixed minor negative and minor positive** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on sensitive receptors remain. A **mixed minor negative and minor positive** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from forest restocking would extend over a more limited area of the Crown Estate Scotland assets. The scale and nature of buildings works would be most limited under this alternative. Although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **mixed minor negative and minor positive** effect is identified.
Soil	Protect valuable soil resources, including carbon soils and best and most versatile agricultural land. Reduce vacant and derelict land and buildings.	+/-	+/-	+/-	+/-	**Environmental effects** The environmental effects of forest restocking relate to the replacement of trees following felling activities. This can include nursery restocking, natural regeneration or coppice management. These activities could affect soil quality and composition, as discussed below: Coppice management could affect soil chemistry (e.g. content of calcium, potassium, nitrogen etc.) and soil fertility, depending on how the coppices are managed. Coppice systems (without standards) have the benefit of minimal soil damage during harvest, a reduced need for weed management, physical protection of the site. Where appropriate and possible, coppice management may offer long-term soil stability with reduced risk of windthrow compared with high forest management. Nursery restocking could have beneficial effects on soil quality, as nursery restocking could contribute to diverse woodlands. Woodlands with different tree species, ages and management regimes are resilient to storms, pests and diseases, with associated positive effects on soil quality. Natural regeneration involves allowing trees around the site to seed naturally. The species that grows will be dictated by what seed bearing trees are in the locality and whether the ground conditions are suitable. Furthermore, the impacts on the replacement of trees following felling activities also depend on the existing soil type on site. A few examples are discussed below: Planting on predominantly wet, acid soils will require some ground preparation and drainage with an inevitable increase in erosion, suspended sediment and colour. Road building carries risks of erosion, especially on steep slopes. Planting on some acid upland soils will require fertilisers. Some of the added fertiliser will inevitably lost in drainage water; however, the loss and consequent contamination of drainage is greater on peats and peaty soils than freely drained, acidic mineral soils. The environmental effects of continuing to meet investment obligations for fixed equipment on agricultural holdings relates to building repairs and some replacement of farm buildings. Works to improve the overall standard of residential assets and to increase residential returns is likely to involve building improvements. This could result in adverse effects on soil quality. For instance, construction works (e.g. construction of access roads) usually result in compacted soil, which restricts plant growth and infiltration, with associated effects on soil quality. Other adverse effects could result from soil sealing, ground contamination due to spillages of hazardous material and digging associated with construction works. It is unlikely that Crown Estate Scotland owns vacant and derelict land and buildings, due to their duty to maintain and enhance the value of Crown Estate assets in Scotland and the returns obtained from it. Therefore, the Investment Strategy is likely to have a negligible effect on reducing the amount of vacant and derelict land and buildings in Scotland.

SEA Topic Area	SEA Objective	Alternative 1 –£30m	Alternative 2 –£15m	Preferred Strategy–	Alternative 3 - £5m	Justification
						Regulatory controls Forest restocking is regulated through long term forest plans which are required for woodlands of over 100 ha or more in order to be eligible for grants within the Forestry Grant Scheme. Forestry Grants also require consideration of other licenses and permissions which include those related to protected species, the water environment and planning permission / prior notification requirements for access tracks. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. In addition, forest roads are also subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. Prior approval provides further scrutiny of the proposals by key agencies and an additional level of environmental control that would not otherwise have been actioned. **Residual effects** The residual effects on soil quality are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and forest restocking. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in forest restocking, natural regeneration and coppice management over a wider geographic area with associated positive environmental effects, depending on the type of management system used and current soil conditions (particularly in relation to forest restocking and natural regeneration). Conversely, it could also result in building works to a greater number of agricultural buildings and structures and residential buildings, or a greater scale of building work. This could result in potential adverse impacts on soils over a wider area and a greater number of properties. Therefore, a **mixed minor negative and minor positive** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on soils remain. A **mixed minor negative and minor positive** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from forest restocking would extend over a more limited area of the Crown Estate Scotland assets. The scale and nature of buildings works would be most limited under this alternative. However although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **mixed minor negative and minor positive** effect is identified.
Water	Protect and enhance the quality and quantity of watercourses and waterbodies (surface water and groundwater) including coastal and estuarial waters. Avoid and reduce flood risk both presently and taking into account climate change.	+/-	+/-	+/-	+/-	**Environmental effects** The environmental effects of forest restocking relate to the replacement of trees following felling activities. This can include nursery restocking, natural regeneration or coppice management. Trees and vegetation absorb rainwater, increase evapotranspiration and draw water from the ground, with associated effects on water quality and quantity. As such, forest management can have a marked impact on local water resources. For instance, soil cultivation prior to planting can have a significant effect on local water resources, although it is important to note that the magnitude of the effect is highly dependent on the extent to which the existing vegetation is disturbed or removed by the operation. Ploughing generally causes a considerable reduction in water use by leaving a temporary bare soil surface. The application of herbicides associated with tree planting can also have an indirect effect on water quality. Furthermore, the impacts on the replacement of trees following felling activities also depend on the existing soil type on site: - Planting trees on predominantly wet, acid soil will continue to require some ground preparation and drainage with an inevitable increase in erosion, suspended sediment and colour; ground preparation of peats and peaty soils can also have impacts on water chemistry. - Planting on some acid upland soils will require fertilisers. Some of the added fertiliser will inevitably lost in drainage water; however, the loss and consequent contamination of drainage is greater on peats and peaty soils than freely drained, acidic mineral soils. The environmental effects of continuing to meet investment obligations for fixed equipment on agricultural holdings relates to building repairs and some replacement of farm buildings. Works to improve the overall standard of residential assets and to increase residential returns is likely to impact upon water quality and quantity. For instance, construction works (e.g. construction of access roads) usually result in compacted soil, which restricts plant growth and infiltration. Other adverse effects could result from soil sealing and ground contamination due to spillages of hazardous material during the construction phase. Building improvements (i.e. extensions) are also likely to increase flood risk through increases in impermeable surfaces. **Regulatory controls** Forest restocking is regulated through long term forest plans, which are required for woodlands of over 100 ha or more in order to be eligible for grants within the Forestry Grant Scheme. Long term forest plans require consideration of water pollution issues. Before deciding whether to approve a Long Term Forest Plan, Forestry Commission Scotland has a formal consultation process with local Planning Authorities and other organisations with statutory powers such as SEPA for 'CAR regulations' and diffuse pollution aspects. Forestry Grants also require consideration of other licenses and permissions which include those related to the water environment. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. In addition, forest roads are also subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. Prior approval provides further scrutiny of the proposals by key agencies and an additional level of environmental control that would not otherwise have been actioned. **Residual effects** The residual effects on water quality and quantity are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and forest restocking. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in forest restocking, natural regeneration and coppice management over a wider

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy –	Alternative 3 - £5m	Justification
						geographic area. The significance of potential effects on the water environment depends on the type of management system used and current soil conditions. Conversely, it could also result in building works to a greater number of agricultural buildings and structures and residential buildings, or a greater scale of building work. This could result in potential adverse impacts on soils over a wider area and a greater number of properties. Therefore, a **mixed minor negative and minor positive** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. Although a more limited area is affected under this alternative, the potential for effects on soils remain. A **mixed minor negative and minor positive** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from forest restocking would extend over a more limited area of the Crown Estate Scotland assets. The scale and nature of buildings works would be most limited under this alternative. However although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **mixed minor negative and minor positive** effect is identified.
Air	Minimise air pollution, particularly where air quality is a known issue through the designation of an AQMA. Improve air quality.	+/-	+/-	+/-	+/-	**Environmental effects** The environmental effects of forest restocking relate to the replacement of trees following felling activities. This can include nursery restocking, natural regeneration or coppice management. Forest restocking is likely to have positive effects on air quality through carbon sequestration, the direct removal of air pollutants and the enhancement of microclimate. Species choice has a large influence on the potential for pollutant scrubbing by trees and other vegetation. For instance, evergreen species contribute to pollutant scrubbing year round, whilst deciduous species are limited to stem deposition only in winter. When in leaf, broadleaf species may also be more efficient than needle-leaf species, due to the higher leaf surface area of broadleaf trees. However, forest restocking could also have adverse impacts on local air quality. For instance, the construction, use and maintenance of forestry access tracks are likely to result in increased emissions of greenhouse gases and air pollutants. Furthermore, chemical weed control associated with new tree planting could adversely impact upon local air quality, particularly if herbicides are sprayed in windy or wet conditions. The duration of effects from access tracks is short to medium term, and the impacts of weed control activity is only during the first few years and short term in effect. The extent of these impacts is local to the area of forest restocking. The environmental effects of continuing to meet investment obligations for fixed equipment on agricultural holdings relates to building repairs and some replacement of farm buildings. Works to improve the overall standard of residential assets and to increase residential returns is likely to involve building improvements. This could result in positive effects on air quality through improving the quality and energy efficiency of residential properties. However, from the construction of access tracks, traffic movements and the use of equipment associated with construction work is likely to increase emissions of greenhouse gases and air pollutants. The duration of these effects is short to medium term, and the extent of these impacts is highly localised. **Regulatory controls** Forest restocking is regulated through long term forest plans, which are required for woodlands of over 100 ha or more in order to be eligible for grants within the Forestry Grant Scheme. Long term forest plans require consideration of air pollution issues. Forestry Grants also require consideration of other licenses and permissions which include those related to planning permission / prior notification requirements for access tracks. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. In addition, forest roads are also subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. Prior approval provides further scrutiny of the proposals by key agencies and an additional level of environmental control that would not otherwise have been actioned. **Residual effects** The residual effects on air quality are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and forest restocking. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in forest restocking, natural regeneration and coppice management over a wider geographic area with associated positive environmental effects on local air quality. Conversely, it could also result in building works to a greater number of agricultural buildings and structures and residential buildings, or a greater scale of building work. This could result in potential impacts on air quality over a wider area and a greater number of properties. Overall, a **mixed minor negative and minor positive** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on air quality remain. A **mixed minor negative and minor positive** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from forest restocking would extend over a more limited area of the Crown Estate Scotland assets. The scale and nature of buildings works would be most limited under this alternative. However although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **mixed minor negative and minor positive** effect is identified.
Climatic factors	Avoid increasing greenhouse gas emissions. Support actions which contribute to targets for reducing greenhouse gas emissions. Support climate change adaptation.	+/-	+/-	+/-	+/-	**Environmental effects** The environmental effects of forest restocking relate to the replacement of trees following felling activities. This can include nursery restocking, natural regeneration or coppice management. The replacement of trees following felling activities is likely to have positive effects on climate through carbon sequestration and the direct removal of air pollutants. The significance of such positive effects depends on the tree species used and the type of management. For instance, evergreen species contribute to pollutant scrubbing year round, whilst deciduous species are limited to stem deposition only in winter. When in leaf, broadleaf species may also be more efficient than needle-leaf species, due to the higher leaf surface area of broadleaf trees. However, forest restocking could also have adverse impacts on this SEA objective. For instance, the construction, use and maintenance of forestry access tracks are likely to result in increased emissions of greenhouse gases and air pollutants. The duration of effects from access tracks is short to medium term. The environmental effects of continuing to meet investment obligations for fixed equipment on agricultural holdings relates to building repairs and some replacement of farm

SEA Topic Area	SEA Objective	Alternative 1 –£30m	Alternative 2 –£15m	Preferred Strategy–	Alternative 3 - £5m	Justification
						buildings. Works to improve the overall standard of residential assets and to increase residential returns is likely to involve building improvements. This could result in adverse effects on climate through greenhouse gas emissions resulting from the construction of access tracks, traffic movements and the use of equipment associated with construction work. **Regulatory controls** Forest restocking is regulated through long term forest plans, which are required for woodlands of over 100 ha or more in order to be eligible for grants within the Forestry Grant Scheme. Long term forest plans require consideration of climatic conditions. Forestry Grants also require consideration of other licenses and permissions which include those related to planning permission / prior notification requirements for access tracks. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. In addition, forest roads are also subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. Prior approval provides further scrutiny of the proposals by key agencies and an additional level of environmental control that would not otherwise have been actioned. **Residual effects** The residual effects on climatic factors are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and forest restocking. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in forest restocking, natural regeneration and coppice management over a wider geographic area with associated positive environmental effects on climatic conditions. Conversely, it could also result in building works to a greater number of agricultural buildings and structures and residential buildings, or a greater scale of building work. This could result in potential adverse impacts on climatic conditions over a wider area and a greater number of properties. Therefore, a **mixed minor negative and minor positive** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on climatic conditions remain. A **mixed minor negative and minor positive** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from forest restocking would extend over a more limited area of the Crown Estate Scotland assets. The scale and nature of buildings works would be most limited under this alternative. However although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **mixed minor negative and minor positive** effect is identified.
Cultural heritage and the historic environment	Conserve and, where appropriate, enhance those elements which contribute to the significance of terrestrial and marine designated and undesignated heritage assets in a manner appropriate to their significance, including World Heritage Sites, Conservation Areas, Listed Buildings, Historic Marine Protected Areas, archaeological remains, and areas of historical heritage and cultural value e.g. locally listed buildings. Improve the quality of the wider built environment.	-	-	-	-	**Environmental effects** The environmental effects of forest restocking relate to the replacement of trees following felling activities. This can include nursery restocking, natural regeneration or coppice management. These activities are likely to have direct effects on buried archaeological assets due to root penetration, and the construction of forestry access tracks may increase the risk of potential physical damage to below ground archaeology. Following felling activities, drainage may also be necessary to promote tree growth. Any tree planting in river valleys and floodplains may have implications for the buried archaeological resource, as these areas have typically provided desirable settlement locations since prehistory and many may have a high archaeological potential containing well-preserved remains in waterlogged deposits. Furthermore, the use of herbicides may be corrosive to certain types of archaeological evidence. The duration of effects from fencing and access tracks is short to medium term, and the impacts of weed control activity is only during the first few years and short term in effect. The extent of these impacts is local to the area of forest restocking. The environmental effects of continuing to meet investment obligations for fixed equipment on agricultural holdings relates to building repairs and some replacement of farm buildings. Works to improve the overall standard of residential assets and to increase residential returns is likely to involve building improvements. This could result in adverse effects on built heritage and buried archaeology through digging and other groundworks. Furthermore, certain types of development (e.g. extensions, installation of solar panels on roofs etc.) could adversely impact upon the setting of heritage assets. The significance of these effects depends on the scale, size and design of the proposed development, as well as the nature of the existing setting of the heritage asset in question. **Regulatory controls** Forest restocking is regulated through long term forest plans, which are required for woodlands of over 100 ha or more in order to be eligible for grants within the Forestry Grant Scheme. Long term forest plans require consideration of cultural heritage and the wider historic environment. Before deciding whether to approve a Long Term Forest Plan, Forestry Commission Scotland has a formal consultation process with local Planning Authorities and other organisations with statutory powers such as Historic Environment Scotland for potential issues relating to archaeological assets. Forestry Grants also require consideration of other licenses and permissions which include those related to protected species, the water environment and planning permission / prior notification requirements for access tracks. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. In addition, forest roads are also subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. Prior approval provides further scrutiny of the proposals by key agencies and an additional level of environmental control that would not otherwise have been actioned. Listed Building consent applies to works that seek to alter or extend a listed building in a way that affects its character or appearance as a building of special architectural or historic interest. Scheduled Monument Consent applies to works resulting in the demolition or destruction of, or any damage to, a scheduled monument. **Residual effects** The residual effects on cultural heritage are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and forest restocking. In addition, tree planting can be mechanised, but is predominantly a manual task and involving relatively minor soil disturbance. Significant physical damage to

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy –	Alternative 3 - £5m	Justification
						archaeological sites through the direct action of tree planting is unlikely to occur, as the ground disturbance is minimal. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in forest restocking, natural regeneration and coppice management over a wider geographic area. It could also result in building works to a greater number of agricultural buildings and structures and residential buildings, or a greater scale of building work. This could result in potential adverse impacts on buried archaeological assets over a wider area and a greater number of properties. Therefore, a **minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on buried archaeological assets remain. A **minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from forest restocking would extend over a more limited area of the Crown Estate Scotland assets. The scale and nature of buildings works would be most limited under this alternative. However although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **minor negative** effect is identified.
Landscape and geodiversity	Protect and enhance landscape and seascape character and quality including National Scenic Areas, national parks, geoparks, wild land, open spaces, parks and gardens and their settings. Protect geological sites of national, regional or local importance.	+/-	+/-	+/-	+/-	**Environmental effects** The environmental effects of forest restocking relate to the replacement of trees following felling activities. This can include nursery restocking, natural regeneration or coppice management. These activities are likely to have positive effects on landscape character through increases in tree cover and woodland diversification. However, forest restocking could also have negative effects on landscape quality and geodiversity. For instance, deer and rabbit fencing may have adverse visual impacts by increasing the risk of visual clutter, resulting in potential adverse effects on local amenity. Furthermore, the construction of forest access tracks associated with forest restocking could have adverse visual impacts, particularly in designated areas such as National Scenic Areas. Landscape effects from access tracks include the introduction of unnatural shapes and features into a rural landscape which typically has lower levels of human influence. The introduction of such features influences the sense of space in a landscape. Furthermore, construction works could result in impacts on important rock formations, fossils, landforms, soils and land forming processes. In more rural and open landscapes access tracks may be seen over long distances, resulting in negative effects on landscape quality and geodiversity. The duration of effects from fencing is short to medium term, and the extent of these impacts is local to the area of forest restocking. The environmental effects of continuing to meet investment obligations for fixed equipment on agricultural holdings relates to building repairs and some replacement of farm buildings. Works to improve the overall standard of residential assets and to increase residential returns is likely to involve building improvements. This could result in direct effects on landscape character through increasing the risk of visual clutter. Furthermore, construction works could potentially damage important rock formations, fossils and soils. The significance of these effects greatly depends on the scale and design of the proposed building works. **Regulatory controls** Forest restocking is regulated through long term forest plans which require consideration of landscape quality. In addition, for sensitive areas a Landscape and Visual Impact Assessment may also be required as part of the EIA process. Of particular relevance are the broad-scale international and national designations, such as National Parks, National Scenic Areas and Areas of Outstanding Natural Beauty, and local level designations such as Special Landscape Areas in Scotland. Long term forest plans are required for woodlands of over 100 ha or more in order to be eligible for grants within the Forestry Grant Scheme. Forestry Grants also require consideration of other licenses and permissions which include those related to planning permission / prior notification requirements for access tracks. In addition, forest roads are also subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. In addition, forest roads are also subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. Prior approval provides further scrutiny of the proposals by key agencies and an additional level of environmental control that would not otherwise have been actioned. **Residual effects** The residual effects on landscape quality are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and forest restocking. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in forest restocking, natural regeneration and coppice management over a wider geographic area. It could also result in building works to a greater number of agricultural buildings and structures and residential buildings, or a greater scale of building work. This could result in potential adverse impacts on landscape character over a wider area and a greater number of properties. Overall, a **mixed minor positive and minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on landscape character remain. A **mixed minor positive and minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from forest restocking would extend over a more limited area of the Crown Estate Scotland assets. The scale and nature of buildings works would be most limited under this alternative. However although a more limited area is affected under this alternative, the potential for effects on landscape character remain. A **mixed positive and minor negative** effect is identified.
Material assets	Avoid adversely impacting on material assets. Enhance material assets.	+	+	+	+	**Environmental effects** The environmental effects of forest restocking relate to the replacement of trees following felling activities. This can include nursery restocking, natural regeneration or coppice management. These activities are likely to have positive effects on material assets through increases in tree cover and woodland diversification, although the extent of these

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy–	Alternative 3 - £5m	Justification
						impacts is local to the area of forest restocking. The environmental effects of continuing to meet investment obligations for fixed equipment on agricultural holdings relates to building repairs and some replacement of farm buildings. Works to improve the overall standard of residential assets and to increase residential returns is likely to involve building improvements which could result in positive effects on material assets. However, the significance and nature of these effects greatly depends on the scale and design of the proposed building works. **Regulatory controls** Forest restocking is regulated through long term forest plans which require consideration of landscape quality, the water environment and other environmental issues. Forestry Grants also require consideration of other licenses and permissions which include those related to planning permission / prior notification requirements for access tracks. In addition, forest roads are also subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** Forest restocking and meeting investment obligations for fixed equipment on agricultural holdings supports the maintenance of these assets contributing towards the enhancement of these assets. The effects on material assets are judged to be very low in scale. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in forest restocking, natural regeneration and coppice management over a wider geographic area. It could also result in building works to a greater number of agricultural buildings and structures and residential buildings, or a greater scale of building work. This could result in positive effects on these assets. Overall, a **minor positive** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for positive effects on these assets remains. A **minor positive effect** is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from forest restocking would extend over a more limited area of the Crown Estate Scotland assets. The scale and nature of buildings works would be most limited under this alternative. However although a more limited area is affected under this alternative, the potential for positive effects on material assets remain. A **minor positive** effect is identified.

Investment objective 2

Invest in the development of offshore renewable energy, carbon capture and storage, and aquaculture (finfish, shellfish and seaweed):

- Promote and support partnerships which drive third-party investment, generate public benefits and future revenue and/or capital growth
- Work with tenants to identify improvement works and investment. Support farm diversification, agroforestry, farm business consolidation/restructuring, tourism and other non-agricultural commercial enterprises.
- Facilitate voluntary lease restructures or surrenders to allow for (a) commercial or residential development planning), (b) opportunities for expansion or restructuring of existing tenants' businesses, (c) open market re-letting, (d) opportunities for new entrants, (e) sales or (f) alternative uses.
- Develop and enhance local economic activity (such as tourism), and natural and cultural heritage, to promote long-term sustainable development.
- New forestry planting

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy –	Alternative 3 - £5m	Justification
Biodiversity, flora and fauna	Protect and enhance terrestrial and aquatic habitats and species of international, national, regional or local importance. Maintain and expand wildlife corridors and minimise fragmentation of ecological areas and green spaces	+/-	+/-	+/-	+/-	**Environmental effects** The environmental effects of partnerships relate to the creation of partnerships which drive third-party investment. Generally, the aim of such partnerships is to develop local improvement plans and to generate public benefits and future revenue, with associated positive effects on the local environment. This could also entail landscape and biodiversity improvements, resulting in positive effects on protecting and enhancing habitats and species of international, national, regional or local importance. However, these effects are uncertain, depending on the aims, strategy and implementation of the partnership. The environmental effects of farm diversification relate to additional income alongside core farming activity. Farm diversification typically comprises activities such as the rearing of 'unusual' livestock such as llamas, tourism ventures, nature and camping and festivals. As such, farm diversification is likely to have various implications for local biodiversity, flora and fauna. If diversification is aimed at allowing local wildlife to thrive on farms, then this could have positive effects on local biodiversity. However, farm diversification may also have adverse effects on local wildlife, principally due to increased physical disturbance of wildlife resulting from construction works and farm diversification activities such as festivals. The environmental effects of supporting agroforestry relate to the use of land use management systems in which woody perennials are grown around or among crops and/or pastureland. Agroforestry practices could result in increased biodiversity and reduced erosion, with associated positive effects on local flora and fauna. Biodiversity in agroforestry systems is typically higher than in conventional agricultural systems by providing a more diverse habitat and more food and nesting possibilities. Furthermore, agroforests can serve as corridors between habitats. The environmental effects of facilitating voluntary lease restructures principally relates to the release of land for residential or commercial development, consolidation and restructuring of existing farm businesses and the re-letting of farms in the open markets. This could lead to adverse effects on biodiversity through habitat fragmentation and habitat degradation resulting from commercial and residential development. On the other hand, the restructuring of existing farm businesses may lead to opportunities for enhancing local wildlife. For instance, the restructuring of agricultural businesses may open up opportunities for enhancing local wildlife e.g. through the creation and/or expansion of hedgerows. The significance of such effects is highly uncertain, depending on the size, scale and design of the proposed developments. The environmental effects of new forestry planting relate to the planting of new trees for the purposes of woodland diversification and/or expansion. The impacts of this include effects on protected habitats and species. Species choice can be more favourable for different species. For instance, planting native trees could help to restore local ecosystems and maintain and/or expand wildlife corridors, with associated positive effects on habitats and species of international, national, regional and local importance. However, new forestry planting could also have the potential to adversely impact on protected habitats and species. Impacts of rabbit and deer protection measures, such as fencing create barriers to species movements, or hazards to bird species. The environmental impacts of chemical weed control activities can also impact on habitats and species. Furthermore, the construction of forestry access tracks could have adverse impacts on local wildlife, principally through the disturbance of species (e.g. through traffic noise), vehicle strikes and the potential introduction of invasive species. The duration of effects from fencing and access tracks is short to medium term, and the impacts of weed control activity is only during the first few years and short term in effect. The extent of these impacts is local to the area of forest restocking. **Regulatory controls** The planning process may control changes which relate to developments in the countryside. The planning process or permitted development rights, where relevant with prior notification controls relate to the development of buildings and extensions. Under the current planning process, forest roads are subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. Prior approval provides further scrutiny of the proposals by key agencies and an additional level of environmental control that would not otherwise have been actioned. New forestry planting may be regulated by long term forest plans, or forestry grant requirements. The Habitats Directive and Birds Directive provide legal protection for habitats and species. **Residual effects** The residual effects on biodiversity, flora and fauna are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and other activities associated with the aforementioned investment objectives. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and the associated environmental effects over a wider geographic area. A **mixed minor positive and minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor and the potential for

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy –	Alternative 3 - £5m	Justification
						positive effect on local wildlife remain. A **mixed minor positive and minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from forest restocking would extend over a more limited area of the Crown Estate Scotland assets. The scale and nature of buildings works would be most limited under this alternative. However, although a more limited area is affected under this alternative, the potential for environmental effects remain. A **mixed minor positive and minor negative** effect is identified.
Population and human health	Avoid adverse effects on health and quality of life. Improve the health and living environment of people and communities. Retain and improve quality, quantity and connectivity of publicly accessible open space.	+/-	+/-	+/-	+/-	**Environmental effects** The environmental effects of partnerships relate to the creation of partnerships which drive third-party investment. Generally, the aim of such partnerships is to develop local improvement plans and to generate public benefits and future revenue. This is likely to have positive effects on population and human health through improvements of publicly accessible open space. However, the significance of these effects is uncertain, depending on the aims, strategy and implementation of the local partnership. A good example of a local partnership which aims to generate public benefits is the Tomintoul and Glenlivet Landscape Partnership (comprising of organisations such as the Cairngorms National Park Authority, Highlands and Islands Enterprise, Moray Council, RSPB, local communities etc.). The environmental effects of farm diversification relate to additional income alongside core farming activity. Farm diversification typically comprises activities such as the rearing of 'unusual' livestock such as llamas, tourism ventures, nature and camping and festivals. As such, farm diversification is likely to improve the connectivity of rural areas by promoting rural tourism and other non-agricultural activities. For example, rural tourism could raise cultural awareness and provide direct financial benefits for local people, mostly in the form of increased investment and jobs. However, it is important to note that rural tourism, if highly successful, could also have adverse effects on local communities. Rural tourism has resulted in some areas, at certain times of the year, experiencing pressure on infrastructure and negative impacts on local communities. The environmental effects of supporting agroforestry relate to the use of land use management systems in which woody perennials are grown around or among crops and/or pastureland. Agroforestry practices could result in increased biodiversity and reduced erosion, with associated indirect effects on the quality of rural areas. As such, agroforestry practices can provide financial benefits for local people, as improved soil quality could help farmers to produce more crops. Furthermore, introducing trees in traditional agricultural systems can allow for more nutrient recycling, meaning farm output can be more substantive and reliable. The environmental effects of facilitating voluntary lease restructures principally relates to the release of land for residential or commercial development, consolidation and restructuring of existing farm businesses and the re-letting of farms in the open markets. The restructuring of existing farm businesses may lead to opportunities for improved profitability and viability of farm units, supporting the maintenance of rural populations. The significance of such effects is highly uncertain, depending on the size, scale and design of the proposed developments. The environmental effects of new forestry planting relate to the planting of new trees for the purposes of woodland diversification and/or expansion. The impacts of this on population and human health could include temporary local negative impacts on access and recreation as a result of fencing to control rabbits and deer affecting access routes which were previously used. The use of chemical weed control can have direct impacts on human health for workers using the chemicals. **Regulatory controls** The planning process controls the creation of local partnerships, farm diversification, the development of agro-forestry and voluntary lease restructures. This is because developments in the countryside are likely to be subject to planning conditions e.g. Local Development Plans. The result of land is subject to development planning and development management processes. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. Under the current planning process, forest roads are subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. Prior approval provides further scrutiny of the proposals by key agencies and an additional level of environmental control that would not otherwise have been actioned. **Residual effects** The residual effects on population and human health are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and other activities associated with the aforementioned investment objectives. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and the associated environmental effects over a wider geographic area. A **mixed minor positive and minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor and the potential for positive effect on local wildlife remain. A **mixed minor positive and minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from forest restocking would extend over a more limited area of the Crown Estate Scotland assets. The scale and nature of buildings works would be most limited under this alternative. However, although a more limited area is affected under this alternative, the potential for environmental effects remain. A **mixed minor positive and minor negative** effect is identified.
Soil	Protect valuable soil resources, including carbon soils and best and most versatile agricultural land. Reduce vacant and derelict land and buildings.	+/-	+/-	+/-	+/-	**Environmental effects** The environmental effects of partnerships relate to the creation of partnerships which drive third-party investment. Generally, the aim of such partnerships is to develop local improvement plans and to generate public benefits and future revenue. These partnerships are likely to drive landscape and biodiversity improvements, resulting in positive effects in terms of improving soil quality. However, these effects are uncertain, depending on the aims, strategy and implementation of the partnership. The environmental effects of farm diversification relate to additional income alongside core farming activity. Farm diversification typically comprises activities such as the rearing of 'unusual' livestock such as llamas, tourism ventures, nature and camping and festivals. As such, farm diversification is likely to have positive effects in terms of land use diversification, with associated positive effects on soil quality and the use of versatile agricultural land. The environmental effects of supporting agroforestry relate to the use of land use management systems in which woody perennials (trees, shrubs, palms, bamboos etc.) are grown

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy –	Alternative 3 - £5m	Justification
						around or among crops and/or pastureland. Agroforestry practices could result in increased organic matter content in soil and reduced erosion, with associated positive effects on soil fertility and therefore the quality of agricultural land. The environmental effects of facilitating voluntary lease restructures principally relates to the release of land for residential or commercial development, consolidation and restructuring of existing farm businesses and the re-letting of farms in the open markets. This could lead to adverse effects on this SEA objective through construction works associated with commercial and residential development on carbon soils and agricultural land. On the other hand, the restructuring of existing farm businesses may lead to opportunities for enhancing the quality and diversity of rural areas. The significance of such effects is highly uncertain, depending on the size, scale and design of the proposed developments. The environmental effects of new forestry planting relate to the planting of new trees for the purposes of woodland diversification and/or expansion. The impacts of these activities include effects on soil quality and composition, depending on the soil type present on-site. Two examples are discussed in greater detail below: Planting on predominantly wet, acid soils will require some ground preparation and drainage with an inevitable increase in erosion, suspended sediment and colour. Road building carries risks of erosion, especially on steep slopes. Planting on some acid upland soils will require fertilisers. Some of the added fertiliser will inevitably lost in drainage water; however, the loss and consequent contamination of drainage is greater on peats and peaty soils than freely drained, acidic mineral soils. It is unlikely that Crown Estate Scotland owns vacant and derelict land and buildings, due to their duty to maintain and enhance the value of Crown Estate assets in Scotland and the returns obtained from it. Therefore, the Investment Strategy is likely to have a negligible effect on reducing the amount of vacant and derelict land and buildings in Scotland. **Regulatory controls** Forest restocking is regulated through long term forest plans which are required for woodlands of over 100 ha or more in order to be eligible for grants within the Forestry Grant Scheme. Forestry Grants also require consideration of other licenses and permissions which include those related to protected species, the water environment and planning permission / prior notification requirements for access tracks. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. Under the current planning process, forest roads are subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. Prior approval provides further scrutiny of the proposals by key agencies and an additional level of environmental control that would not otherwise have been actioned. The planning process may influence impacts on soil arising from development associated with farm diversification **Residual effects** The residual effects on soil quality are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and other activities associated with the aforementioned investment objectives. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and the associated environmental effects over a wider geographic area. A **mixed minor positive and minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects (both positive and negative) remain. A **mixed minor positive and minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from forest restocking would extend over a more limited area of the Crown Estate Scotland assets. The scale and nature of buildings works would be most limited under this alternative. However, although a more limited area is affected under this alternative, the potential for environmental effects remain. A **mixed minor positive and minor negative** effect is identified.
Water	Protect and enhance the quality and quantity of watercourses and waterbodies (surface water and groundwater) including coastal and estuarial waters. Avoid and reduce flood risk both presently and taking into account climate change.	+/-	+/-	+/-	+/-	**Environmental effects** The environmental effects of partnerships relate to the creation of partnerships which drive third-party investment. Generally, the aim of such partnerships is to develop local improvement plans and to generate public benefits and future revenue. These partnerships are likely to drive environmental improvements, which could result in positive effects in terms of improving water quality and quantity. However, these effects are uncertain, depending on the aims, strategy and implementation of the partnership. The environmental effects of farm diversification relate to additional income alongside core farming activity. Farm diversification typically comprises activities such as the rearing of 'unusual' livestock such as llamas, tourism ventures, nature and camping and festivals. Nevertheless, agriculture has significant impacts on water quality through the release of nutrients (as a result of soil management and fertiliser application) and other chemicals to the water environment. These impacts are likely to remain following farm diversification. The environmental effects of supporting agroforestry relate to the use of land use management systems in which woody perennials (trees, shrubs, palms, bamboos etc.) are grown around or among crops and/or pastureland. Agroforestry practices can help reduce soil erosion and nutrient losses from pastured land and thereby protect water quality. The environmental effects of facilitating voluntary lease restructures principally relates to the release of land for residential or commercial development, consolidation and restructuring of existing farm businesses and the re-letting of farms in the open markets. This could lead to adverse effects on water quality and water quantity through construction works associated with commercial and residential development. New forest planting is likely to have diverse effects on the water environment. Trees and vegetation absorb rainwater, increase evapotranspiration and draw water from the ground, with associated effects on water quality and quantity. For instance, soil cultivation prior to planting can have a significant effect on local water resources, although it is important to note that the magnitude of the effect is highly dependent on the extent to which the existing vegetation is disturbed or removed by the operation. Ploughing generally causes a considerable reduction in water use by leaving a temporary bare soil surface. The application of herbicides associated with tree planting can also have an indirect effect

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy –	Alternative 3 - £5m	Justification
						on water quality. Furthermore, the impacts on the replacement of trees following felling activities also depend on the existing soil type on site: Planting on predominantly wet, acid soil will continue to require some ground preparation and drainage with an inevitable increase in erosion, suspended sediment and colour; ground preparation of peats and peaty soils can also have impacts on water chemistry. Planting on some acid upland soils will require fertilisers. Some of the added fertiliser will inevitably lost in drainage water; however, the loss and consequent contamination of drainage is greater on peats and peaty soils than freely drained, acidic mineral soils. **Regulatory controls** Forest restocking is regulated through long term forest plans, which are required for woodlands of over 100 ha or more in order to be eligible for grants within the Forestry Grant Scheme. Long term forest plans require consideration of water pollution issues. Before deciding whether to approve a Long Term Forest Plan, Forestry Commission Scotland has a formal consultation process with local Planning Authorities and other organisations with statutory powers such as SEPA for 'CAR regulations' and diffuse pollution aspects. Forestry Grants also require consideration of other licenses and permissions which include those related to the water environment. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. Under the current planning process, forest roads are subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. Prior approval provides further scrutiny of the proposals by key agencies and an additional level of environmental control that would not otherwise have been actioned. **Residual effects** The residual effects on water quality and quantity are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and other activities associated with the aforementioned investment objectives. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in potential impacts on the water environment over a wider area. Overall, a **mixed minor negative and minor positive** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on the water environment remain. A **mixed minor negative and minor positive** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from forest restocking would extend over a more limited area of the Crown Estate Scotland assets. However although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **mixed minor negative and minor positive** effect is identified.
Air	Minimise air pollution, particularly where air quality is a known issue through the designation of an AQMA. Improve air quality.	+/-	+/-	+/-	+/-	**Environmental effects** The environmental effects of partnerships relate to the creation of partnerships which drive third-party investment. Generally, the aim of such partnerships is to develop local improvement plans and to generate public benefits and future revenue. These partnerships are likely to drive environmental improvements, resulting in positive effects in terms of improving air quality. However, these effects are uncertain, depending on the aims, strategy and implementation of the partnership. The environmental effects of farm diversification relate to additional income alongside core farming activity. Farm diversification typically comprises activities such as the rearing of 'unusual' livestock such as llamas, tourism ventures, nature and camping and festivals. Some of these activities may generate additional vehicle journeys with impacts on air quality. However, it is important to note that conventional agriculture is judged to have significant impacts on air through the use of artificial nitrogen fertiliser which damages soil, local wildlife and hedgerows. Furthermore, the high use of artificial ammonia fertilisers by UK agriculture significantly contributes to the levels of nitrogen in the air, which increases air pollution. However, positive effects could occur if farm diversification involves a gradual transition from synthetic nitrogen impacts to legume-based crop rotations. The significance of these impacts is uncertain, depending on the farming activity in question. The environmental effects of supporting agroforestry relate to the use of land use management systems in which woody perennials are grown around or among crops and/or pastureland. Agroforestry practices can help reduce soil erosion and remove nitrogen and phosphorus originating from fertiliser excess and thereby help to protect local air quality. Furthermore, agroforestry systems have the potential for pesticides removal, with associated positive effects on air quality. The environmental effects of facilitating voluntary lease restructures principally relates to the release of land for residential or commercial development, consolidation and restructuring of existing farm businesses and the re-letting of farms in the open markets. This could lead to adverse effects on air quality through construction works associated with commercial and residential development. The significance of these effects is uncertain, depending on the scale, size and design of proposed development. New forest planting is likely to have a positive effect on air quality through carbon sequestration, the direct removal of air pollutants and effects on microclimate. Species choice has a large influence on the potential for pollutant scrubbing by trees and other vegetation. For instance, evergreen species contribute to pollutant scrubbing year round, whilst deciduous species are limited to stem deposition only in winter. When in leaf, broadleaf species may also be more efficient than needle-leaf species, due to the higher leaf surface area of broadleaf trees. **Regulatory controls** Forest restocking is regulated through long term forest plans, which are required for woodlands of over 100 ha or more in order to be eligible for grants within the Forestry Grant Scheme. Long term forest plans require consideration of air pollution issues. Forestry Grants also require consideration of other licenses and permissions which include those related to planning permission / prior notification requirements for access tracks. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. Under the current planning process, forest roads are subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. Prior approval provides further scrutiny of the

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy –	Alternative 3 - £5m	Justification
						proposals by key agencies and an additional level of environmental control that would not otherwise have been actioned. **Residual effects** The residual effects on air quality are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and other activities associated with the aforementioned investment objectives. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in greater potential impacts on air quality over a wider area. Overall, a **mixed minor negative and minor positive** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on the water environment remain. A **mixed minor negative and minor positive** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from forest restocking would extend over a more limited area of the Crown Estate Scotland assets. However although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **mixed minor negative and minor positive** effect is identified.
Climatic factors	Avoid increasing greenhouse gas emissions. Support actions which contribute to targets for reducing greenhouse gas emissions. Support climate change adaptation.	+/-	+/-	+/-	+/-	**Environmental effects** The environmental effects of partnerships relate to the creation of partnerships which drive third-party investment. Generally, the aim of such partnerships is to develop local improvement plans and to generate public benefits and future revenue. These partnerships are likely to drive environmental improvements, which could result in positive effects in terms of reducing greenhouse gas emissions. However, these effects are uncertain, depending on the aims, strategy and implementation of the partnership. The environmental effects of farm diversification relate to additional income alongside core farming activity. Farm diversification typically comprises activities such as the rearing of 'unusual' livestock such as llamas, tourism ventures, nature and camping and festivals. Some of these activities may generate additional vehicle journeys and increase greenhouse gas emissions, depending on the existing use of the site and the proposed farm diversification activities. The environmental effects of supporting agroforestry relate to the use of land use management systems in which woody perennials (trees, shrubs, palms, bamboos etc.) are grown around or among crops and/or pastureland. Agroforestry systems are likely to have positive effects on climatic factor as they can increase carbon sequestration, offset greenhouse gas (GHG) emissions and reduce the carbon footprint generated by animal production. The environmental effects of facilitating voluntary lease restructures principally relates to the release of land for residential or commercial development, consolidation and restructuring of existing farm businesses and the re-letting of farms in the open markets. This could lead to adverse effects on this SEA objective through increased emissions of greenhouse gases resulting from construction works. The significance of these effects is uncertain, depending on the scale, size and design of proposed development. New forest planting is likely to have a positive effect on air quality through carbon sequestration and effects on microclimate. Species choice has a large influence on the potential for pollutant scrubbing by trees and other vegetation. For instance, evergreen species contribute to pollutant scrubbing year round, whilst deciduous species are limited to stem deposition only in winter. When in leaf, broadleaf species may also be more efficient than needle-leaf species, due to the higher leaf surface area of broadleaf trees. **Regulatory controls** Forest restocking is regulated through long term forest plans, which are required for woodlands of over 100 ha or more in order to be eligible for grants within the Forestry Grant Scheme. Long term forest plans require consideration of air pollution issues. Forestry Grants also require consideration of other licenses and permissions which include those related to planning permission / prior notification requirements for access tracks. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. Under the current planning process, forest roads are subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. Prior approval provides further scrutiny of the proposals by key agencies and an additional level of environmental control that would not otherwise have been actioned. The planning process controls the creation of local partnerships, farm diversification, the development of agro-forestry and voluntary lease restructures. This is because developments in the countryside are likely to be subject to planning conditions e.g. Local Development Plans. The result of land is subject to development planning and development management processes. **Residual effects** The residual effects on climatic factors are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and other activities associated with the aforementioned investment objectives. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in greater potential impacts on air quality over a wider area. Overall, a **mixed minor negative and minor positive** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on the water environment remain. A **mixed minor negative and minor** positive effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from forest restocking would extend over a more limited area of the Crown Estate Scotland assets. However although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **mixed minor**

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy –	Alternative 3 - £5m	Justification
						negative and minor positive effect is identified.
Cultural heritage and the historic environment	Conserve and, where appropriate, enhance those elements which contribute to the significance of terrestrial and marine designated and undesignated heritage assets in a manner appropriate to their significance, including World Heritage Sites, Conservation Areas, Listed Buildings, Historic Marine Protected Areas, archaeological remains, and areas of historical heritage and cultural value e.g. locally listed buildings. Improve the quality of the wider built environment.	-	-	-	-	**Environmental effects** The environmental effects of partnerships relate to the creation of partnerships which drive third-party investment. Generally, the aim of such partnerships is to develop local improvement plans and to generate public benefits and future revenue. As such, these partnerships could promote the conservation of cultural heritage assets, resulting in positive effects on this SEA objective. However, these effects are uncertain, depending on the aims, strategy and implementation of the partnership. The environmental effects of farm diversification relate to additional income alongside core farming activity. Farm diversification typically comprises activities such as the rearing of 'unusual' livestock such as llamas, tourism ventures, nature and camping and festivals. These farm diversification activities may increase cultural awareness, resulting in positive impacts on the conservation of cultural heritage and the wider historic environment. However, rural tourism is known to put additional strain on infrastructure, local assets and local communities, with associated adverse effects on cultural heritage. The potential environmental effects associated with farm diversification are likely to occur over the short/medium term. The environmental effects of supporting agroforestry relate to the use of land use management systems in which woody perennials (trees, shrubs, palms, etc.) are grown around or among crops and/or pastureland. Agroforestry systems are likely to have varying impacts on cultural heritage assets. For instance, root penetration caused by woody perennials could damage buried archaeological assets. On the other hand, agroforestry could enhance the preservation of cultural ecosystems though the provision of communities' food security and livelihoods. The environmental effects of facilitating voluntary lease restructures principally relates to the release of land for residential or commercial development, consolidation and restructuring of existing farm businesses and the re-letting of farms in the open markets. This could lead to direct impacts on buried archaeology resulting from construction works associated with commercial and residential developments. The significance of these effects is uncertain, depending on the scale, size and design of proposed development. The environmental effects of new forestry planting relate to the planting of new trees for the purposes of woodland diversification and/or expansion. These activities are likely to have direct effects on buried archaeological assets due to site preparation works and root penetration. Site preparation works could adversely impact upon buried archaeology, as ploughing is frequently attributed to the loss of archaeological evidence. In addition, drainage may be necessary to promote tree growth. However, river valleys and floodplains have provided desirable settlement locations since prehistory and many may have a high archaeological potential containing well-preserved remains in waterlogged deposits. Any tree planting in these areas may have implications for the buried archaeological resource. Furthermore, the use of herbicides may be corrosive to certain types of archaeological evidence, depending on the substances involved. **Regulatory controls** New forest planting is regulated through long term forest plans, which are required for woodlands of over 100 ha or more in order to be eligible for grants within the Forestry Grant Scheme. Long term forest plans require consideration of the historic environment. Before deciding whether to approve a Long Term Forest Plan, Forestry Commission Scotland has a formal consultation process with local Planning Authorities and other organisations with statutory powers such as Historic Environment Scotland for potential issues relating to archaeological assets. Forestry Grants also require consideration of other licenses and permissions which include those related to planning permission. Forestry Grants also require consideration of other licenses and permissions which include those related to planning permission / prior notification requirements for access tracks. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. Under the current planning process, forest roads are subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. Prior approval provides further scrutiny of the proposals by key agencies and an additional level of environmental control that would not otherwise have been actioned. Listed Building consent applies to works that seek to alter or extend a listed building in a way that affects its character or appearance as a building of special architectural or historic interest. Scheduled Monument Consent applies to works resulting in the demolition or destruction of, or any damage to, a scheduled monument. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. Furthermore, the planning process controls the creation of local partnerships, farm diversification, the development of agro-forestry and voluntary lease restructures. This is because developments in the countryside are likely to be subject to planning conditions e.g. Local Development Plans. The result of land is subject to development planning and development management processes. **Residual effects** The residual effects on cultural heritage assets and the historic environment are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and other activities associated with the aforementioned investment objectives. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in potential adverse impacts on buried archaeological assets over a wider area and a greater number of properties. Therefore, a **minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on buried archaeological assets remain. A **minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the potential environmental effects would be most limited under this alternative. However although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **minor negative** effect is identified.
Landscape and geodiversity	Protect and enhance landscape and seascape character and quality	+/-	+/-	+/-	+/-	**Environmental effects** The environmental effects of partnerships relate to the creation of partnerships which drive third-party investment. Generally, the aim of such partnerships is to develop local

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	including National Scenic Areas, national parks, geoparks, wild land, open spaces, parks and gardens and their settings. Protect geological sites of national, regional or local importance.					improvement plans and to generate public benefits and future revenue. As such, these partnerships could protect and enhance landscape and seascape character, resulting in positive effects on this SEA objective. However, these effects are uncertain, depending on the aims, strategy and implementation of the partnership. The environmental effects of farm diversification relate to additional income alongside core farming activity. Farm diversification typically comprises activities such as the rearing of 'unusual' livestock such as llamas, tourism ventures, nature and camping and festivals. These farm diversification activities may promote rural tourism, which may help to underpin efforts to maintain and/or improve landscape quality. However, rural tourism is known to put additional strain on infrastructure, local assets and local communities, with associated adverse effects on the integrity of geological sites, wild land, open spaces, parks and gardens and their settings. The potential environmental effects associated with farm diversification are likely to occur over the short/medium term. The environmental effects of supporting agroforestry relate to the use of land use management systems in which woody perennials (trees, shrubs, palms, etc.) are grown around or among crops and/or pastureland. Agroforestry systems are likely to have landscape benefits. For example, the creation of diverse woodlands favours recreational activities. This will be particularly the case in very sparsely wooded areas, where plots are developed by planting arable land, and in very heavily wooded areas, where plots are developed by thinning the forest. The duration of these effects is short to medium term, and the extent of these impacts is local to the area of agroforestry systems. The environmental effects of facilitating voluntary lease restructures principally relates to the release of land for residential or commercial development, consolidation and restructuring of existing farm businesses and the re-letting of farms in the open markets. This could lead to direct impacts on landscape quality resulting from construction works associated with commercial and residential developments. The construction of new buildings could have adverse visual impacts, particularly in landscapes and seascapes of national importance e.g. National Scenic Areas. The significance of these effects is uncertain, depending on the scale, size and design of proposed development. The environmental effects of new forestry planting relate to the planting of new trees for the purposes of woodland diversification and/or expansion. These activities are likely to have positive effects on landscape character through increases in tree cover and woodland diversification. However, deer and rabbit fencing may have adverse visual impacts. The duration of effects from fencing is short to medium term, and the extent of these impacts is local to the area of forest replanting. **Regulatory controls** Forest restocking is regulated through long term forest plans which require consideration of landscape quality. In addition, for sensitive areas a Landscape and Visual Impact Assessment may also be required as part of the EIA process. Of particular relevance are the broad-scale international and national designations, such as National Parks, National Scenic Areas and Areas of Outstanding Natural Beauty, and local level designations such as Special Landscape Areas in Scotland. Long term forest plans are required for woodlands of over 100 ha or more in order to be eligible for grants within the Forestry Grant Scheme. Forestry Grants also require consideration of other licenses and permissions which include those related to planning permission / prior notification requirements for access tracks. In addition, forest roads are also subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. Under the current planning process, forest roads are subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. Prior approval provides further scrutiny of the proposals by key agencies and an additional level of environmental control that would not otherwise have been actioned. **Residual effects** The residual effects on landscape quality and geodiversity are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and other activities associated with the aforementioned investment objectives. The environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in potential adverse impacts on landscape character over a wider area and a greater number of properties. Therefore, a **mixed minor positive and minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on landscape character remain. A **mixed minor positive and minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects are expected to be very limited. However, although a more limited area is affected under this alternative, the potential for effects on landscape character remain. A **mixed minor positive and minor negative** effect is identified.
Material assets	Avoid adversely impacting on material assets. Enhance material assets.	+	+	+	+	**Environmental effects** The environmental effects of partnerships relate to the creation of partnerships which drive third-party investment. Generally, the aim of such partnerships is to develop local improvement plans and to generate public benefits and future revenue. As such, these partnerships could protect and enhance local environmental assets, resulting in positive effects on this SEA objective. However, these effects are uncertain, depending on the aims, strategy and implementation of the partnership. The environmental effects of farm diversification relate to additional income alongside core farming activity. Farm diversification typically comprises activities such as the rearing of 'unusual' livestock such as llamas, tourism ventures, nature and camping and festivals. These farm diversification activities may promote rural tourism, which may help to underpin efforts to maintain and/or improve landscape quality for recreational purposes. However, rural tourism is known to put additional strain on infrastructure, local assets and local communities, with associated adverse effects on the integrity of geological sites, wild land, open spaces, parks and gardens and their settings. The potential environmental effects associated with farm diversification are likely to occur over the short/medium term. The environmental effects of supporting agroforestry relate to the use of land use management systems in which woody perennials (trees, shrubs, palms, etc.) are grown around or among crops and/or pastureland. Agroforestry systems are likely to have positive effects on the wider environment. For example, agroforestry practices can help reduce soil erosion and remove nitrogen and phosphorus originating from fertiliser excess. Furthermore, agroforestry systems have the potential for pesticides removal. Therefore, agroforestry systems are judged to have a positive effect on this SEA objective. The environmental effects of facilitating voluntary lease restructures principally relates to the release of land for residential or commercial development, consolidation and restructuring of existing farm businesses and the re-letting of farms in the open markets. This could lead to direct impacts on landscape quality resulting from construction works

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy –	Alternative 3 - £5m	Justification
						associated with commercial and residential developments. The construction of new buildings could have physical impacts on local soil quality, air quality and water quality, resulting in adverse effects on this SEA objective. The significance of these effects is uncertain, depending on the scale, size and design of proposed development. The environmental effects of new forestry planting relate to the planting of new trees for the purposes of woodland diversification and/or expansion. These activities are likely to have positive effects on landscape character through increases in tree cover and woodland diversification. The extent of these impacts is local to the area of new forestry planting. **Regulatory controls** Forest restocking is regulated through long term forest plans which require consideration of landscape quality, the water environment and other environmental issues. Forestry Grants also require consideration of other licenses and permissions which include those related to planning permission / prior notification requirements for access tracks. In addition, forest roads are also subject to local Planning Authority scrutiny through 'prior notification of forest private ways'. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** The residual effects on material assets are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works and other activities associated with the aforementioned investment objectives. The environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in potential adverse impacts on landscape character over a wider area and a greater number of properties. Therefore, a **minor positive** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on landscape character remain. A **minor positive** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects are expected to be very limited. However, although a more limited area is affected under this alternative, the potential for effects on landscape character remain. A **minor positive** effect is identified.

Investment objective 3

Build a capital fund over 3 years:

- Granting of servitude rights for use of assets for infrastructure/access.
- Sale of land for strategic development – commercial, employment and residential users.

SEA Topic Area	SEA Objective	Alternative 1 –£30m	Alternative 2 –£15m	Preferred Strategy–	Alternative 3 - £5m	Justification
Biodiversity, flora and fauna	Protect and enhance terrestrial and aquatic habitats and species of international, national, regional or local importance. Maintain and expand wildlife corridors and minimise fragmentation of ecological areas and green spaces	?	?	?	?	**Environmental effects** The granting of servitude rights is judged to have very limited environmental effects in principle. However, it is important to note that servitude rights could encompass a wide range of activities, which in turn could result in environmental effects depending on the nature and the scale of the works carried out. This particularly applies to larger developments that are undertaken following the granting of servitude rights. Therefore, the potential environmental effects associated with servitude rights are judged to be uncertain. The environmental effects of sale of land for strategic development are uncertain, depending on the future use of the site. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. The Habitats Directive and Birds Directive provide legal protection for animals and birds. **Residual effects** Following from the findings above, an **uncertain** effect is identified. However, it is important to note that the potential environmental effects associated with the granting of servitude rights and the sales of land for strategic development are uncertain.
Population and human health	Avoid adverse effects on health and quality of life. Improve the health and living environment of people and communities. Retain and improve quality, quantity and connectivity of publicly accessible open space.	0	0	0	0	**Environmental effects** The granting of servitude rights is judged to have very limited environmental effects in principle. However, it is important to note that servitude rights could encompass a wide range of activities, which in turn could result in environmental effects depending on the nature and the scale of the works carried out. This particularly applies to larger developments that are undertaken following the granting of servitude rights. Therefore, the potential environmental effects associated with servitude rights are judged to be uncertain. The environmental effects of sale of land for strategic development are uncertain, depending on the future use of the site. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** Following from the findings above, a **negligible** effect is identified. However, it is important to note that the potential environmental effects associated with the granting of servitude rights and the sales of land for strategic development are uncertain.
Soil	Protect valuable soil resources, including carbon soils and best and most versatile agricultural land. Reduce vacant and derelict land and buildings.	?	?	?	?	**Environmental effects** The granting of servitude rights is judged to have very limited environmental effects in principle. However, it is important to note that servitude rights could encompass a wide range of activities, which in turn could result in environmental effects depending on the nature and the scale of the works carried out. This particularly applies to larger developments that are undertaken following the granting of servitude rights. Therefore, the potential environmental effects associated with servitude rights are judged to be uncertain. The environmental effects of sale of land for strategic development are uncertain, depending on the future use of the site. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** Following from the findings above, an **uncertain** effect is identified. However, it is important to note that the potential environmental effects associated with the granting of servitude rights and the sales of land for strategic development are uncertain.
Water	Protect and enhance the quality and quantity of watercourses and	?	?	?	?	**Environmental effects** The granting of servitude rights is judged to have very limited environmental effects in principle. However, it is important to note that servitude rights could encompass a wide

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy–	Alternative 3 - £5m	Justification
	waterbodies (surface water and groundwater) including coastal and estuarial waters. Avoid and reduce flood risk both presently and taking into account climate change.					range of activities, which in turn could result in environmental effects depending on the nature and the scale of the works carried out. This particularly applies to larger developments that are undertaken following the granting of servitude rights. Therefore, the potential environmental effects associated with servitude rights are judged to be uncertain. The environmental effects of sale of land for strategic development are uncertain, depending on the future use of the site. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** Following from the findings above, an **uncertain** effect is identified. However, it is important to note that the potential environmental effects associated with the granting of servitude rights and the sales of land for strategic development are uncertain.
Air	Minimise air pollution, particularly where air quality is a known issue through the designation of an AQMA. Improve air quality.	?	?	?	?	**Environmental effects** The granting of servitude rights is judged to have very limited environmental effects in principle. However, it is important to note that servitude rights could encompass a wide range of activities, which in turn could result in environmental effects depending on the nature and the scale of the works carried out. This particularly applies to larger developments that are undertaken following the granting of servitude rights. Therefore, the potential environmental effects associated with servitude rights are judged to be uncertain. The environmental effects of sale of land for strategic development are uncertain, depending on the future use of the site. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** Following from the findings above, an **uncertain** effect is identified. However, it is important to note that the potential environmental effects associated with the granting of servitude rights and the sales of land for strategic development are uncertain.
Climatic factors	Avoid increasing greenhouse gas emissions. Support actions which contribute to targets for reducing greenhouse gas emissions. Support climate change adaptation.	?	?	?	?	**Environmental effects** The granting of servitude rights is judged to have very limited environmental effects in principle. However, it is important to note that servitude rights could encompass a wide range of activities, which in turn could result in environmental effects depending on the nature and the scale of the works carried out. This particularly applies to larger developments that are undertaken following the granting of servitude rights. Therefore, the potential environmental effects associated with servitude rights are judged to be uncertain. The environmental effects of sale of land for strategic development are uncertain, depending on the future use of the site. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** Following from the findings above, an **uncertain** effect is identified. However, it is important to note that the potential environmental effects associated with the granting of servitude rights and the sales of land for strategic development are uncertain.
Cultural heritage and the historic environment	Conserve and, where appropriate, enhance those elements which contribute to the significance of terrestrial and marine designated and undesignated heritage assets in a manner appropriate to their significance, including World Heritage Sites, Conservation Areas, Listed Buildings, Historic Marine Protected Areas, archaeological remains, and areas of historical heritage and cultural value e.g. locally listed buildings. Improve the quality of the wider built environment.	?	?	?	?	**Environmental effects** The granting of servitude rights is judged to have very limited environmental effects in principle. However, it is important to note that servitude rights could encompass a wide range of activities, which in turn could result in environmental effects depending on the nature and the scale of the works carried out. This particularly applies to larger developments that are undertaken following the granting of servitude rights. Therefore, the potential environmental effects associated with servitude rights are judged to be uncertain. The environmental effects of sale of land for strategic development are uncertain, depending on the future use of the site. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. Listed Building consent applies to works that seek to alter or extend a listed building in a way that affects its character or appearance as a building of special architectural or historic interest. Scheduled Monument Consent applies to works resulting in the demolition or destruction of, or any damage to, a scheduled monument. **Residual effects** Following from the findings above, an **uncertain** effect is identified. However, it is important to note that the potential environmental effects associated with the granting of servitude rights and the sales of land for strategic development are uncertain.
Landscape and	Protect and enhance	-	-	-	-	**Environmental effects**

SEA Topic Area	SEA Objective	Alternative 1 –£30m	Alternative 2 –£15m	Preferred Strategy–	Alternative 3 - £5m	Justification
geodiversity	landscape and seascape character and quality including National Scenic Areas, national parks, geoparks, wild land, open spaces, parks and gardens and their settings. Protect geological sites of national, regional or local importance.					The granting of servitude rights could result in direct adverse effects on landscape character through changes in the character of the built environment. However, it is important to note that servitude rights could encompass a wide range of activities, which in turn could result in environmental effects depending on the nature and the scale of the works carried out. This particularly applies to larger developments that are undertaken following the granting of servitude rights. The environmental effects of sale of land for strategic development are uncertain, depending on the future use of the site. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** The residual effects on landscape quality and geodiversity are judged to be very low in scale. The sale of land for strategic development could result in adverse landscape effects, however reflecting the role of the planning system these effects are judged to be **minor negative**.
Material assets	Avoid adversely impacting on material assets. Enhance material assets.	?	?	?	?	**Environmental effects** The granting of servitude rights is judged to have very limited environmental effects in principle. However, it is important to note that servitude rights could encompass a wide range of activities, which in turn could result in environmental effects depending on the nature and the scale of the works carried out. This particularly applies to larger developments that are undertaken following the granting of servitude rights. Therefore, the potential environmental effects associated with servitude rights are judged to be uncertain. The environmental effects of sale of land for strategic development are uncertain, depending on the future use of the site. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** Following from the findings above, an **uncertain** effect is identified. However, it is important to note that the potential environmental effects associated with the granting of servitude rights and the sales of land for strategic development are uncertain.

Investment objective 4

Identify and dispose of non-core assets

- Capital release from non-core rural assets, where this can be done without impact on the integrity of the estate or a significant negative impact on the provision of wider public benefits.
- Sale of agricultural units in line with the farm sales framework.
- Sale of assets (forests, residential property, fishing rights etc.) with a high capital investment liability and/or limited prospect of revenue growth in the medium or long term.
- Sale of non-core assets to community bodies to support sustainable development, where this does not compromise the integrity of the estate or impact capital value.

SEA Topic Area	SEA Objective	Alternative 1 –£30m	Alternative 2 –£15m	Preferred Strategy–	Alternative 3 - £5m	Justification
Biodiversity, flora and fauna	Protect and enhance terrestrial and aquatic habitats and species of international, national, regional or local importance. Maintain and expand wildlife corridors and minimise fragmentation of ecological areas and green spaces	?	?	?	?	**Environmental effects** Capital release, the sale of agricultural units and the sale of core assets are likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are uncertain, depending on the future use of the asset in question. The sale of non-core assets to community bodies to support sustainable development could result in positive effects on protecting and enhancing habitats and species of international, national, regional or local importance. However, these effects are uncertain, depending on the aims, strategy and implementation of the community body in question. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. The Habitats Directive and Birds Directive provide legal protection for animals and birds. **Residual effects** Following from the findings above, an **uncertain** effect is identified
Population and human health	Avoid adverse effects on health and quality of life. Improve the health and living environment of people and communities. Retain and improve quality, quantity and connectivity of publicly accessible open space.	?	?	?	?	**Environmental effects** Capital release, the sale of agricultural units and the sale of core assets are likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are uncertain, depending on the future use of the asset in question. The sale of non-core assets to community bodies to support sustainable development is likely to entail landscape improvements or the provision of amenities following acquisition by the community body. This could have positive effects on population and human health. However, the significance of these effects is uncertain, depending on the aims of the community body in question. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** Following from the findings above, an **uncertain** effect is identified
Soil	Protect valuable soil resources, including carbon soils and best and most versatile agricultural land. Reduce vacant and derelict land and buildings.	?	?	?	?	**Environmental effects** Capital release, the sale of agricultural units and the sale of core assets are likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are uncertain, depending on the future use of the asset in question. The sale of non-core assets to community bodies to support sustainable development may entail landscape improvements following acquisition by the community body, resulting in positive effects on soil quality. However, the significance of these effects is uncertain, depending on the aims of the community body in question. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** Following from the findings above, an **uncertain** effect is identified
Water	Protect and enhance the quality and quantity of watercourses and waterbodies (surface water and groundwater) including coastal and	?	?	?	?	**Environmental effects** Capital release, the sale of agricultural units and the sale of core assets are likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are uncertain, depending on the future use of the asset in question. The sale of non-core assets to community bodies to support sustainable development could support environmental improvements following acquisition by the community body,

SEA Topic Area	SEA Objective	Alternative 1 –£30m	Alternative 2 –£15m	Preferred Strategy–	Alternative 3 - £5m	Justification
	estuarial waters. Avoid and reduce flood risk both presently and taking into account climate change.					resulting in positive effects on water quality and flood risk. However, the significance of these effects is uncertain, depending on the aims of the community body in question. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** Following from the findings above, an **uncertain** effect is identified
Air	Minimise air pollution, particularly where air quality is a known issue through the designation of an AQMA. Improve air quality.	?	?	?	?	**Environmental effects** Capital release, the sale of agricultural units and the sale of core assets are likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are uncertain, depending on the future use of the asset in question. The sale of non-core assets to community bodies to support sustainable development is likely to drive environmental improvements following acquisition by the community body, resulting in positive effects on air quality. However, the significance of these effects is uncertain, depending on the aims of the community body in question. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** Following from the findings above, an **uncertain** effect is identified.
Climatic factors	Avoid increasing greenhouse gas emissions. Support actions which contribute to targets for reducing greenhouse gas emissions. Support climate change adaptation.	?	?	?	?	**Environmental effects** Capital release, the sale of agricultural units and the sale of core assets are likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are uncertain, depending on the future use of the asset in question. The sale of non-core assets to community bodies to support sustainable development is likely to drive environmental improvements following acquisition by the community body, resulting in positive effects on climatic factors. However, the significance of these effects is uncertain, depending on the aims of the community body in question. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** Following from the findings above, an **uncertain** effect is identified.
Cultural heritage and the historic environment	Conserve and, where appropriate, enhance those elements which contribute to the significance of terrestrial and marine designated and undesignated heritage assets in a manner appropriate to their significance, including World Heritage Sites, Conservation Areas, Listed Buildings, Historic Marine Protected Areas, archaeological remains, and areas of historical heritage and cultural value e.g. locally listed buildings. Improve the quality of the wider built environment.	?	?	?	?	**Environmental effects** Capital release, the sale of agricultural units and the sale of core assets are likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are uncertain, depending on the future use of the asset in question. The sale of non-core assets to community bodies to support sustainable development is likely to drive environmental improvements following acquisition by the community body, resulting in positive effects on cultural heritage and the historic environment. However, the significance of these effects is uncertain, depending on the aims of the community body in question. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. Listed Building consent applies to works that seek to alter or extend a listed building in a way that affects its character or appearance as a building of special architectural or historic interest. Scheduled Monument Consent applies to works resulting in the demolition or destruction of, or any damage to, a scheduled monument. **Residual effects** Following from the findings above, an **uncertain** effect is identified
Landscape and geodiversity	Protect and enhance landscape and seascape character and quality including National Scenic Areas, national parks, geoparks, wild land, open spaces, parks and gardens and their settings. Protect geological sites of	?	?	?	?	**Environmental effects** Capital release, the sale of agricultural units and the sale of core assets are likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are uncertain, depending on the future use of the asset in question. The sale of non-core assets to community bodies to support sustainable development could drive landscape improvements following acquisition by the community body, resulting in positive effects on this SEA objective. However, the significance of these effects is uncertain, depending on the aims of the community body in question. **Regulatory controls**

SEA Topic Area	SEA Objective	Alternative 1 –£30m	Alternative 2 –£15m	Preferred Strategy–	Alternative 3 - £5m	Justification
	national, regional or local importance.					The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** Following from the findings above, an **uncertain** effect is identified
Material assets	Avoid adversely impacting on material assets. Enhance material assets.	?	?	?	?	**Environmental effects** Capital release, the sale of agricultural units and the sale of core assets are likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are uncertain, depending on the future use of the asset in question. The sale of non-core assets to community bodies to support sustainable development could support the positive management of these assets following acquisition by the community body, resulting in positive effects on this SEA objective. However, the significance of these effects is uncertain, depending on the aims of the community body in question. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** Following from the findings above, an **uncertain** effect is identified

Investment objective 5

Comply with lease obligations and manage liabilities:

- Continuing to meet landlord liability investment obligations for fixed equipment on agricultural holdings as part of a prioritised, phased, annual programme of works.
- Prioritising works required to meet regulatory requirements for electrical safety, asbestos management, water supply quality and other property infrastructure
- Ensuring the fabric of the rural estate (roads, roofs, forest fencing, bridges, culverts, flood defences etc.) is maintained and enhanced, managing health and safety obligations, mitigating against future risks and maintaining the capital value of the asset base

SEA Topic Area	SEA Objective	Alternative 1 –£30m	Alternative 2 –£15m	Preferred Strategy–	Alternative 3 - £5m	Justification
Biodiversity, flora and fauna	Protect and enhance terrestrial and aquatic habitats and species of international, national, regional or local importance. Maintain and expand wildlife corridors and minimise fragmentation of ecological areas and green spaces	-	-	-	-	**Environmental effects** Building works to improve the overall standard of residential assets and works to meet regulatory requirements are likely to involve building improvements and repairs/maintenance of infrastructure assets such as roads, roofs, bridges, culverts and flood defences. This could result in local effects on birds and bats which may be present in these buildings or structures. Furthermore, repairs of infrastructure assets could adversely impact upon protected species and habitats due to direct and indirect impacts resulting from maintenance work. Direct impacts are the effects of the road works themselves on protected habitats or species. Indirect impacts comprise induced habitat fragmentation or degradation resulting from an improved road. The significance of these effects is highly uncertain, depending on factors such as building standards and the level of biodiversity at the existing site. **Regulatory controls** Building regulations ensure that buildings are safe, efficient and sustainable. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. The Habitats Directive and Birds Directive provide legal protection for habitats and species. **Residual effects** The residual effects on biodiversity, flora and fauna are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works. The environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in building works to a greater number of buildings and structures, or a greater scale of building work. This could result in potential impacts on habitats and species across a wider area and a greater number of properties. A **minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. Although a more limited area is affected under this alternative, the potential for effects on habitats and species remain. A **minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the scale and nature of buildings works would be most limited under this alternative. Although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **minor negative** effect is identified.
Population and human health	Avoid adverse effects on health and quality of life. Improve the health and living environment of people and communities. Retain and improve quality, quantity and connectivity of publicly accessible open space.	+	+	+	+	**Environmental effects** Building works to improve the overall standard of residential assets and works to meet regulatory requirements are likely to involve building improvements and repairs/maintenance of infrastructure assets such as roads, roofs, bridges, culverts and flood defences. These works are likely to improve the quality and energy efficiency of properties and infrastructural assets, whilst ensuring that health and safety standards are met. **Regulatory controls** Building regulations ensure that buildings are safe, efficient and sustainable. The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** Following from the findings above, **minor positive** effects are identified for population and human health.
Soil	Protect valuable soil resources, including carbon soils and best and most versatile agricultural land. Reduce vacant and derelict land and buildings.	-	-	-	-	**Environmental effects** Building works to improve the overall standard of residential assets and works to meet regulatory requirements are likely to involve building improvements and repairs/maintenance of infrastructure assets such as roads, roofs, bridges, culverts and flood defences. Building works are expected to result in direct, adverse effects on soil quality. For instance, construction works (e.g. construction of access roads) typically result in compacted soil, which restricts plant growth and infiltration, with associated adverse effects on soil quality. Other adverse effects could result from soil sealing, ground contamination due to spillages of hazardous material and digging associated with construction works. It is unlikely that Crown Estate Scotland owns vacant and derelict land and buildings, due to their duty to maintain and enhance the value of Crown Estate assets in Scotland and the returns obtained from it. Therefore, the Investment Strategy is likely to have a negligible effect on reducing the amount of vacant and derelict land and buildings in Scotland.

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy–	Alternative 3 - £5m	Justification
						Regulatory controls The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** The residual effects on soil quality are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in construction and/or maintenance works to a greater number of buildings and infrastructural assets. This could result in potential adverse impacts on soils over a wider area. Therefore, a **minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. Although a more limited area is affected under this alternative, the potential for adverse effects on soils remain. Therefore, a **minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the scale and nature of buildings works would be most limited under this alternative. Although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **minor negative** effect is identified.
Water	Protect and enhance the quality and quantity of watercourses and waterbodies (surface water and groundwater) including coastal and estuarial waters. Avoid and reduce flood risk both presently and taking into account climate change.	-	-	-	-	**Environmental effects** Building works to improve the overall standard of residential assets and works to meet regulatory requirements are likely to involve building improvements and repairs/maintenance of infrastructure assets such as roads, roofs, bridges, culverts and flood defences. Building works have the potential to adversely impact upon water quality and quantity. For instance, construction works (e.g. construction of access roads) usually result in compacted soil, which restricts plant growth and infiltration. Other adverse effects could result from soil sealing and ground contamination due to spillages of hazardous material during the construction phase. Building improvements (i.e. extensions) are also likely to increase flood risk through increases in impermeable surfaces. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** The residual effects on water quality and quantity are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in construction and/or maintenance works to a greater number of buildings and infrastructural assets. This could result in potential adverse impacts on water bodies over a wider area. Therefore, a **minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. Although a more limited area is affected under this alternative, the potential for effects on water bodies remain. A **minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the scale and nature of buildings works would be most limited under this alternative. Although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **minor negative** effect is identified.
Air	Minimise air pollution, particularly where air quality is a known issue through the designation of an AQMA. Improve air quality.	+	+	+	+	**Environmental effects** Building works to improve the overall standard of residential assets and works to meet regulatory requirements are likely to involve building improvements and repairs/maintenance of infrastructure assets such as roads, roofs, bridges, culverts and flood defences. Building improvements could result in positive effects on air quality through improving the quality and energy efficiency of properties. However, the construction of access tracks, traffic movements and the use of equipment associated with construction work are likely to increase emissions of greenhouse gases and air pollutants. The duration of these effects is short to medium term, and the extent of these impacts is highly localised. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** The residual effects on air quality are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in building works to a greater number of agricultural buildings and infrastructural assets. Investment obligations for fixed equipment on agricultural holdings and works to improve the overall standard of residential assets, resulting in positive effects on local air quality through improved energy efficiency. Although prioritising works to meet regulatory requirements and other maintenance works to ensure the fabric of rural estates could lead to potential increases in greenhouse gas emissions and air pollutants resulting from construction works, these are judged to be short term in effect. Therefore, a **minor positive** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. Although a more limited area is affected under this alternative, the potential for effects on air quality remain. A **minor positive** effect is identified.

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy –	Alternative 3 - £5m	Justification
						- Alternative 4 reflects the lowest level of investment and therefore the scale and nature of buildings works would be most limited under this alternative. However although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **minor positive** effect is identified.
Climatic factors	Avoid increasing greenhouse gas emissions. Support actions which contribute to targets for reducing greenhouse gas emissions. Support climate change adaptation.	+	+	+	+	**Environmental effects** Building works to improve the overall standard of residential assets and works to meet regulatory requirements are likely to involve building improvements and repairs/maintenance of infrastructure assets such as roads, roofs, bridges, culverts and flood defences. Building improvements could result in positive effects on climatic factors through improving the quality and energy efficiency of properties. However, building works could result in adverse effects on climate through greenhouse gas emissions resulting from the construction of access tracks, traffic movements and the use of equipment associated with construction work, although these are likely to be short term in effect. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** The residual effects on climatic factors are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in building works to a greater number of agricultural buildings and infrastructural assets. Investment obligations for fixed equipment on agricultural holdings and works to improve the overall standard of residential assets, resulting in positive effects on local air quality. Therefore, a **minor positive** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on climatic conditions remain. A **minor positive** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from forest restocking would extend over a more limited area of the Crown Estate Scotland assets. The scale and nature of buildings works would be most limited under this alternative. However although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **minor positive** effect is identified.
Cultural heritage and the historic environment	Conserve and, where appropriate, enhance those elements which contribute to the significance of terrestrial and marine designated and undesignated heritage assets in a manner appropriate to their significance, including World Heritage Sites, Conservation Areas, Listed Buildings, Historic Marine Protected Areas, archaeological remains, and areas of historical heritage and cultural value e.g. locally listed buildings. Improve the quality of the wider built environment.	+/-	+/-	+/-	+/-	**Environmental effects** Building works could result in adverse effects on buried archaeology through digging and other groundworks. Furthermore, certain types of development (e.g. extensions, installation of solar panels on roofs) could adversely impact upon the quality of the built heritage or the setting of heritage assets. The significance of these effects depends on the scale, size and design of the proposed development, as well as the nature of the existing setting of the heritage asset in question. The extent of these impacts is highly localised. However, it needs to be noted that alterations to buildings can also support the quality of the built assets and maintaining these in viable uses. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. Listed Building consent applies to works that seek to alter or extend a listed building in a way that affects its character or appearance as a building of special architectural or historic interest. Scheduled Monument Consent applies to works resulting in the demolition or destruction of, or any damage to, a scheduled monument. **Residual effects** The residual effects on cultural heritage and the historic environment are judged to be very low in scale. This reflects the role of the regulatory requirements and the limited extent of building works. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in building works to a greater number of agricultural buildings and structures and residential buildings, or a greater scale of building work. This could result in potential adverse impacts on buried archaeological assets over a wider area and a greater number of properties. However, it needs to be noted that alterations to buildings can also support the quality of the built assets and maintaining these in viable uses. Therefore, a **mixed minor negative and minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on buried archaeological assets remain. A **mixed minor negative and minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the scale and nature of buildings works would be most limited under this alternative. However although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **mixed minor negative and minor negative** effect is identified.
Landscape and geodiversity	Protect and enhance landscape and seascape character and quality including National Scenic Areas, national parks, geoparks, wild land, open	-	-	-	-	**Environmental effects** Building works could result in direct effects on landscape character through changes in the character of the built environment. Furthermore, construction works could potentially damage important rock formations, fossils and soils. The significance of these effects greatly depends on the scale and design of the proposed building works. **Regulatory controls**

SEA Topic Area	SEA Objective	Alternative 1 –£30m	Alternative 2 –£15m	Preferred Strategy–	Alternative 3 - £5m	Justification
	spaces, parks and gardens and their settings. Protect geological sites of national, regional or local importance.					The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** The residual effects on landscape quality and geodiversity are judged to be very low in scale. The effects of meeting investment obligations for fixed equipment on agricultural holdings and works to improve the overall standard of residential assets, retains some risk of local effects on landscape character. The effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in building works to a greater number of agricultural buildings and structures and residential buildings, or a greater scale of building work. This could result in potential adverse impacts on landscape character over a wider area and a greater number of properties. Overall, a **minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on landscape character remain. A **minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the scale and nature of buildings works would be most limited under this alternative. However although a more limited area is affected under this alternative, the potential for effects on landscape character remain. A **minor negative** effect is identified.
Material assets	Avoid adversely impacting on material assets. Enhance material assets.	0	0	0	0	**Environmental effects** Works to improve the overall standard of residential assets and to increase residential returns is likely to involve building improvements which could result in positive effects on material assets. However, the significance and nature of these effects greatly depends on the scale and design of the proposed building works. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls relate to development and alterations to buildings. **Residual effects** Following from the findings above, a **negligible** effect is identified.

Coastal Portfolio

Investment objective 1

Maintain and enhance the rural coastal and urban assets through investment in infrastructure development and fixed equipment

- Capital investment in Rhu Marina infrastructure to support current rental income and maintain fabric of the marina

SEA Topic Area	SEA Objective	Alternative 1 –£30m	Alternative 2 –£15m	Preferred Strategy –	Alternative 3 - £5m	Justification
Biodiversity, flora and fauna	Protect and enhance terrestrial and aquatic habitats and species of international, national, regional or local importance. Maintain and expand wildlife corridors and minimise fragmentation of ecological areas and green spaces	0	0	0	0	**Environmental effects** Capital investment in Rhu Marina infrastructure to support current rental income and maintain its fabric is likely to have minor adverse effects on local wildlife. Minor disturbance to species could result from building/maintenance works. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The Habitats Directive and Birds Directive provide legal protection for animals and birds. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on local species and habitats are judged to be very low. This reflects the role of the regulatory requirements and the limited extent of development. Rhu marina is not located within any designated areas and therefore no significant impacts on protected habitats and species are identified, although localised issues of disturbance and minor impacts on habitats could occur The significance of the environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in maintenance works occurring over a wider geographic area which, in turn, could result in potential impacts on local wildlife. A **negligible** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. Although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **negligible** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from maintenance works would extend over a more limited area of the Crown Estate Scotland assets. Although a more limited area is affected under this alternative, the potential for effects on species remain. A **negligible** effect is identified.
Population and human health	Avoid adverse effects on health and quality of life. Improve the health and living environment of people and communities. Retain and improve quality, quantity and connectivity of publicly accessible open space.	0	0	0	0	**Environmental effects** Capital investment in Rhu Marina infrastructure to support current rental income is unlikely to have any direct effects on this SEA objective. However, it is important to acknowledge that maintenance works associated with capital investment are likely to result in site-specific issues e.g. noise pollution. On the other hand, capital investments are expected to support rental income and maintain the fabric of Rhu Marina, resulting in positive effects on local amenity and community viability. The significance of these effects is judged to be negligible, reflecting that these effects are locally specific to Rhu Marina infrastructure. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on population and human health are judged to be **negligible** for the three alternatives and the preferred strategy. This reflects the role of the regulatory

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy – £10m	Alternative 3 - £5m	Justification
						requirements and the limited extent of development.
Soil	Protect valuable soil resources, including carbon soils and best and most versatile agricultural land. Reduce vacant and derelict land and buildings.	0	0	0	0	**Environmental effects** Capital investment in Rhu Marina infrastructure to support current rental income is unlikely to have direct effects on agricultural land and vacant/derelict buildings, as future development is likely to take place on existing built-up areas (i.e. existing Rhu Marina infrastructure). Therefore, a negligible effect is identified for this SEA objective. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on soil quality are judged to be **negligible**. This reflects the role of the regulatory requirements and the limited extent of development.
Water	Protect and enhance the quality and quantity of watercourses and waterbodies (surface water and groundwater) including coastal and estuarial waters. Avoid and reduce flood risk both presently and taking into account climate change.	0	0	0	0	**Environmental effects** Capital investment in Rhu Marina infrastructure to support current rental income is unlikely to have any direct effects on this SEA objective. However, it is important to acknowledge that maintenance works associated with capital investment in Rhu Marina is likely to result in site-specific issues, and that there is uncertainty about the nature and significance of such effects. It is judged that the regulatory controls will address specific issues relating to the wider water environment. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on the water environment are judged to be **negligible**. This reflects the role of the regulatory requirements and the limited extent of development.
Air	Minimise air pollution, particularly where air quality is a known issue through the designation of an AQMA. Improve air quality.	0	0	0	0	**Environmental effects** Capital investment in Rhu Marina infrastructure to support current rental income is unlikely to have any direct effects on this SEA objective. However, it is important to acknowledge that building works associated with capital investment in Rhu Marina are likely to result in site-specific issues e.g. emissions of air pollutants associated with machinery. The significance of these effects is judged to be negligible, reflecting that these effects are locally specific to Rhu Marina infrastructure. In addition, existing regulatory controls will address specific issues relating to local air quality. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on air quality are judged to be **negligible**. This reflects the role of the regulatory requirements and the limited extent of development.
Climatic factors	Avoid increasing greenhouse gas emissions. Support actions which contribute to targets for reducing greenhouse gas emissions. Support climate change adaptation.	0	0	0	0	**Environmental effects** Capital investment in Rhu Marina infrastructure to support current rental income is unlikely to have any direct effects on this SEA objective. However, it is important to acknowledge that building works associated with capital investment in Rhu Marina are likely to result in site-specific issues e.g. emissions of greenhouse gas emissions associated with machinery. The significance of these effects is judged to be negligible, reflecting that these effects are locally specific to Rhu Marina infrastructure. In addition, existing regulatory controls will address specific issues relating to local air quality. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure.

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy – £10m	Alternative 3 - £5m	Justification
						Residual effects The residual effects on climatic factors are judged to be **negligible**. This reflects the role of the regulatory requirements and the limited extent of development.
Cultural heritage and the historic environment	Conserve and, where appropriate, enhance those elements which contribute to the significance of terrestrial and marine designated and undesignated heritage assets in a manner appropriate to their significance, including World Heritage Sites, Conservation Areas, Listed Buildings, Historic Marine Protected Areas, archaeological remains, and areas of historical heritage and cultural value e.g. locally listed buildings. Improve the quality of the wider built environment.	0	0	0	0	**Environmental effects** Capital investment in Rhu Marina infrastructure to support current rental income is unlikely to have any direct effects on this SEA objective. This is mainly because potential building works associated with capital investment in Rhu Marina would occur in an existing built-up area, which is unlikely to contain buried archaeology. However, it is important to acknowledge that maintenance works associated with capital investment in Rhu Marina is likely to result in site-specific issues, and that there is uncertainty about the nature and significance of such effects. Furthermore, it is judged that the regulatory controls will address specific issues relating to cultural heritage and the historic environment. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on cultural heritage assets and the wider historic environment are judged to be **negligible**. This reflects the role of the regulatory requirements and the limited extent of development.
Landscape and geodiversity	Protect and enhance landscape and seascape character and quality including National Scenic Areas, national parks, geoparks, wild land, open spaces, parks and gardens and their settings. Protect geological sites of national, regional or local importance.	0	0	0	0	**Environmental effects** Capital investment in Rhu Marina infrastructure to support current rental income is unlikely to have any direct effects on this SEA objective. This is mainly because potential building works associated with capital investment in Rhu Marina would occur in an existing built-up area. However, it is important to acknowledge that maintenance works associated with capital investment in Rhu Marina is likely to result in site-specific issues, and that there is uncertainty about the nature/significance of such effects. It is judged that the regulatory controls will address specific issues relating to landscapes and seascapes. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on landscape quality and geodiversity are judged to be **negligible**. This reflects the role of the regulatory requirements and the limited extent of development.
Material assets	Avoid adversely impacting on material assets. Enhance material assets.	+	+	+	+	**Environmental effects** Capital investment in Rhu Marina infrastructure to support current rental income is judged to have positive effects on this SEA objective, as it is mainly about the maintenance and improvement of current material assets e.g. infrastructure and local amenities. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on material assets are judged to be very low. This reflects the role of the regulatory requirements and the limited extent of development. The significance of the environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in positive effects on material assets. Due to the limited extent of development, a **minor positive** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. Therefore, a **minor positive** effect is identified.

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy – £10m	Alternative 3 - £5m	Justification
						- Alternative 4 reflects the lowest level of investment and therefore a **minor positive** effect is identified due to the limited extent of investment and/or development.

Investment objective 2

Invest in the development of offshore renewable energy, carbon capture and storage, and aquaculture (finfish, shellfish and seaweed)

- Economic impact/feasibility studies to inform future investment in coastal infrastructure which will drive future revenue streams and assist wider objectives to develop marine tourism and coastal business activity.
- Infrastructure at Rhu Marina in partnership with other agencies to drive long-term economic growth opportunities.
- Investment in stewardship or community initiatives which deliver significant value for local economic development, community viability and environmental benefit

SEA Topic Area	SEA Objective	Alternative 1 –£30m	Alternative 2 –£15m	Prefrered Strategy –	Alternative 3 - £5m	Justification:
Biodiversity, flora and fauna	Protect and enhance terrestrial and aquatic habitats and species of international, national, regional or local importance. Maintain and expand wildlife corridors and minimise fragmentation of ecological areas and green spaces	0	0	0	0	**Environmental effects** Investments to maintain Rhu Marina Infrastructure is judged to have minor negative effects on local wildlife. Minor disturbance to species could occur resulting from building/maintenance works. Investments in stewardship or community initiatives could potentially deliver additional environmental benefits e.g. the provision of green spaces. The nature and significance of such effects is highly uncertain, depending on the aims, strategy and implementation of the community initiative in question. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The Habitats Directive and Birds Directive provide legal protection for animals and birds. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on local species and habitats are judged to be very low. This reflects the role of the regulatory requirements and the limited extent of development. Furthermore, the potential maintenance work associated with capital investment in Rhu Marina would occur in an existing built-area which is likely to be characterised by low biodiversity value. Investment in feasibility studies to inform future investment in coastal infrastructure, and investment in stewardship or community initiatives which deliver significant local economic, community and environmental benefit could lead to environmental effects in the future, but do not result in direct environmental effects at this stage. The significance of the environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in maintenance works occurring over a wider geographic area which, in turn, could result in potential impacts on local wildlife. Reflecting the scale of potential effects a **negligible** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. Although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. However, reflecting the scale of potential effects a **negligible** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from maintenance works would extend over a more limited area of the Crown Estate Scotland assets. Although a more limited area is affected under this alternative, the potential for effects on species remain. Reflecting the scale of potential effects a **negligible** effect is identified.
Population and human health	Avoid adverse effects on health and quality of life. Improve the health and living environment of people and communities. Retain and improve quality, quantity and connectivity of publicly accessible open space.	0	0	0	0	**Environmental effects** Capital investment in Rhu Marina infrastructure and stewardship or community initiatives is likely to have positive effects on population and human health, as it could deliver significant value for local economic development, community viability and environmental benefit. Furthermore, the proposed economic impact and feasibility studies could inform investment in coastal infrastructure which will drive future revenue streams to support marine tourism and coastal business activity. However, the significance and nature of these effects are highly uncertain, depending on the aims of community initiatives and the potential implications of economic impact/feasibility studies. It is recognised that these studies could lead to environmental effects in the future, although they do not have direct environmental effects at this stage. Lastly, stewardship or community initiatives could potentially deliver additional environmental benefits and benefits for community vitality e.g. through the provision of green spaces. The nature and significance of such effects is highly uncertain, depending on the aims, strategy and implementation of the community initiative in question. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects**

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Prefrered Strategy – £10m	Alternative 3 - £5m	Justification:
						The residual effects on population and human health are judged to be very low. This reflects the role of the regulatory requirements and the limited extent of development. - Although it is recognised that Alternative 1 reflects the highest level of investment and therefore could result in greater positive effects on population and human health. Due to the limited extent of development, a **negligible** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. A **negligible** effect is identified. - Alternative 4 reflects the lowest level of investment and a **negligible** effect is identified due to the limited extent of investment in community initiatives.
Soil	Protect valuable soil resources, including carbon soils and best and most versatile agricultural land. Reduce vacant and derelict land and buildings.	0	0	0	0	**Environmental effects** Capital investment in Rhu Marina infrastructure and investments in stewardship/community initiatives are unlikely to have direct effects on agricultural land and vacant/derelict buildings, as development is likely to take place on existing built-up areas. Investment in stewardship or community initiatives which deliver significant value for local economic development, community viability and environmental benefit. However, the nature and significance of such effects is uncertain, depending on the aims, strategy and implementation of the community initiative in question. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on soil quality are judged to be **negligible**. This reflects the role of regulatory controls and the limited extent of development.
Water	Protect and enhance the quality and quantity of watercourses and waterbodies (surface water and groundwater) including coastal and estuarial waters. Avoid and reduce flood risk both presently and taking into account climate change.	0	0	0	0	**Environmental effects** Capital investment in Rhu Marina infrastructure and economic impact/feasibility studies to inform future investment in coastal infrastructure are unlikely to have any direct effects on this SEA objective. However, it is important to acknowledge that maintenance works associated with capital investment in Rhu Marina is likely to result in site-specific issues. Furthermore, it is judged that the regulatory controls will address specific issues relating to the wider water environment. Investments in stewardship or community initiatives are unlikely to have any direct effects on this SEA objective. However, it is important to acknowledge that stewardship or community initiatives have the potential to deliver additional environmental benefits, with associated positive effects on the wider water environment. The nature and significance of such effects is uncertain, depending on the aims, strategy and implementation of the community initiative in question. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on the water environment are judged to be **negligible**. This reflects the role of the regulatory requirements and the limited extent of development. Therefore, no residual effects are identified.
Air	Minimise air pollution, particularly where air quality is a known issue through the designation of an AQMA. Improve air quality.	0	0	0	0	**Environmental effects** Capital investment in Rhu Marina infrastructure and economic impact/feasibility studies to inform future investment in coastal infrastructure are unlikely to have any direct effects on this SEA objective. However, it is important to acknowledge that maintenance works associated with capital investment in Rhu Marina is likely to result in site-specific issues, and that there is uncertainty about the nature and/or significance of such effects. Investments in stewardship or community initiatives are unlikely to have any direct effects on this SEA objective. However, it is important to note that such initiatives are likely to have indirect, positive effects on local air quality. Generally speaking, the aim of such community initiatives is to develop local improvement plans and to generate public benefits and future revenue. These initiatives are likely to drive environmental improvements, resulting in positive effects in terms of improving air quality. However, the significance of such effects is uncertain, depending on the aims, strategy and implementation of the community initiative in question. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure.

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Prefrered Strategy – £10m	Alternative 3 - £5m	Justification:
						Residual effects The residual effects on local air quality are judged to be **negligible**. This reflects the role of the regulatory requirements and the limited extent of development.
Climatic factors	Avoid increasing greenhouse gas emissions. Support actions which contribute to targets for reducing greenhouse gas emissions. Support climate change adaptation.	?	?	?	?	**Environmental effects** Capital investment in Rhu Marina infrastructure and economic impact/feasibility studies to inform future investment in coastal infrastructure are unlikely to have any direct effects on this SEA objective. However, it is important to acknowledge that maintenance works associated with capital investment in Rhu Marina is likely to result in site-specific issues, and that there is uncertainty about the nature and/or significance of such effects. Investments in stewardship or community initiatives are unlikely to have any direct effects on this SEA objective. However, it is important to note that such initiatives are likely to have indirect, positive effects on local air quality. Generally speaking, the aim of such community initiatives is to develop local improvement plans and to generate public benefits and future revenue. These initiatives are likely to drive environmental improvements, resulting in positive effects in terms of reducing greenhouse gas emissions. However, the significance of such effects is uncertain, depending on the aims, strategy and implementation of the community initiative in question. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on climatic factors are judged to be **uncertain**. This reflects the uncertainty over the future environmental effects arising from feasibility studies, and the limited extent of development at Rhu Marina.
Cultural heritage and the historic environment	Conserve and, where appropriate, enhance those elements which contribute to the significance of terrestrial and marine designated and undesignated heritage assets in a manner appropriate to their significance, including World Heritage Sites, Conservation Areas, Listed Buildings, Historic Marine Protected Areas, archaeological remains, and areas of historical heritage and cultural value e.g. locally listed buildings. Improve the quality of the wider built environment.	0	0	0	0	**Environmental effects** Capital investment in Rhu Marina infrastructure and economic impact/feasibility studies to inform future investment in coastal infrastructure are unlikely to have any direct effects on this SEA objective. This is mainly because potential maintenance work associated with capital investment in Rhu Marina would occur in an existing built-up area which is unlikely to contain buried archaeology. However, it is important to acknowledge that maintenance works associated with capital investment in Rhu Marina is likely to result in site-specific issues, and that there is uncertainty about the nature/significance of such effects. It is judged that the regulatory controls will address specific issues relating to cultural heritage and the historic environment. Investments in stewardship or community initiatives are unlikely to have any direct effects on cultural heritage and the historic environment. However, it is important to note that such initiatives could deliver significant value for environmental benefit. Generally, the aim of such community initiatives is to develop local improvement plans and to generate public benefits and future revenue. These initiatives are likely to drive environmental improvements, resulting in indirect effects in terms of conserving local heritage assets. However, the significance of such effects is uncertain, depending on the aims, strategy and implementation of the community initiative in question. Therefore, impacts on this SEA objective are uncertain. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on cultural heritage assets and the wider historic environment are judged to be **negligible**. This reflects the role of the regulatory requirements and the limited extent of development.
Landscape and geodiversity	Protect and enhance landscape and seascape character and quality including National Scenic Areas, national parks, geoparks, wild land, open spaces, parks and gardens and their settings. Protect geological sites of national, regional or local	0	0	0	0	**Environmental effects** Capital investment in Rhu Marina infrastructure and economic impact/feasibility studies to inform future investment in coastal infrastructure are unlikely to have any direct effects on this SEA objective. This is mainly because potential maintenance work associated with capital investment in Rhu Marina would occur in an existing built-up area. However, it is important to acknowledge that maintenance works associated with capital investment in Rhu Marina is likely to result in site-specific issues, and that there is uncertainty about the nature/significance of such effects. It is judged that the regulatory controls will address specific issues relating to landscapes and seascapes. Investments in stewardship or community initiatives are unlikely to have any direct effects on this SEA objective. However, it is important to note that such initiatives could deliver significant value for environmental benefit. Generally, the aim of such community initiatives is to develop local improvement plans and to generate public benefits and future revenue.

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Prefrered Strategy – £10m	Alternative 3 - £5m	Justification:
	importance.					These initiatives are likely to drive environmental improvements, resulting in indirect effects in terms of improving landscape quality e.g. through the provision of additional greenspaces. However, the significance of such effects is uncertain, depending on the aims, strategy and implementation of the community initiative in question. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on landscape quality and geodiversity are judged to be **negligible**. This reflects the role of the regulatory requirements and the limited extent of development.
Material assets	Avoid adversely impacting on material assets. Enhance material assets.	0	0	0	0	**Environmental effects** Capital investment in Rhu Marina infrastructure is judged to have positive effects on this SEA objective, as it is mainly about the maintenance and improvement of current material assets e.g. infrastructure and local amenities. However the scale of positive effect is very localised. Investment in stewardship or community initiatives is likely to have positive effects on material assets. Generally, the aim of such community initiatives is to develop local improvement plans and to generate public benefits and future revenue. Community initiatives are likely to drive environmental improvements, resulting in positive effects in terms of maintaining and improving existing assets at Rhu Marina, and delivering significant benefits for local economic development and community viability. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on material assets are judged to be very low. This reflects the role of the regulatory requirements and the limited extent of development. The significance of the environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in positive effects on material assets. Due to the limited extent of development, a **minor positive** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. Therefore, a **minor positive** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore a **minor positive** effect is identified due to the limited extent of investment and/or development.

Investment objective 3

Build a capital fund of £10m over 3 years

- Facilitating dredging activities around the coastline (subject to marine licences).
- Investigating opportunities for the capitalisation of rent for long term leases.
- Capitalisation of long-term rental income from long leases (commercial, non-agricultural), where appropriate and where this may suit Crown Estate Scotland and the occupier.

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy –	Alternative 3 - £5m	Justification
Biodiversity, flora and fauna	Protect and enhance terrestrial and aquatic habitats and species of international, national, regional or local importance. Maintain and expand wildlife corridors and minimise fragmentation of ecological areas and green spaces	0	0	0	0	**Environmental effects** Facilitating dredging activities around the coastline is likely to have adverse impacts on local marine wildlife. Dredging could result in species disturbance by directly affecting physical habitats. This could result in habitat deterioration, particularly in relation to benthic wildlife. Dredging could also make channels more vulnerable to exploitation by invasive and non-native species. Furthermore, short-term increases in the level of suspended sediment could also result in the possible release of organic matter, nutrients and/or contaminants depending upon the nature of the material in the dredging area. These changes in water quality could affect marine wildlife, both favourably (e.g. removal of contaminants) and unfavourably, depending on local conditions. In addition, the settlement of these suspended sediments can result in the blanketing of subtidal communities and/or adjacent intertidal communities. The impact of the dredged material largely depends on the nature of the material (inorganic, organic or contaminated) and the characteristics of the disposal area (accumulative or dispersive areas). Investigating opportunities for the capitalisation of rent for long-term rental income is unlikely to have any direct impacts on this SEA objective. The nature and significance of these effects highly depends on the details of rent capitalisation, and the spatial implications of such decisions are judged to be largely outside the remit of Crown Estate Scotland. Therefore, an uncertain effect is identified for this SEA objective. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. Dredging will be subject to marine licences as set out under the Marine Scotland Act 2010. The Habitats Directive and Birds Directive provide legal protection for animals and birds. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on local species and habitats are judged to be very low. This reflects the role of the regulatory requirements and the limited extent of dredging activities. The significance of the environmental effects relating to each of the alternatives are discussed below:

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy – £10m	Alternative 3 - £5m	Justification
						- Alternative 1 reflects the highest level of investment and therefore could result in maintenance works occurring over a wider geographic area which, in turn, could result in potential impacts on local wildlife. A **negligible** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. Although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **negligible** - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from maintenance works would extend over a more limited area of the Crown Estate Scotland assets. Although a more limited area is affected under this alternative, the potential for effects on species remain. A **negligible** effect is identified.
Population and human health	Avoid adverse effects on health and quality of life. Improve the health and living environment of people and communities. Retain and improve quality, quantity and connectivity of publicly accessible open space.	0	0	0	0	**Environmental effects** Facilitating dredging activities is unlikely to result in direct impacts on this SEA objective, due to the limited extent as well as the limited scale of potential dredging activities. Furthermore, investigating opportunities for the capitalisation of rent for long-term rental income is unlikely to have any direct impacts on this SEA objective. The nature and significance of these effects highly depends on the details of rent capitalisation, and the spatial implications of such decisions are judged to be largely outside the remit of Crown Estate Scotland. Therefore, an uncertain effect is identified for this SEA objective. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. Dredging will be subject to marine licences as set out under the Marine Scotland Act 2010. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on population and human health are judged to be **negligible**. This reflects the role of the regulatory requirements and the limited extent of development.
Soil	Protect valuable soil resources, including carbon soils and best and most versatile agricultural land. Reduce vacant and derelict land and buildings.	0	0	0	0	**Environmental effects** Facilitating dredging activities around the coastline is unlikely to have any direct impacts on agricultural land and vacant buildings/land. Furthermore, investigating opportunities for the capitalisation of rent for long-term rental income is unlikely to have any direct impacts on this SEA objective. The nature and significance of these effects highly depends on the details of rent capitalisation, and the spatial implications of such decisions are judged to be largely outside the remit of Crown Estate Scotland. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on soil quality are judged to be **negligible**. This reflects the role of the limited extent of development.
Water	Protect and enhance the quality and quantity of watercourses and waterbodies (surface water and groundwater) including coastal and estuarial waters. Avoid and reduce flood risk both presently and taking into account climate change.	0	0	0	0	**Environmental effects** Facilitating dredging activities is unlikely to result in direct impacts on this SEA objective, due to the limited extent as well as the limited scale of potential dredging activities. However, it is important to note that short-term increases in the level of suspended sediment could result in the possible release of organic matter, nutrients and/or contaminants depending upon the nature of the material in the dredging area. In addition, dredging can reduce water levels at some locations. However, the significance of such effects depends on local conditions and is therefore site specific. Investigating opportunities for the capitalisation of rent for long-term rental income is unlikely to have any direct impacts on this SEA objective. The nature and significance of these effects highly depends on the details of rent capitalisation, and the spatial implications of such decisions are judged to be largely outside the remit of Crown Estate Scotland. Therefore, an uncertain effect is identified for this SEA objective. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. Dredging will be subject to marine licences as set out under the Marine Scotland Act 2010. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on the water environment are judged to be **negligible**. This reflects the role of the regulatory requirements and the limited extent of development.
Air	Minimise air pollution, particularly where air	0	0	0	0	**Environmental effects**

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy – £10m	Alternative 3 - £5m	Justification
	quality is a known issue through the designation of an AQMA. Improve air quality.					Facilitating dredging activities is unlikely to result in direct impacts on this SEA objective, due to the limited extent as well as the limited scale of potential dredging activities. However, it is important to note that site-specific effects could occur due to the release of odorous or toxic compounds in dredged material. However, the significance of these effects is uncertain, depending on the nature of the dredged material as well as local conditions. Investigating opportunities for the capitalisation of rent for long-term rental income is unlikely to have any direct impacts on this SEA objective. The nature and significance of these effects highly depends on the details of rent capitalisation, and the spatial implications of such decisions are judged to be largely outside the remit of Crown Estate Scotland. Therefore, an uncertain effect is identified for this SEA objective. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. Dredging will be subject to marine licences as set out under the Marine Scotland Act 2010. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on local air quality are judged to be **negligible**. This reflects the role of the regulatory requirements and the limited extent of development.
Climatic factors	Avoid increasing greenhouse gas emissions. Support actions which contribute to targets for reducing greenhouse gas emissions. Support climate change adaptation.	0	0	0	0	**Environmental effects** Facilitating dredging activities is unlikely to result in direct impacts on this SEA objective, due to the limited extent as well as the limited scale of potential dredging activities. However, it is important to note that site-specific effects could occur due to the release of greenhouse gases or toxic compounds in dredged material. However, the significance of these effects is uncertain, depending on the nature of the dredged material as well as local conditions. Investigating opportunities for the capitalisation of rent for long-term rental income is unlikely to have any direct impacts on this SEA objective. The nature and significance of these effects highly depends on the details of rent capitalisation, and the spatial implications of such decisions are judged to be largely outside the remit of Crown Estate Scotland. Therefore, an uncertain effect is identified for this SEA objective. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on climatic factors are judged to be **negligible**. This reflects the role of the regulatory requirements and the limited extent of development.
Cultural heritage and the historic environment	Conserve and, where appropriate, enhance those elements which contribute to the significance of terrestrial and marine designated and undesignated heritage assets in a manner appropriate to their significance, including World Heritage Sites, Conservation Areas, Listed Buildings, Historic Marine Protected Areas, archaeological remains, and areas of historical heritage and cultural value e.g. locally listed buildings. Improve the quality of the wider built environment.	0	0	0	0	**Environmental effects** Facilitating dredging activities around the coastline is unlikely to have any direct effects on cultural heritage assets and the wider historic environment. Dredging activity could directly damage marine archaeology. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. Dredging will be subject to marine licences as set out under the Marine Scotland Act 2010. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on cultural heritage assets and the wider historic environment are judged to be **negligible**. This reflects the role of the regulatory requirements and the limited extent of development.
Landscape and geodiversity	Protect and enhance landscape and seascape character and quality including National Scenic Areas, national parks,	0	0	0	0	**Environmental effects** Facilitating dredging activities around the coastline is unlikely to have any direct effects on this SEA objective. However, it is important to acknowledge that temporary construction works associated with dredging activities is likely to result in site-specific issues, and that there is uncertainty about the nature/significance of such effects. It is judged that the

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy – £10m	Alternative 3 - £5m	Justification
	geoparks, wild land, open spaces, parks and gardens and their settings. Protect geological sites of national, regional or local importance.					regulatory controls will address specific issues relating to landscapes and seascapes. Investigating opportunities for the capitalisation of rent for long-term rental income is unlikely to have any direct impacts on this SEA objective. The nature and significance of these effects highly depends on the details of rent capitalisation, and the spatial implications of such decisions are judged to be largely outside the remit of Crown Estate Scotland. Therefore, an uncertain effect is identified for this SEA objective. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. Dredging will be subject to marine licences as set out under the Marine Scotland Act 2010. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on landscape quality and geodiversity are judged to be **negligible**. This reflects the role of the regulatory requirements and the limited extent of development.
Material assets	Avoid adversely impacting on material assets. Enhance material assets.	+	+	+	+	**Environmental effects** Investigating opportunities for the capitalisation of rent for long-term rental income is expected to have minor positive effects on material assets. This is because investigating opportunities for the capitalisation of rent for long-term rental income is focussed on the enhancement of existing and future assets. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. Dredging will be subject to marine licences as set out under the Marine Scotland Act 2010. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The residual effects on material assets are judged to be very low. This reflects the role of the regulatory requirements and the limited extent of development. The significance of the environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in positive effects on material assets. Due to the limited extent of development, a **minor positive** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. Therefore, a **minor positive** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore a **minor positive** effect is identified due to the limited extent of investment and/or development.

Investment objective 4

Identify and dispose of non-core assets

- Facilitating sale of foreshore, occupied seabed and coastal infrastructure (pontoons) to communities or port authorities in line with agreed protocols.

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy – £10m	Alternative 3 - £5m	Justification
Biodiversity, flora and fauna	Protect and enhance terrestrial and aquatic habitats and species of international, national, regional or local importance. Maintain and expand wildlife corridors and minimise fragmentation of ecological areas and green spaces	?	?	?	?	**Environmental effects** The sale of non-core assets is likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are uncertain, depending on the future use of the asset in question. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** Assets could pass from an organisation with a biodiversity duty, to other organisations without these aims. Therefore there is potential risk that the management of these assets could result in potential adverse effects on biodiversity. The effects on biodiversity, flora and fauna are **uncertain**, reflecting the risk of differing management aims of the new landowners. This effect is identified for the three alternatives and the preferred strategy.
Population and human health	Avoid adverse effects on health and quality of life. Improve the health and living environment of people and communities. Retain and improve quality, quantity and connectivity of publicly accessible open space.	?	?	?	?	**Environmental effects** The sale of non-core assets is likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are uncertain, depending on the future use of the asset in question. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** Impacts on population and human health will depend on the future management aims and activities of the new landowners and an **uncertain** effect is identified.
Soil	Protect valuable soil resources, including carbon soils and best and most versatile agricultural land. Reduce vacant and derelict land and buildings.	?	?	?	?	**Environmental effects** The sale of non-core assets is likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are uncertain, depending on the future use of the asset in question. **Regulatory controls** The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The effects on soil are **uncertain**, depending on the management aims of the new landowners.
Water	Protect and enhance the quality and quantity of watercourses and waterbodies (surface water and groundwater) including coastal and estuarial waters. Avoid and reduce flood risk both presently and taking into account climate change.	?	?	?	?	**Environmental effects** The sale of non-core assets is likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are uncertain, depending on the future use of the asset in question. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The effects on water are **uncertain**, depending on the management aims of the new landowners.
Air	Minimise air pollution, particularly where air quality is a known issue through the designation of an AQMA.	?	?	?	?	**Environmental effects** The sale of non-core assets is likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are uncertain, depending on the future use of the asset in question.

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy – £10m	Alternative 3 - £5m	Justification
	Improve air quality.					**Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The effects on water are **uncertain**, depending on the management aims of the new landowners.
Climatic factors	Avoid increasing greenhouse gas emissions. Support actions which contribute to targets for reducing greenhouse gas emissions. Support climate change adaptation.	?	?	?	?	**Environmental effects** The sale of non-core assets is likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are uncertain, depending on the future use of the asset in question. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The effects on climatic factors are **uncertain**, depending on the management aims of the new landowners.
Cultural heritage and the historic environment	Conserve and, where appropriate, enhance those elements which contribute to the significance of terrestrial and marine designated and undesignated heritage assets in a manner appropriate to their significance, including World Heritage Sites, Conservation Areas, Listed Buildings, Historic Marine Protected Areas, archaeological remains, and areas of historical heritage and cultural value e.g. locally listed buildings. Improve the quality of the wider built environment.	?	?	?	?	**Environmental effects** The sale of non-core assets is likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are uncertain, depending on the future use of the asset in question. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The effects on cultural and archaeological heritage are **uncertain**, depending on the management aims of the new landowners.
Landscape and geodiversity	Protect and enhance landscape and seascape character and quality including National Scenic Areas, national parks, geoparks, wild land, open spaces, parks and gardens and their settings. Protect geological sites of national, regional or local importance.	?	?	?	?	**Environmental effects** The sale of non-core assets is likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the nature of these effects are uncertain, depending on the future use of the asset in question. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The effects on landscape and geodiversity are **uncertain**, depending on the management aims of the new landowners.
Material assets	Avoid adversely impacting on material assets. Enhance material assets.	?	?	?	?	**Environmental effects** The sale of non-core assets is likely to have minimal environmental effects, as the focus of these actions is essentially about changing ownership. However, the significance and the

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy – £10m	Alternative 3 - £5m	Justification
						nature of these effects are uncertain, depending on the future use of the asset in question. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The planning process or permitted development rights, where relevant with prior notification controls, relate to development and alterations to buildings and infrastructure. **Residual effects** The effects on material assets are **uncertain**, depending on the management aims of the new landowners.

Marine portfolio

Investment objective 1: marine renewables

Marine Portfolio Investment Objectives: Invest in the development of offshore renewable energy, carbon capture and storage, and aquaculture (finfish, shellfish and seaweed)

Marine renewables

- Capital funded staff resources and research studies to support;
  - Further offshore wind development. This will include a new offshore wind leasing round which will align with areas identified in Marine Scotland's sectoral plan for offshore wind following their strategic planning process (including their SEA)
- Tidal and wave energy to help create a strategic opportunity for community value via industrialisation and ownership of a sector
- Power storage and infrastructure. This has the potential to unlock resource in Scotland, principally around the west coast and islands. Crown Estate Scotland's role is a) working with economic development agencies to explore socio-economic benefits, b) investing in strategic R&D

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy –	Alternative 3 - £5m	Justification:
Biodiversity, flora and fauna	Protect and enhance terrestrial and aquatic habitats and species of international, national, regional or local importance. Maintain and expand wildlife corridors and minimise fragmentation of ecological areas and green spaces	-	-	-	-	**Environmental effects** The facilitation of marine renewable energy developments could indirectly result in adverse impacts on protected habitats and species. For instance, construction noise associated with the construction of offshore wind turbines could temporarily displace some fish and marine mammals, because certain species are particularly sensitive to the frequencies generated by dredging and pile driving – the process of installing poles into the ocean floor for wind turbine foundations. Potential impacts during the operational phase are likely to be more variable, and could be either negative or positive depending on biological conditions as well as prevailing management goals. Furthermore, tidal barrages used for generating tidal and wave energy could have the potential to cause ecological impacts, particularly on bird feeding areas when they are constructed at coastal estuaries or bays. They also have the potential to change habitats, depending on the design of the tidal barrage (e.g. floating, mid-water column and seabed devices). However, it is important to note that the significance of these effects is uncertain as tidal and wave energy technology is still at the early stages of development, and so the prediction of their impacts is based on very limited empirical data. Positive impacts may occur if wind turbine areas provide new habitats for marine wildlife. For instance, underwater turbine foundations have the potential to transform into artificial reefs, attracting molluscs and small fish that feed on plankton. However, the significance of these effects is uncertain due to a lack of existing empirical data. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. **Natural capital** Not applicable. **Residual effects** The residual effects on protected species and habitats are judged to be low. This reflects the role of the regulatory requirements and the relatively limited extent of development. However, it is important to note that the significance of impacts will generally depend on the size of the installation and the location selected for development. The significance of the environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in renewable energy developments over a wider geographic area. This, in turn, could result in potential impacts on habitats and species across a wider area. A **minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. Although a more limited area is affected under this alternative, the potential for effects on local habitats and species remain. A **minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from renewable energy developments would extend over a more limited area of the Crown Estate Scotland assets. Although a more limited area is affected under this alternative, the potential for effects on local habitats and species remain. A **minor negative** effect is identified.
Population and human health	Avoid adverse effects on health and quality of life.	0	0	0	0	**Environmental effects**

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy – £10m	Alternative 3 - £5m	Justification:
	Improve the health and living environment of people and communities. Retain and improve quality, quantity and connectivity of publicly accessible open space.					The facilitation of offshore wind turbine development is likely to have indirect effects on this SEA objective through potential increases in the provision of renewable energy. In addition, the development of power storage and infrastructure has the potential to unlock resource in Scotland, principally around the west coast and islands which, in turn, could result in additional socio-economic benefits. Furthermore, tidal and wave energy developments are likely help create a strategic opportunity for community value via industrialisation and ownership of a sector. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. **Natural capital** Not applicable. **Residual effects** Following from the findings above, **negligible** effects are identified for all of the alternatives.
Soil	Protect valuable soil resources, including carbon soils and best and most versatile agricultural land. Reduce vacant and derelict land and buildings.	0	0	0	0	**Environmental effects** The facilitation of offshore renewable developments is unlikely to have any effects on agricultural land and vacant/derelict land and buildings. Therefore, a negligible effect is identified. It may result in indirect impacts on marine sediments through construction works, however the effects are identified as negligible. **Regulatory controls** Not applicable. **Natural capital** Not applicable. **Residual effects** Following from the findings above, **negligible** effects are identified for all of the alternatives.
Water	Protect and enhance the quality and quantity of watercourses and waterbodies (surface water and groundwater) including coastal and estuarial waters. Avoid and reduce flood risk both presently and taking into account climate change.	-	-	-	-	**Environmental effects** The facilitation of offshore renewable developments is judged to have indirect, adverse impacts on the water environment. For instance, substrate disturbance due to construction/maintenance/decommissioning activities, scour effects, and changes in wave exposure associated with tidal and wave energy could lead to increased suspended sediments and turbidity. Substrate disturbance is considered to be a greater risk in areas with finer substrates such as sand or silt. However, it is important to note that the significance of these effects is uncertain as tidal and wave energy technology is still at the early stages of development, and so the prediction of their impacts is based on very limited empirical data. In addition, drilling associated with the construction of renewable energy developments in general could release a plume of fine material comprised of drill fragments that are potentially damaging to the wider water environment. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. **Natural capital** Not applicable. **Residual effects** The residual effects on the water environment are judged to be low. This reflects the role of the regulatory requirements and the limited extent of development. The significance of the environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in renewable energy developments over a wider geographic area. This, in turn, could result in potential impacts on water quality across a wider area. A **minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on the water environment remain. A **minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from renewable energy developments would extend over a more limited area of

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy – £10m	Alternative 3 - £5m	Justification:
						the Crown Estate Scotland assets. Although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **minor negative** effect is identified.
Air	Minimise air pollution, particularly where air quality is a known issue through the designation of an AQMA. Improve air quality.	0	0	0	0	**Environmental effects** The facilitation of offshore renewable energy development is likely to have positive effects on air quality. This is because the deployment of renewable energy technologies is likely to reduce reliance on fossil fuel-based electricity generation and thus greenhouse gas emissions. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. **Natural capital** Not applicable. **Residual effects** Following from the findings above, **negligible** effects are identified for all of the alternatives.
Climatic factors	Avoid increasing greenhouse gas emissions. Support actions which contribute to targets for reducing greenhouse gas emissions. Support climate change adaptation.	+	+	+	+	**Environmental effects** The facilitation of offshore renewable energy developments are likely to have positive effects on climatic factors. This is because the deployment of renewable energy technologies is likely to reduce reliance on fossil fuel-based electricity generation and thus greenhouse gas emissions. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. **Natural capital** Not applicable. **Residual effects** Although it is recognised that Alternative 1 reflects the highest level of investment, and therefore could result in a greater scale of activities, a **minor positive** effect is identified for all of the alternatives
Cultural heritage and the historic environment	Conserve and, where appropriate, enhance those elements which contribute to the significance of terrestrial and marine designated and undesignated heritage assets in a manner appropriate to their significance, including World Heritage Sites, Conservation Areas, Listed Buildings, Historic Marine Protected Areas, archaeological remains, and areas of historical heritage and cultural value e.g. locally listed buildings. Improve the quality of the wider built environment.	-	-	-	-	**Environmental effects** The facilitation of offshore renewable energy installations could indirectly result in physical impacts on marine archaeology such as shipwrecks and registered battlefields through dredging and pile driving. Furthermore, changes in sedimentation caused by dredging and pile driving are likely to result in heritage assets being uncovered and exposed to damage. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. Furthermore, applications for marine licences to carry out archaeological investigations occur in each marine plan area. Standards for archaeological investigations are set out in national, local and professional codes of practice, standards and guidance. **Natural capital** Not applicable. **Residual effects** The residual effects on cultural heritage are judged to be low. This reflects the role of the regulatory requirements and the relatively limited extent of development. However, it is important to note that the significance of impacts will generally depend on the size of the installation and the location selected for development. The significance of the environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in renewable energy developments over a wider geographic area. This, in turn, could result in potential impacts on underwater heritage assets across a wider area. A **minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **minor**

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy – £10m	Alternative 3 - £5m	Justification:
						negative effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from renewable energy developments would extend over a more limited area of the Crown Estate Scotland assets. Although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **minor negative** effect is identified.
Landscape and geodiversity	Protect and enhance landscape and seascape character and quality including National Scenic Areas, national parks, geoparks, wild land, open spaces, parks and gardens and their settings. Protect geological sites of national, regional or local importance.	-	-	-	-	**Environmental effects** The facilitation of offshore renewable energy developments is likely to have potential visual impacts on the character and qualities of seascapes. Such visual impacts are mainly a result of intrusion and obstruction caused by offshore wind turbine development. Visual impacts on seascapes principally relate to the impacts of the development on views of the seascape through changing the content and focus of views, the reactions (attitudes and behaviours) of the viewers who may be affected, and the overall change in visual amenity. With offshore wind farms, the majority of the development is not on a landscape, so consideration should be given to the indirect landscape effects on the setting or perception of coastal and marine landscapes. It is important to note that this depends on the levels of sensitivity and impact magnitude for each seascape and visual receptor. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. **Natural capital** Not applicable. **Residual effects** The residual effects on seascapes are judged to be low. This reflects the role of the regulatory requirements and the relatively limited extent of development. However, it is important to note that the significance of impacts will generally depend on the size of the installation and the location selected for development. The significance of the environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in renewable energy developments over a wider geographic area. This, in turn, could result in potential impacts on seascapes across a wider area. A **minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. Although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from renewable energy developments would extend over a more limited area of the Crown Estate Scotland assets. Although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **minor negative** effect is identified.
Material assets	Avoid adversely impacting on material assets. Enhance material assets.	+	+	+	+	**Environmental effects** The facilitation of offshore renewable energy developments is likely to result in positive effects on material assets. This is because the deployment of renewable energy technologies is likely to reduce reliance on fossil fuel-based electricity generation and thus greenhouse gas emissions. Furthermore, the development of additional power storage and infrastructure has the potential to unlock resource in Scotland, principally around the west coast and islands. However, it is important to note that the significance of impacts will generally depend on the size of the installation and the location selected for development. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. **Natural capital** Not applicable. **Residual effects** The residual effects on material assets are judged to be very low. This reflects the role of the regulatory requirements and the limited extent of development. The significance of the environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in positive effects on material assets. Due to the limited extent of development, a **minor positive** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. Therefore, a **minor positive** effect is identified.

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy – £10m	Alternative 3 - £5m	Justification:
						- Alternative 4 reflects the lowest level of investment and therefore a **minor positive** effect is identified due to the limited extent of investment and/or development.

Investment objective 1: carbon capture and storage

Marine Portfolio Investment Objectives: Invest in the development of offshore renewable energy, carbon capture and storage, and aquaculture (finfish, shellfish and seaweed)

Carbon Capture and Storage

- Crown Estate Scotland will work with governments and developers to facilitate future CCS projects. This includes supporting project proposals through the leasing process, including the proposed Acorn Project in Aberdeenshire, to facilitate a first step in establishing CCS in the North Sea.

SEA Topic Area	SEA Objective	Alternative 1 –	Alternative 2 –	Preferred Strategy	Alternative 3- £5m	Justification:
Biodiversity, flora and fauna	Protect and enhance terrestrial and aquatic habitats and species of international, national, regional or local importance. Maintain and expand wildlife corridors and minimise fragmentation of ecological areas and green spaces	-	-	-	-	**Environmental effects** The facilitation of Carbon Capture and Storage (CCS) technology is likely to directly impact upon marine species and habitats. This may include habitat and species loss during construction and disturbance to species. Leaks of CO2 can impact on ocean acidity. Through the use of CCS technology, CO_2 could be stored into intermediate/deep oceanic water or into the sub-seabed. These processes have the potential to adversely impact upon marine microbiological processes and benthic ecosystems, including those with high levels of endemicity. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. **Natural capital** Not applicable. **Residual effects** The residual effects on marine species and habitats are judged to be very low. This reflects the role of the regulatory requirements and the relatively limited extent of development. The significance of the environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in CCS development over a wider geographic area. This, in turn, could result in potential impacts on habitats and species across a wider area. A **minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on marine species and habitats remain. A **minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from renewable energy developments would extend over a more limited area of the Crown Estate Scotland assets. Although a more limited area is affected under this alternative, the potential for effects on a sensitive receptor remain. A **minor negative** effect is identified.
Population and human health	Avoid adverse effects on health and quality of life. Improve the health and living environment of people and communities. Retain and improve quality, quantity and connectivity of publicly accessible open space.	0?	0?	0?	0?	**Environmental effects** The facilitation of CCS technology is unlikely to have any direct effects on this SEA objective. However, it is important to acknowledge that facilitating CCS technology is likely to result in site-specific health and safety issues associated with compressed CO_2, and that there is uncertainty about the nature/significance of such effects. It is judged that the regulatory controls will address specific issues relating population and human health. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. Health and safety executive **Natural capital** Not applicable. **Residual effects** Following from the findings above, **negligible** effects are identified for all of the alternatives.
Soil	Protect valuable soil resources, including carbon soils and best and most versatile agricultural land. Reduce vacant and derelict	0	0	0	0	**Environmental effects** The facilitation of CCS technology is unlikely to have any direct effects on agricultural land and vacant/derelict buildings. Impacts may occur on the seabed, affect sedimentation and geomorphology. However, a negligible effect is identified for this SEA objective.

SEA Topic Area	SEA Objective	Alternative 1 –	Alternative 2 –	Preferred Strategy	Alternative 3- £5m	Justification:
	land and buildings.					**Regulatory controls** Not applicable. **Natural capital** Not applicable. **Residual effects** Following from the findings above, **negligible** effects are identified for all of the alternatives.
Water	Protect and enhance the quality and quantity of watercourses and waterbodies (surface water and groundwater) including coastal and estuarial waters. Avoid and reduce flood risk both presently and taking into account climate change.	0	0	0	0	**Environmental effects** The facilitation of CCS technology is unlikely to have any direct effects on this SEA objective. However, it is important to acknowledge that facilitating CCS technology is likely to result in site-specific issues such as sedimentation and contamination, and that there is uncertainty about the nature/significance of such effects. It is judged that the regulatory controls will address specific issues relating to the wider water environment. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. **Natural capital** Not applicable. **Residual effects** Following from the findings above, **negligible** effects are identified for all of the alternatives.
Air	Minimise air pollution, particularly where air quality is a known issue through the designation of an AQMA. Improve air quality.	-	-	-	-	**Environmental effects** The aim of CCS is to prevent the release of large quantities of CO_2 into the atmosphere. CCS technology involves capturing CO_2 produced by large industrial plants, compressing it for transportation and then injecting it deep into a rock formation, where it is permanently stored. As such, CCS technology is a potential means of mitigating the release of fossil fuel emissions to the air. However, it is important to note that CCS technologies need more fuel than conventional plants as they require approximately 15-25% more energy depending on the particular type of technology used. Following from this, there are some trade-offs for the main air pollutants. For instance, sulphur dioxide (SO_2) emissions from power plants are predicted to fall when CCS is used. Particulate matter (PM) and nitrogen oxide (NO_x) emissions are expected to increase in line with the amount of the additional fuel consumed. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. **Natural capital** Not applicable. **Residual effects** The residual effects on air quality are judged to be very low. This reflects the role of the regulatory requirements and the relatively limited extent of development. The significance of the environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could result in facilitation of CCS technologies over a wider geographic area. However, adverse impacts could occur resulting from increased emissions of certain air pollutants associated with CCS technology. Overall, a **minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on air quality remain. A **minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from the facilitation of CCS technologies would extend over a more limited area of the Crown Estate Scotland assets. Although a more limited area is affected under this alternative, the potential for effects on air quality remain. A **minor negative** effect is identified.
Climatic factors	Avoid increasing greenhouse gas emissions. Support actions which contribute to targets for reducing greenhouse gas	+	+	+	+	**Environmental effects** The facilitation of CCS technology is likely to have positive effects on this SEA objective, as the aim of CCS is to prevent the release of large quantities of CO_2 into the atmosphere. CCS technology involves capturing CO_2 produced by large industrial plants, compressing it for transportation and then injecting it deep into a rock formation, where it is permanently

SEA Topic Area	SEA Objective	Alternative 1 –	Alternative 2 –	Preferred Strategy	Alternative 3- £5m	Justification:
	emissions. Support climate change adaptation.					stored. As such, CCS technology is a potential means of mitigating the release of fossil fuel emissions to the air. Overall, the facilitation of CCS technology is likely to have a positive impact on climatic factors, as it can achieve considerable CO_2 emission reductions. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. **Natural capital** Not applicable. **Residual effects** Following from the findings above, a minor positive effect is identified.
Cultural heritage and the historic environment	Conserve and, where appropriate, enhance those elements which contribute to the significance of terrestrial and marine designated and undesignated heritage assets in a manner appropriate to their significance, including World Heritage Sites, Conservation Areas, Listed Buildings, Historic Marine Protected Areas, archaeological remains, and areas of historical heritage and cultural value e.g. locally listed buildings. Improve the quality of the wider built environment.	0	0	0	0	**Environmental effects** It is important to acknowledge that facilitating CCS technology is likely to result in site-specific issues, and that there is uncertainty about the nature/significance of such effects. It is judged that the regulatory controls will address specific issues relating to cultural heritage and the historic environment. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. **Natural capital** Not applicable. **Residual effects** A **negligible** effect is identified across the three alternatives and the preferred strategy.
Landscape and geodiversity	Protect and enhance landscape and seascape character and quality including National Scenic Areas, national parks, geoparks, wild land, open spaces, parks and gardens and their settings. Protect geological sites of national, regional or local importance.	0	0	0	0	**Environmental effects** The facilitation of CCS technology is unlikely to have any effects on this SEA objective, as CCS is likely to occur at previously used sites. However, it is important to acknowledge that facilitating CCS technology is likely to result in site-specific issues, and that there is uncertainty about the nature/significance of such effects. It is judged that the regulatory controls will address specific issues relating to the character and quality of seascapes. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. **Natural capital** Not applicable. **Residual effects** Following from the findings above, a **negligible** effect is identified for all of the alternatives.
Material assets	Avoid adversely impacting on material assets.	0	0	0	0	**Environmental effects** The facilitation of CCS technology is likely to result in positive effects on material assets. This is because the deployment of CCS technologies contributes towards reducing greenhouse gas emissions with wider positive effects. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables.

SEA Topic Area	SEA Objective	Alternative 1 – £2m	Alternative 2 – £3m	Preferred Strategy	Alternative 3- £5m	Justification:
						Natural capital Not applicable. **Residual effects** Following from the findings above, a **negligible** effect is identified for all of the alternatives.

Investment objective 1: aquaculture

Marine Portfolio Investment Objectives: Invest in the development of offshore renewable energy, carbon capture and storage, and aquaculture (finfish, shellfish and seaweed)

Aquaculture

- Opportunities for securing business growth, and increased capital value, include:
  - Prioritising access to development space for finfish (primarily salmon) by:
    - Working with shareholders to improve shared marine co-existence and
    - Supporting business partners to invest more in improving the social licence of the industry to aid further expansion
  - Supporting development of commercially viable shellfish projects, by working with the finfish sector (to encourage investment for economic stewardship purposes), with strategic (non-financial) input, through collaboration on an industry insurance scheme with the Scottish Shellfish Management Group.
  - Assisting with funding for research to investigate and confirm bio-methane production potential of co-digested seaweed and finfish production waste-streams, to demonstrate feasibility and offer a more sustainable disposal route for salmon waste-streams. This could result in the provision of biogas for communities from local Anaerobic Digestion plants – a potentially strong community benefit that salmon industry may finance, especially if current disposal costs are mitigated.

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy – ~~£~~	Alternative 3 - £5m	Justification
Biodiversity, flora and fauna	Protect and enhance terrestrial and aquatic habitats and species of international, national, regional or local importance. Maintain and expand wildlife corridors and minimise fragmentation of ecological areas and green spaces	-	-	-	-	**Environmental effects** Promoting opportunities for expansion of aquaculture (finfish, shellfish) is likely to have adverse impacts on marine species and habitats. Adverse impacts on marine biodiversity could occur as a result of habitat degradation/loss due to increased waste flows associated with expanding development space for finfish and shellfish farms. However, working with stakeholders to improve marine co-existence could have positive effects, because finding environmental solutions resulting from finfish farming (e.g. regarding parasite control and waste management) could have beneficial environmental effects. Assisting with funding for research to investigate and confirm the bio-methane production potential of co-digested seaweed and finfish production waste-streams is likely to have indirect implications for this SEA objective. This is because such research could demonstrate feasibility and offer a more sustainable disposal route for salmon waste-streams. However, the significance and nature of this effect are highly uncertain, depending on the outcomes and potential implications of the proposed research. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. **Natural capital** Not applicable. **Residual effects** The residual effects on protected habitats and species are judged to be low. This reflects the role of the regulatory requirements and the relatively limited extent of development. However, it is important to note that the significance of impacts will generally depend on the size of the installation and the location selected for development. The significance of the environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could potentially result in aquaculture expansion over a wider geographic area. This, in turn, could result in potential impacts on marine habitats and species. A **minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. Although a more limited area is affected under this alternative, the potential for effects on marine species and habitats remain. A **minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from aquaculture expansion would extend over a more limited area of the Crown Estate Scotland assets. Although a more limited area is affected under this alternative, the potential for effects on marine species and habitats remain. A **minor negative** effect is identified.
Population and human health	Avoid adverse effects on health and quality of life. Improve the health and living environment of people and communities. Retain and improve quality, quantity and connectivity of publicly accessible open space.	0	0	0	0	**Environmental effects** Promoting opportunities of aquaculture (finfish, shellfish) is unlikely to have any direct effects on this SEA objective. However, it is important to acknowledge that aquaculture expansion is likely to result in site-specific issues, and that there is uncertainty about the nature/significance of such effects. It is judged that the regulatory controls will address specific issues relating population and human health. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy – £10m	Alternative 3 - £5m	Justification
						areas such as marine renewables. **Natural capital** Not applicable. **Residual effects** Following from the findings above, **negligible** effects are identified for all of the alternatives.
Soil	Protect valuable soil resources, including carbon soils and best and most versatile agricultural land. Reduce vacant and derelict land and buildings.	0	0	0	0	**Environmental effects** The development of finfish and shellfish developments is unlikely to have direct effects on agricultural land and vacant and derelict buildings. Therefore, a negligible effect is identified for this SEA objective. **Regulatory controls** Not applicable. **Natural capital** Not applicable. **Residual effects** Following from the findings above, **negligible** effects are identified for all of the alternatives.
Water	Protect and enhance the quality and quantity of watercourses and waterbodies (surface water and groundwater) including coastal and estuarial waters. Avoid and reduce flood risk both presently and taking into account climate change.	-	-	-	-	**Environmental effects** Promoting opportunities of expansion of aquaculture (finfish, shellfish) is likely to have adverse impacts on local water quality due to increased waste flows associated with finfish and shellfish farms. Assisting with funding for research to investigate and confirm the bio-methane production potential of co-digested seaweed and finfish production waste-streams is likely to have positive implications for this SEA objective. This is because such research could demonstrate feasibility and offer a more sustainable disposal route for salmon waste-streams. However, the significance of this effect is highly uncertain, depending on the outcomes and potential implications of the proposed research. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. **Natural capital** Not applicable. **Residual effects** The residual effects on protected habitats and species are judged to be low. This reflects the role of the regulatory requirements and the relatively limited extent of development. The significance of the environmental effects relating to each of the alternatives are discussed below: - Alternative 1 reflects the highest level of investment and therefore could potentially result in aquaculture expansion over a wider geographic area. This, in turn, could result in potential impacts on marine habitats and species. A **minor negative** effect is identified. - Alternative 2 and Alternative 3 reflect medium high and medium low levels of investment. They could result in more limited scale and extent of environmental effects than described for Alternative 1. However although a more limited area is affected under this alternative, the potential for effects on marine species and habitats remain. A **minor negative** effect is identified. - Alternative 4 reflects the lowest level of investment and therefore the environmental effects from aquaculture expansion would extend over a more limited area of the Crown Estate Scotland assets. Although a more limited area is affected under this alternative, the potential for effects on marine species and habitats remain. A **minor negative** effect is identified.
Air	Minimise air pollution, particularly where air quality is a known issue through the designation of an AQMA. Improve air quality.	0	0	0	0	**Environmental effects** Promoting opportunities for aquaculture (finfish, shellfish) is unlikely to have any direct effects on this SEA objective. However, it is important to acknowledge that aquaculture expansion is likely to result in site-specific issues, and that there is uncertainty about the nature/significance of such effects. It is judged that the regulatory controls will address specific issues relating to air quality. **Regulatory controls**

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy – £10m	Alternative 3 - £5m	Justification
						The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. **Natural capital** Not applicable. **Residual effects** Following from the findings above, a **negligible** effect is identified for all of the alternatives.
Climatic factors	Avoid increasing greenhouse gas emissions. Support actions which contribute to targets for reducing greenhouse gas emissions. Support climate change adaptation.	0	0	0	0	**Environmental effects** Promoting opportunities of aquaculture (finfish, shellfish) is unlikely to have any direct effects on this SEA objective. However, it is important to acknowledge that aquaculture expansion is likely to result in site-specific issues, and that there is uncertainty about the nature/significance of such effects. It is judged that the regulatory controls will address specific issues relating to climatic factors. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. **Natural capital** Not applicable. **Residual effects** Following from the findings above, **negligible** effects are identified for all of the alternatives.
Cultural heritage and the historic environment	Conserve and, where appropriate, enhance those elements which contribute to the significance of terrestrial and marine designated and undesignated heritage assets in a manner appropriate to their significance, including World Heritage Sites, Conservation Areas, Listed Buildings, Historic Marine Protected Areas, archaeological remains, and areas of historical heritage and cultural value e.g. locally listed buildings. Improve the quality of the wider built environment.	0	0	0	0	**Environmental effects** Promoting opportunities of aquaculture (finfish, shellfish) is unlikely to have any direct effects on this SEA objective. It is important to acknowledge that aquaculture expansion is likely to result in site-specific issues, and that there is uncertainty about the nature/significance of such effects. It is judged that the regulatory controls will address specific issues relating to cultural heritage and the historic environment. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. **Natural capital** Not applicable. **Residual effects** Following from the findings above, **negligible** effects are identified for all of the alternatives.
Landscape and geodiversity	Protect and enhance landscape and seascape character and quality including National Scenic Areas, national parks, geoparks, wild land, open spaces, parks and gardens and their settings. Protect geological sites of national, regional or local importance.	0	0	0	0	**Environmental effects** Promoting the expansion of aquaculture (finfish, shellfish) is unlikely to have any direct effects on this SEA objective. However, it is important to acknowledge that aquaculture expansion is likely to result in site-specific issues, and that there is uncertainty about the nature/significance of such effects. It is judged that the regulatory controls will address specific issues relating to the character and quality of seascapes. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. **Natural capital** Not applicable.

SEA Topic Area	SEA Objective	Alternative 1 – £30m	Alternative 2 – £15m	Preferred Strategy – £10m	Alternative 3 - £5m	Justification
						Residual effects Following from the findings above, **negligible** effects are identified for all of the alternatives.
Material assets	Avoid adversely impacting on material assets.	0	0	0	0	**Environmental effects** Shellfish farming is unlikely to have any direct impacts on this SEA objective due to its low environmental impact. Finfish farming could have adverse effects on local amenity. It is important to acknowledge that aquaculture expansion is likely to result in site-specific issues, and that there is uncertainty about the nature/significance of such effects. Assisting with funding for research to investigate and confirm the bio-methane production potential of co-digested seaweed and finfish production waste-streams is likely to have indirect, positive implications for this SEA objective. This is because such research could demonstrate feasibility and offer a more sustainable disposal route for salmon waste-streams. However, the significance of this effect is highly uncertain, depending on the outcomes and potential implications of the proposed research. **Regulatory controls** The Marine (Scotland) Act 2010 sets a duty to protect and enhance the marine environment, and therefore includes a provision about marine plans, the licensing of marine activities, the protection of the area and its wildlife including seals and the regulation of sea fisheries. The 2010 Act also includes measures to help boost economic investment and growth in areas such as marine renewables. **Natural capital** Not applicable. **Residual effects** Following from the findings above, **negligible** effects are identified for all of the alternatives. It is important to note that there is a lot of uncertainty about the nature/significance of environmental effects associated with finfish farming.

Urban portfolio

Investment objective 1

Maintain and enhance the rural coastal and urban assets through investment in infrastructure development and fixed equipment:

- Refurbishment of vacant space (taking into account likely dilapidation receipts from tenants), required mechanical and electrical upgrade works, energy efficiency and planning consultancy advice
- Opportunities for further investment in this sector – which could include office, industrial, retail or other commercial property – on a more modest scale, or if additional capital funds become available, are considered worthy of consideration due to the attractive returns and asset and risk diversification

SEA Topic Area	SEA Objective	Alternative 1 – [illegible]	Alternative 2 – [illegible]	Preferred Strategy	Alternative 3- £5m	Justification:
Biodiversity, flora and fauna	Protect and enhance terrestrial and aquatic habitats and species of international, national, regional or local importance. Maintain and expand wildlife corridors and minimise fragmentation of ecological areas and green spaces	0	0	0	0	**Environmental effects** Internal refurbishment of an historic building could result in impacts on protected species such as birds and bats. No impacts are identified from further investment in additional property. **Regulatory controls** European protected species legislation. **Residual effects** The residual effects on protected species and habitats are judged to be low. This reflects the role of the regulatory requirements and the relatively limited extent of development. No difference is noted between the three alternatives and the preferred strategy and a **negligible** effect is identified.
Population and human health	Avoid adverse effects on health and quality of life. Improve the health and living environment of people and communities. Retain and improve quality, quantity and connectivity of publicly accessible open space.	0	0	0	0	**Environmental effects** Although the refurbishment works will improve the quality of the building, no effects on population and human health are identified. No impacts are identified from further investment in additional property.
Soil	Protect valuable soil resources, including carbon soils and best and most versatile agricultural land. Reduce vacant and derelict land and buildings.	0	0	0	0	**Environmental effects** No impact on soil is identified.
Water	Protect and enhance the quality and quantity of watercourses and waterbodies (surface water and groundwater) including coastal and estuarial waters. Avoid and reduce flood risk both presently and taking into account climate change.	0	0	0	0	**Environmental effects** No impact on the water environment is identified.
Air	Minimise air pollution, particularly where air quality is a known issue through the designation of	0	0	0	0	**Environmental effects**

SEA Topic Area	SEA Objective	Alternative 1 – [illegible]	Alternative 2 – [illegible]	Preferred Strategy	Alternative 3- £5m	Justification:
	an AQMA.					No impact on air quality is identified.
	Improve air quality.					
Climatic factors	Avoid increasing greenhouse gas emissions.	0	0	0	0	**Environmental effects** The works to the building improve energy efficiency, however reflecting the scale of the property, no impacts are identified. No impacts are identified from further investment in additional property.
	Support actions which contribute to targets for reducing greenhouse gas emissions.					
	Support climate change adaptation.					
Cultural heritage and the historic environment	Conserve and, where appropriate, enhance those elements which contribute to the significance of terrestrial and marine designated and undesignated heritage assets in a manner appropriate to their significance, including World Heritage Sites, Conservation Areas, Listed Buildings, Historic Marine Protected Areas, archaeological remains, and areas of historical heritage and cultural value e.g. locally listed buildings.	0	0	0	0	**Environmental effects** 39 George Street is located within the Edinburgh World Heritage Site and is a B listed building. Modifications to the building could result in impacts on the historic characteristics of the building. No impacts are identified from further investment in additional property. **Regulatory controls** Listed building consent World Heritage Site management plan. **Residual effects** The residual effects on cultural heritage are judged to be low. This reflects the role of the regulatory requirements and the very limited extent of development, even within this sensitive location. A **negligible** effect is therefore identified.
	Improve the quality of the wider built environment.					
Landscape and geodiversity	Protect and enhance landscape and seascape character and quality including National Scenic Areas, national parks, geoparks, wild land, open spaces, parks and gardens and their settings.	0	0	0	0	**Environmental effects** No impact on landscape and geodiversity is identified.
	Protect geological sites of national, regional or local importance.					
Material assets	Avoid adversely impacting on material assets.	0	0	0	0	**Environmental effects** The works support the quality and viability of the building, but due to the scale and extent of these effects no impacts are identified on material assets. No impacts are identified from further investment in additional property.
	Enhance material assets.					