

# **Sectoral Marine Plan for Offshore Wind for Innovation and Targeted Oil and Gas Decarbonisation (INTOG)**

## **Strategic Environmental Assessment Screening and Scoping Report**

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# 1 Introduction

## 1.1 Background

- 1.1.1 The Scottish Government is committed to ensuring secure, reliable, and affordable energy supplies within the context of the long term decarbonisation of energy generation. Continued growth of the renewable energy sector in Scotland is an essential feature of the future clean energy system and a potential key driver of economic growth. As a nation with an abundance of renewable energy resources, opportunities exist not only to meet domestic needs, but also to export low carbon energy to the rest of UK and Europe.
- 1.1.2 Around Scotland, there exists the potential to extract significant energy resources in the form of renewable offshore wind energy generation. Any expansion of offshore wind energy generation in Scottish waters requires the application of marine spatial planning, at a national, regional and local scale, to identify areas that may be suitable for the development of offshore wind projects.
- 1.1.3 Offshore wind is a large scale technology with the potential to play a pivotal role in Scotland's energy system over the coming decades. The development of technologies such as floating wind, which offer scope for development in deeper water, have significant potential to contribute offshore wind energy supply at affordable prices. Floating technology is particularly well suited to the deeper water abundant around Scotland and in the vicinity of oil and gas infrastructure.
- 1.1.4 In October 2020, the Scottish Government published the Sectoral Marine Plan for Offshore Wind Energy. The Sectoral Marine Plan 2020 identified a possible need to re-examine the planning process to allow more targeted and non-traditional projects to progress with the specific focus of seeking to electrify oil and gas infrastructure. In addition, in the context of the growing blue economy and need for sustainable management of the marine environment, the Sectoral Marine Plan 2020 set a commercial scale minimum size at 100 MW.
- 1.1.5 Accordingly, smaller test and demonstration scale projects (i.e. those below 100 MW) are not accounted for in the 2020 plan nor do they have a route to seabed lease or consent. The Scottish Government is now seeking to develop a Sectoral Marine Plan for Offshore Wind for Innovation projects and Targeted Oil and Gas Decarbonisation (INTOG) which encompasses Plan Options to provide the strategic framework for future offshore wind deployment in sustainable and suitable locations. Delivery of sustainable offshore wind projects providing power directly, through electrification, to oil and gas assets is the core objective of the INTOG planning and leasing process. As this planning process is specifically targeting oil and gas decarbonisation, it will provide

unique opportunities to further deliver a Just Transition and assist the oil and gas sector in meeting the commitments of the North Sea Transition Deal<sup>1</sup>.

- 1.1.6 In support of this, the Scottish Government published a Planning Specification and Context Report in 2021 which set out the parameters for the planning process and the information and spatial analysis carried out to identify Areas of Search (AoS) for future leasing opportunities suitable for innovative offshore wind projects and offshore wind projects that aim to decarbonise oil and gas installations<sup>2</sup>. These initial planning specifications and AoS were subject to public consultation to provide an opportunity for all stakeholders to engage early with the planning process and help shape the plan as it moves forward<sup>3</sup>. The consultation opened on 25 August 2021 and closed on 20 October 2021. The AoS were not proposed as sites to be developed in their entirety, but provided a starting point for the identification of optimum locations for offshore wind energy production under the plan. These initial AoS were subject to a process of consultation and refinement, leading to the Initial Plan Framework (IPF)<sup>4</sup> published in February 2022.
- 1.1.7 The IPF sets out the spatial parameters that will enable projects to progress through the planning and seabed leasing process. The IPF provides the updated planning specification and outline of the Areas of Search, as modified following the consultation earlier in 2021, and now approved for use in the leasing process managed by CES.
- 1.1.8 The planning and leasing process will allow a number of innovation projects to proceed; up to a total of 500MW generating capacity and 167km<sup>2</sup>, provided they also meet the following criteria:
- Projects under this category should not exceed 100MW potential generation capacity
  - Projects should not be located within the areas marked for exclusion nor should they be located inside the areas identified for Targeted Oil and Gas decarbonisation projects.
  - Any project proceeding to the final Plan must have successfully progressed through the CES lease application process and been awarded exclusivity.

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<sup>1</sup> UK Government (2022) Policy Paper: North Sea Transition Deal [online] Available at: <https://www.gov.uk/government/publications/north-sea-transition-deal/north-sea-transition-deal-accessible-webpage> (accessed 12/09/2022)

<sup>2</sup> Scottish Government (2022). Sectoral Marine Plan for Offshore Wind for Innovation and Targeted Oil and Gas Decarbonisation (INTOG) – Planning Specification and Context Report. Available at: <https://marine.gov.scot/data/sectoral-marine-plan-offshore-wind-innovation-and-targeted-oil-and-gas-decarbonisation-intog> (accessed 28/06/2022)

<sup>3</sup> Scottish Government (2022). Sectoral Marine Plan - innovation and targeted oil and gas decarbonisation, offshore wind. Available at: <https://consult.gov.scot/marine-scotland/smp-innovation-and-targeted-oil-and-gas/> (accessed 28/06/2022)

<sup>4</sup> Marine Scotland (2022). Initial Plan Framework Sectoral Marine Plan for Offshore Wind for Innovation and Targeted Oil and Gas Decarbonisation (INTOG). Available at <https://www.gov.scot/publications/initial-plan-framework-sectoral-marine-plan-offshore-wind-innovation-targeted-oil-gas-decarbonisation-intog/documents/> (accessed 28/06/2022)

- 1.1.9 The planning and leasing process will consider and assess a number of Targeted Oil and Gas decarbonisation projects, up to a total of 4GW generating capacity and 1900km<sup>2</sup>, provided they meet the following criteria:
- Projects should be located within the areas identified for Targeted Oil and Gas Decarbonisation projects (see Section 4);
  - The project should deliver electricity to oil and gas assets. Projects may pursue alternative uses for excess generated energy, such as hydrogen conversion or supply to the grid, but these must be additional to the primary purpose above; and
  - Any project proceeding to the final Plan must have successfully progressed through CES lease application process and been awarded exclusivity.
- 1.1.10 It should be noted that the 4GW capacity limit at the planning stage does not account for the possible attrition of projects. The maximum potential capacity available under CES Option Agreements and ultimately as Lease agreements will be 5.7GW for Targeted Oil and Gas Decarbonisation.
- 1.1.11 The Draft Plan for INTOG (the 'Draft Plan') falls under Section 5(4) of the Environmental Assessment (Scotland) Act 2005 (the '2005 Act') and is considered likely to give rise to significant environmental effects. In accordance with the requirements of the Act, a joint Screening and Scoping Report has been prepared to give preliminary consideration to the types of environmental effects that could arise from the identified AoS.

## 1.2 Strategic Environmental Assessment

- 1.2.1 The 2005 Act requires that public plans, programmes, and strategies (PPS) be assessed for their potential effects on the environment<sup>5</sup>. Undertaking a Strategic Environmental Assessment (SEA) provides a means of identifying potentially significant environmental impacts at an early stage in the development of the PPS. SEA also considers how identified impacts can be avoided or minimised through appropriate mitigation measures and provides for engagement with stakeholders through public consultation on both the PPS as well as the findings of the assessment. This feedback is used to inform the final iteration of the plan, as summarised by the Post-Adoption Statement.
- 1.2.2 There is potential for the Draft Plan to give rise to transboundary impacts. As such, this SEA has been undertaken in accordance with both the requirements of the 2005 Act and the Environmental Assessment of Plans and Programmes Regulations 2004 (the '2004 Regulations')<sup>6</sup>.

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<sup>5</sup> Environmental Assessment (Scotland) Act 2005, asp 15 [online] Available at: <https://www.legislation.gov.uk/asp/2005/15/introduction> (accessed 22/06/2022)

<sup>6</sup> The Environmental Assessment of Plans and Programmes Regulations 2004, SI 2004/1663 [online] Available at: <http://www.legislation.gov.uk/ukSI/2004/1633/introduction/made> (accessed 22/06/2022)

## SEA and the wider assessment process

- 1.2.3 This SEA forms part of a wider Sustainability Appraisal (SA) of the Draft Plan that will be undertaken, in line with the requirements of the European Commission (EC) Habitats<sup>7</sup>, Birds<sup>8</sup>, and Public Participation Directives<sup>9</sup>, as well as the Marine and Coastal Access Act 2009<sup>10</sup>. As the UK is no longer a member of the European Union (EU), EU legislation, as it applied to the United Kingdom (UK) on 31 December 2020, is now a part of UK domestic legislation as set out in the EU (Withdrawal) Act 2018<sup>11</sup>.
- 1.2.4 Specifically, this joint Screening and Scoping Report has been produced as part of a suite of documents that have been made available for early comment. These include:
- A report setting out initial pre-screening stages of the Habitats Regulations Appraisal (HRA) process in accordance with guidance<sup>12</sup>; and
  - A report setting out the proposed methodology for the socio-economic impact assessment (SEIA).
- 1.2.5 Following this initial consultation, Marine Scotland Directorate intends to deliver an overarching SA through four key, complementary initiatives: the SEA; an HRA; a SEIA; and public consultation on the Draft Plan.

## 1.3 Purpose of this Screening and Scoping Report

- 1.3.1 This report sets out information on the following:
- the proposed scope and level of detail of the assessment;
  - a description of the potential methodology that may be used in the assessment;
  - a summary of the information that is likely to underlie the compilation of the environmental baseline; and
  - the prospective period of consultation on the Draft Plan and draft Environmental Report.

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<sup>7</sup> European Commission (1992). The Habitats Directive [online] Available at: [http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index\\_en.htm](http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm) (accessed 22/06/2022)

<sup>8</sup> European Commission (2009). The Birds Directive [online] Available at: [http://ec.europa.eu/environment/nature/legislation/birdsdirective/index\\_en.htm](http://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm) (accessed 22/06/2022)

<sup>9</sup> European Commission (2017). The Aarhus Convention [online] Available at: <http://ec.europa.eu/environment/aarhus/legislation.htm> (accessed 22/06/2022)

<sup>10</sup> Marine and Coastal Access Act 2009, 2009/Chapter 23 [online] Available at: <https://www.legislation.gov.uk/ukpga/2009/23/introduction> (accessed 22/06/2022)

<sup>11</sup> European Union (Withdrawal) Act 2018 [online] Available at: <https://www.legislation.gov.uk/ukpga/2018/16/contents/enacted> (accessed 22/06/2022)

<sup>12</sup> SNH (2015). Habitats Regulations Appraisal (HRA) of plans – Guidance for plan-making bodies in Scotland [online] Available at: <https://www.nature.scot/habitats-regulations-appraisal-plans-guidance-plan-making-bodies-scotland-jan-2015> (accessed 22/06/2022)

- 1.3.2 Information to support the screening exercise is provided in Appendix A.
- 1.3.3 The views of the Consultation Authorities (Scottish Environment Protection Agency (SEPA), Historic Environment Scotland (HES), and NatureScot (formerly Scottish Natural Heritage (SNH)), the UK consultation bodies<sup>13</sup> (the Environment Agency, Historic England, and Natural England), Member States of relevance, and members of the public on this combined report are now being sought.

## 1.4 Report structure

- 1.4.1 This Screening and Scoping Report is set out as follows:
- Section 1 introduces the Draft Plan and the SEA process;
  - Section 2 provides background information on the development of the offshore wind energy sector in Scotland;
  - Section 3 summarises a range of offshore wind energy technologies and their associated environmental impacts;
  - Section 4 sets out the proposed approach to the assessment, including the proposed scope, potential methodology and how issues of mitigation, monitoring, reasonable alternatives, and cumulative effects are likely to be addressed;
  - Section 5 presents the broader legislative and policy context for the Draft Plan, in addition to an outline of the proposed environmental baseline to inform the subsequent assessment;
  - Section 6 provides details of the next steps in the preparation of the Draft Plan and the SEA process, including proposed consultation timescales; and
  - Appendix A includes the environmental Screening Report.

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<sup>13</sup> UK Government (2015). Guidance - Strategic environmental assessment and sustainability appraisal [online] Available at: <https://www.gov.uk/guidance/strategic-environmental-assessment-and-sustainability-appraisal> (accessed 22/06/2022)

## 2 Offshore wind energy in Scotland

### 2.1 Background

- 2.1.1 The Scottish Government has set a range of targets and ambitions to cut greenhouse gas emissions and to generate more energy from renewable sources. The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019<sup>14</sup> commits the Scottish Government to reach net zero emissions of all greenhouse gases by 2045. It also sets out interim targets to cut emissions by 75% by 2030 and 90% by 2040, against the 1990 baseline. Additionally, the Scottish Government has set a target to generate 50% of Scotland's overall energy consumption from renewable sources by 2030<sup>15</sup>. Furthermore, the Blue Economy Vision<sup>16</sup> of Scotland's shared stewardship of the marine environment includes the decarbonisation of marine sectors to support Scotland's Net Zero and Nature Positive commitments.
- 2.1.2 Offshore wind accounts for a rapidly growing proportion of Scotland's renewable energy portfolio. By the fourth quarter of 2021, Scotland had a total installed operational capacity of 946 MW<sup>17</sup>. As Scotland pursues more ambitious reductions in its greenhouse gas emissions, the focus has broadened to consider the potential to support innovative projects and projects which support the decarbonisation of the oil and gas sector. Carbon capture usage and storage (CCUS) and direct power options from shore, in addition to offshore turbines connected to oil and gas assets may all play a role in meeting commitments<sup>18</sup>. However, offshore wind is a proven and reliable source of green energy and with technological advances in floating wind, it offers a direct, sustainable and importantly, a timely solution<sup>19</sup>.
- 2.1.3 To facilitate the sustainable development of offshore renewable energy in Scottish waters, the Scottish Government has introduced a system of sectoral marine planning. This planning exercise brings together the related planning, SEA, HRA and SEIA as well as statutory consultation processes into one integrated process. The output of the process is a Sectoral Marine Plan ("SMP")

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<sup>14</sup> Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 [online] Available at: <https://www.legislation.gov.uk/asp/2019/15/enacted> (accessed 28/06/2022)

<sup>15</sup> Scottish Government's Policy on Renewable and Low Carbon Energy [online] Available at: <https://www.gov.scot/policies/renewable-and-low-carbon-energy/> (accessed 28/06/2022)

<sup>16</sup> Marine Scotland (2022). Blue Economy Vision for Scotland. Scottish Government. Available at <https://www.gov.scot/publications/blue-economy-vision-scotland/> (accessed 28/06/2022)

<sup>17</sup> Scottish Renewables (2022). Statistics Energy Consumption by Sector [online] Available at: <https://www.scottishrenewables.com/our-industry/statistics> (accessed 28/06/2022)

<sup>18</sup> Marine Scotland (2021) Sectoral Marine Plan for Offshore Wind for Innovation and Targeted Oil and Gas Decarbonisation (INTOG) Planning Specification and Context Report [online] Available at: <https://marine.gov.scot/data/sectoral-marine-plan-offshore-wind-innovation-and-targeted-oil-and-gas-decarbonisation-intog> (accessed 11/07/2022)

<sup>19</sup> *ibid*

containing Scottish Ministers' 'Plan Options' ("PO") for the sustainable development of commercial scale offshore renewable energy.

## 2.2 Blue Seas Green Energy – A Sectoral Marine Plan for Offshore Wind Energy in Scottish Territorial Waters 2011

2.2.1 In 2009, Crown Estate Commissioners (CEC) undertook the first stage of lease bidding and awarded Exclusivity Agreement awards (the first step towards securing a commercial lease) for 10 sites in Scottish Territorial Waters:

- Solway Firth;
- Wigtown Bay;
- Kintyre;
- Islay;
- Argyll Array;
- Beatrice;
- Inch Cape;
- Neart na Gaoithe;
- Forth Array, and
- Bell Rock.

2.2.2 In response to the CEC leasing round and to support the sustainable delivery of the potential for offshore wind around Scotland, the Scottish Government made a commitment to produce a SEA of the potential for offshore wind development in Scottish Territorial Waters, to include the 10 site options. A draft Plan was developed to accompany the SEA Environment Report, and thereby ensure that those reviewing the assessment findings during statutory consultation were clear about the emerging proposals.

2.2.3 In addition to the short term sites identified by CEC, the Scottish Government commissioned a further constraint and opportunity mapping exercise in order to identify additional medium term options, within which there could be further potential for development beyond 2020. The marine spatial planning model, Marine Resource System (MaRS), was used to identify options by mapping environmental and technical constraints as well as resource opportunities. This model identified 30 medium term options (areas of search). The 30 medium term options were then subject to environmental assessment, using the strategic environmental objectives developed with the Consultation Authorities. This resulted in 5 options being ruled out, including South West Option 2 (SW2), due to its proximity to the Beaufort's Dyke munitions dump. As a result, 25 medium term options (areas of search) were taken forward in the Sectoral Marine Plan.

2.2.4 Further to the SEA, an HRA for the site and medium term options, as well as an SEIA for the regional implications of the site options were also prepared. A

consultation analysis report of all the consultation responses received for the SEA and Plan development process was produced.

2.2.5 In March 2011, Scottish Ministers, following consideration of the key findings from the SEA, HRA, SEIA and consultation analysis, decided that 6 short term sites would be progressed.

- Islay;
- Argyll Array;
- Beatrice;
- Inch Cape;
- Neart na Gaoithe; and
- Forth Array.

2.2.6 In addition, Scottish Ministers' recognised the 25 medium term options within the Plan as the starting point for the next strategic planning exercise to support offshore wind energy around Scotland.

2.2.7 Three of the six short-term option sites identified in the 2011 Plan have progressed to consenting (Beatrice, Inch Cape and Neart na Gaoithe), with Beatrice Offshore Wind Farm becoming operational in 2019 with an installed capacity of 588 MW.

## 2.3 Draft Sectoral Marine Plan for Offshore Wind Energy in Scottish Waters 2013

2.3.1 As per its commitment to a two-year review, Blue Seas Green Energy was reviewed in 2013 alongside the Sectoral Marine Plans for Wave and Tidal Renewables<sup>20</sup>. The review included a re-evaluation of the previous selection of medium term development areas and broadened the geographic scope of consideration to include non-territorial waters (i.e. out to 200 nautical miles (nm)). The latter involved identifying both additional medium term areas of search as well as areas of deeper water that could become suitable as turbine structure technologies progress and become commercially deliverable at greater depths.

2.3.2 To help refine the potential areas of search, Regional Locational Guidance (RLG) was prepared which considered detailed environmental, technical, socio-economic and planning issues in relation to the offshore renewable energy regions of Scotland<sup>21</sup>. This led to the development of an Initial Plan Framework comprising draft Plan Options which were intended to guide developers towards

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<sup>20</sup> Scottish Government (2013). Draft Sectoral Marine Plans for Offshore Renewable Energy in Scottish Waters – Strategic Environmental Assessment: Environmental Report and Appendix A [online] Available at: <http://www.gov.scot/Publications/2013/07/2403/0> (accessed 22/06/2022)

<sup>21</sup> Scottish Government (2012). Offshore Wind – Regional Locational Guidance – Part 2 – Introduction – Scottish Overview [online] Available at: <https://data.marine.gov.scot/dataset/draft-offshore-wind-regional-locational-guidance/resource/ed754d0b-6d5b-4845-a5f6> (accessed 22/06/2022)

suitable areas when planning projects go through a marine licensing process<sup>22</sup>. This Initial Plan Framework was subject to an iterative series of assessments including SEA, an HRA, and an SEIA, which informed a public consultation on the Draft Plan for Offshore Wind Energy 2013. This Plan contained 10 draft Plan Options which were subsequently reflected in the publication of Scotland's National Marine Plan in 2015<sup>23</sup>.

- 2.3.3 However, due to the challenges faced by the offshore wind industry during this period, resulting from the change in subsidy mechanism from Renewables Obligations Certificates (ROCs) to Contract for Difference (CfD), the Draft Plan was never formally adopted by Scottish Ministers.

## 2.4 Sectoral Marine Plan for Offshore Wind Energy 2020

- 2.4.1 Following the Draft Plan for Offshore Wind Energy 2013, there have been a number of technological, policy, regulatory and market developments, such as the commitments outlined in the UK Offshore Wind Sector Deal<sup>24</sup>, the development of new technologies suitable for deployment in deeper water and the aspirations established in recent climate change legislation. These presented the opportunity for Scottish Ministers to undertake a new strategic planning process to support further offshore wind development in Scotland's seas.
- 2.4.2 The output of the strategic planning process was a Sectoral Marine Plan for Offshore Wind Energy, which was published in October 2020<sup>25</sup>. The 2020 Sectoral Marine Plan identified a possible need to re-examine the planning process to allow more targeted and non-traditional projects to progress with the specific focus of seeking to electrify oil and gas infrastructure. In addition, in the context of the growing blue economy and need for sustainable management of the marine environment, the 2020 plan set a commercial scale minimum size at 100 MW. Accordingly, smaller test and demonstration scale projects (i.e. those below 100 MW) were not accounted for in the 2020 plan nor do they have a route to seabed lease or consent.
- 2.4.3 The 2020 Sectoral Marine Plan contains Scottish Ministers' Plan Options (POs) for the sustainable development of commercial-scale offshore wind energy in Scotland, including deep water wind technologies, covering both Scottish

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<sup>22</sup> Scottish Government (2013) Offshore Wind Energy in Scottish Waters – Initial Plan Framework (Draft Plan Options) [online] Available at: <https://www.webarchive.org.uk/wayback/archive/3000/https://www.gov.scot/Resource/0042/00423948.pdf> (accessed 22/06/2022)

<sup>23</sup> Scottish Government (2015). Scotland's National Marine Plan [online] Available at: <https://www.gov.scot/publications/scotlands-national-marine-plan/> (accessed 23/06/2022)

<sup>24</sup> Department for Business, Energy & Industrial Strategy (2020). Offshore wind: Sector Deal [online] Available at: <https://www.gov.uk/government/publications/offshore-wind-sector-deal> (accessed 23/06/2022)

<sup>25</sup> Scottish Government (2020). Sectoral marine plan for offshore wind energy [online] Available at: <https://www.gov.scot/publications/sectoral-marine-plan-offshore-wind-energy/> (accessed 22/06/2022)

inshore (Scottish territorial waters or within 12nm from shore) and offshore waters (extending out to the Exclusive Economic Zone limit (EEZ)).

- 2.4.4 The Sectoral Marine Plan for Offshore Wind Energy identified 15 POs, split across four regions (North, North East, East and West), and set out a commercial scale threshold of >100 MW and an overall generating capacity of 10 GW. As a result of consultation feedback, amendments were made to the boundaries of seven of the Draft Plan Options (DPOs) and two DPOs (SW1 and NE5) were not progressed as POs<sup>26</sup>. These amendments were primarily implemented to mitigate potential negative impacts on commercial fishing, natural heritage and the shipping sectors and in response to strong and consistent public opposition in relation to SW1.
- 2.4.5 This sectoral planning process provided the spatial strategy to support the first cycle of seabed leasing for commercial-scale offshore wind by Crown Estate Scotland (CES), the 'ScotWind' leasing round<sup>27</sup>. CES managed an application process to award option agreements and subsequently, when other consent conditions are met, seabed leases to successful applicants. The ScotWind leasing process closed on 16 July 2021, with over 70 applications, and awards were announced in January 2022.
- 2.4.6 Seventeen projects have accepted Option Agreements for around 7,000 km<sup>2</sup> of seabed, equating to a potential total capacity of 25 GW with 60% of this capacity being for 11 floating offshore wind projects<sup>28</sup> making it the biggest floating leasing round in the world. The higher capacity awarded under ScotWind compared to the 2020 Sectoral Marine Plan will be addressed through the Iterative Plan Review (IPR) process for the Sectoral Marine Plan. Updated information from this IPR process will be fed into the INTOG assessment to inform the cumulative effects analysis.

## 2.5 Draft Sectoral Marine Plan for Offshore Wind Energy supporting Innovation and Targeted Oil and Gas Decarbonisation (INTOG) 2021

- 2.5.1 Following the adoption of the 2020 plan, the Scottish Government is now seeking to develop a Sectoral Marine Plan for Offshore Wind for Innovation projects and Targeted Oil and Gas Decarbonisation (INTOG) which encompasses POs to provide the strategic framework for future offshore wind deployment in sustainable and suitable locations that will help deliver projects to meet the offshore wind targets and wider net zero commitments. The plan

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<sup>26</sup> Scottish Government (2020). Sectoral Marine Plan Post Adoption Statement [online] Available at: <https://www.gov.scot/isbn/9781800042445> (accessed 22/06/2022)

<sup>27</sup> CES ScotWind Leasing [online] Available at: <https://www.crownestatescotland.com/what-we-do/marine/asset/offshore-wind/section/scotwind-leasing> (accessed 22/06/2022)

<sup>28</sup> Offshore Wind Scotland (2022). A Sea of Opportunity. Available at: <https://www.offshorewindscotland.org.uk/scottish-offshore-wind-market/> (accessed 20/06/2022).

imposes a cap of 4 GW installed capacity and 1900km<sup>2</sup> on targeted oil and gas decarbonisation (TOG) projects and a cap of 500 MW installed capacity and 167km<sup>2</sup> on innovation (IN) projects. It is considered likely that these projects will make use of floating technology.

- 2.5.2 CES and Marine Scotland Directorate have engaged with developers to scope interest in the possibility of a future leasing round. This approach has the potential to support and facilitate the delivery of smaller (100 MW or less) innovative projects and also target larger (>100 MW) projects that seek to support the decarbonisation of the oil and gas sector.
- 2.5.3 To ensure consistency with the existing plans and to account for developing projects and new/updated research, this leasing round requires Marine Scotland Directorate, as planning authority for Scotland's Seas, to undertake a new strategic planning exercise to assess the suitability of potential locations and to ensure compatibility with other projects and marine users in Scotland.
- 2.5.4 The development of the Draft Plan has initially identified AoS and exclusion areas for innovation projects and projects that support the decarbonisation of oil and gas installations in Scotland. The AoS were not proposed as sites to be developed in their entirety, but provide a starting point for the identification of optimum locations for offshore wind energy production under the plan. These initial AoS were subject to a process of consultation and refinement, leading to the Initial Plan Framework (IPF)<sup>29</sup> published in February 2022.
- 2.5.5 The planning round will coincide with a leasing process, managed by CES. This will allow the refined AoS to be developed into potential plan options from which a set of Draft Plan Option (DPO) areas will be derived based on applications to CES as specific project locations within the AoS.
- 2.5.6 The AoS, therefore, provide the starting point from which optimum locations for offshore wind energy production can be identified and DPOs produced, and subsequently assessed.
- 2.5.7 The INTOG leasing round to identify these DPOs launched in August 2022. Only projects which form part of the final INTOG plan as PO areas will be offered option agreements and will be able to move towards leasing.
- 2.5.8 An overview of the timeline and process of identifying sites for offshore wind energy development in Scottish waters to date and the forthcoming Draft Plan is illustrated by Figure 1. Figure 2 depicts the proposed AoS that have been initially identified for the Draft Plan. The blue hatched areas are where targeted oil and gas decarbonisation (TOG) projects will be considered. The black lined

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<sup>29</sup> Marine Scotland (2022). Initial Plan Framework Sectoral Marine Plan for Offshore Wind for Innovation and Targeted Oil and Gas Decarbonisation (INTOG). Available at <https://www.gov.scot/publications/initial-plan-framework-sectoral-marine-plan-offshore-wind-innovation-targeted-oil-gas-decarbonisation-intog/documents/> (accessed 28/06/2022)

areas are where no projects will be considered. The remaining white area within the Scottish sea zone is where innovation (IN) projects will be considered.

**Figure 1. Timeline and process of identifying sites for offshore wind energy development in Scottish waters**

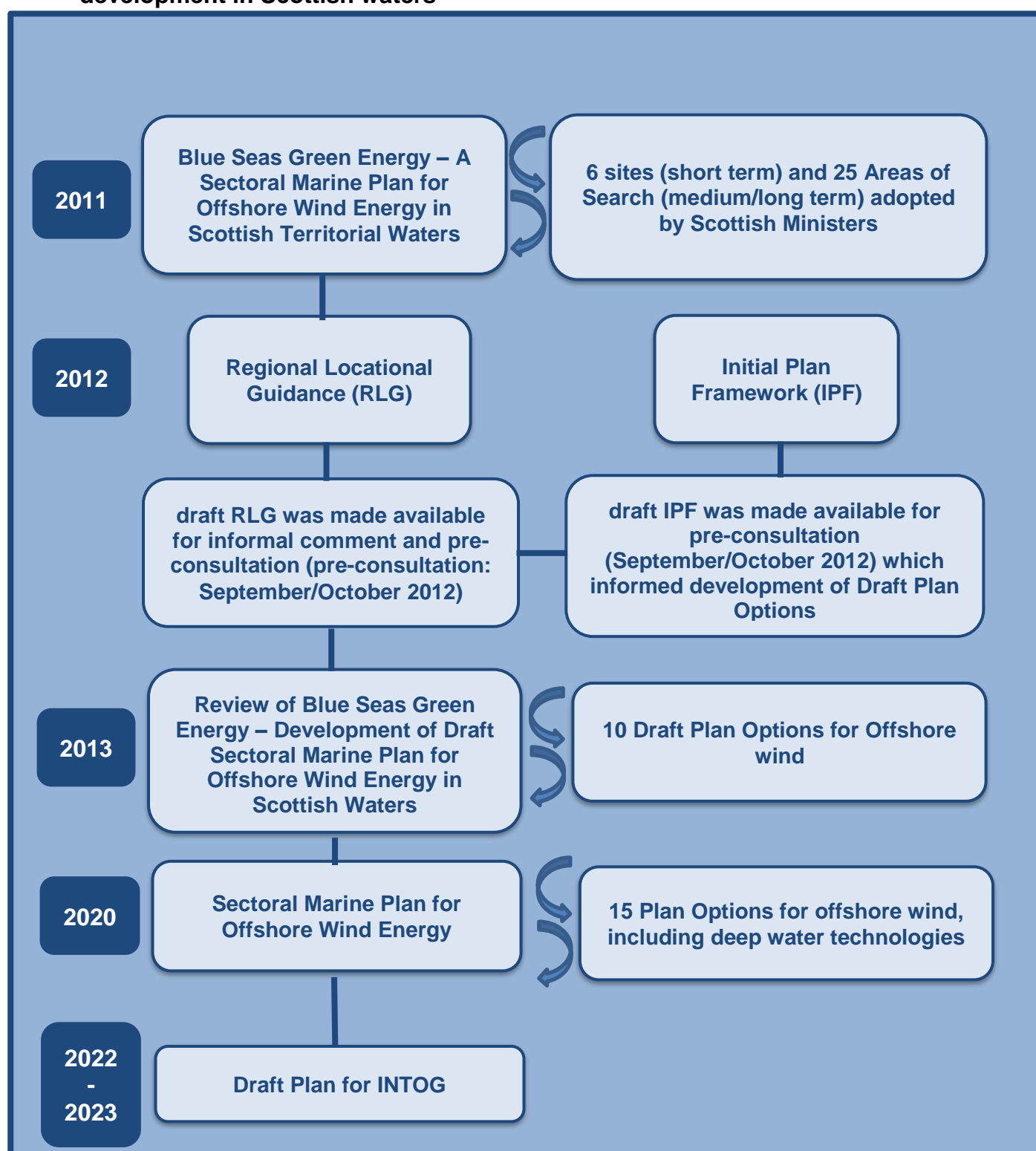
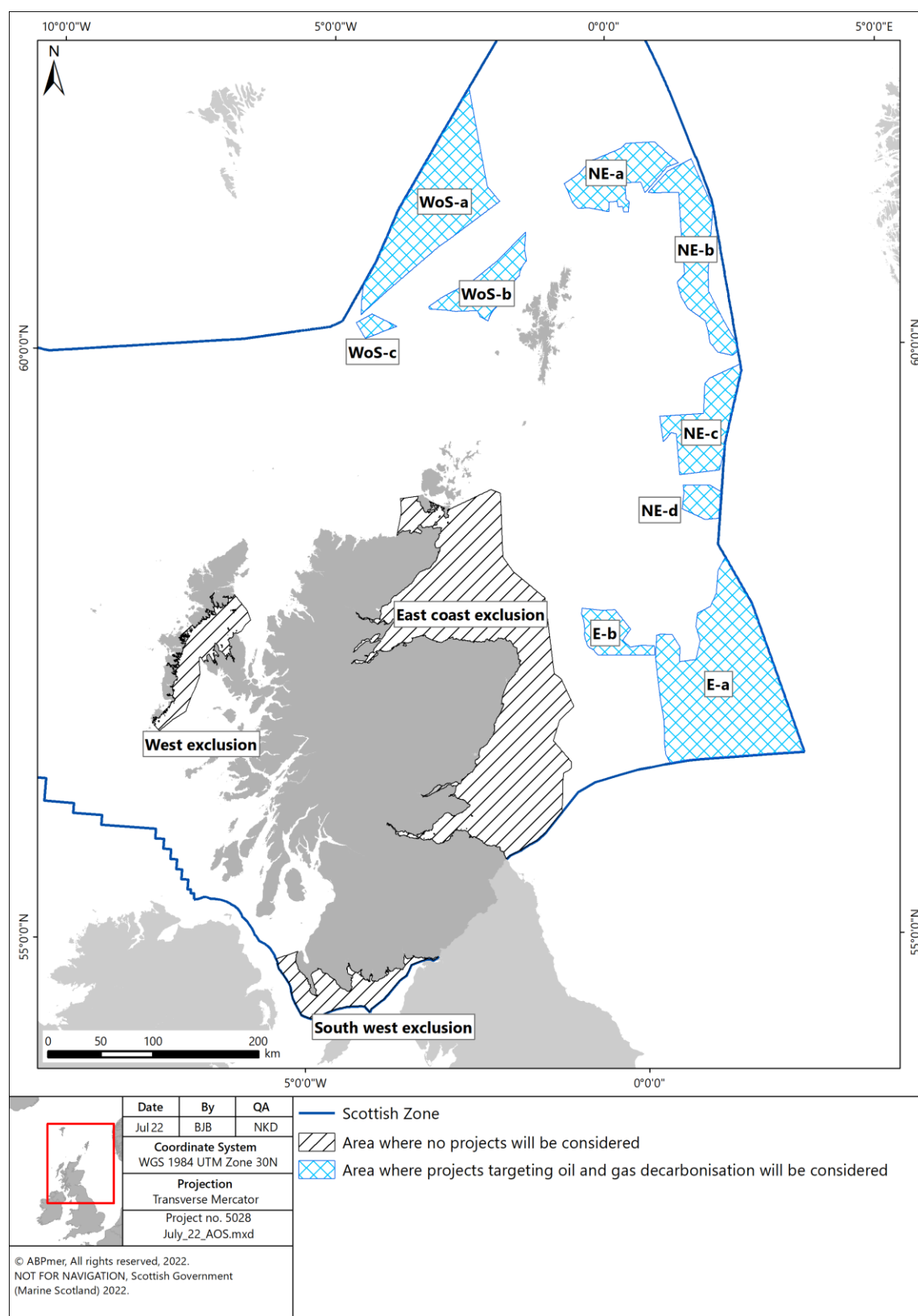


Figure 1

– Diagram illustrating the timeline and process of identifying sites for offshore wind energy development in Scottish waters to date"

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**Figure 2. Map of INTOG AoS and exclusion areas**



"Figure 2

– Map showing the areas of search within Scottish waters for the Draft Plan for INTOG"

## 2.6 Other Offshore Wind Planning/Developments in Scotland

- 2.6.1 Robin Rigg<sup>30</sup>, Scotland's first offshore wind farm, was constructed in the Solway Firth and has been operational for over a decade. In addition to the strategic planning exercises administered by Scottish Ministers', two additional development zones in Scottish waters were identified by Crown Estate Round 3 in 2010 and have received consent for three projects: Moray East<sup>31</sup>, Moray West<sup>32</sup> and Seagreen<sup>33</sup>. Moray East and Seagreen are under construction. Moray East is anticipated to be fully operational by end August 2022 and Seagreen by early 2023<sup>34,35</sup>. Moray West has recently been offered a Contract for Difference (CfD) as part of the UK Government's latest CfD Allocation Round<sup>36</sup>. In addition to these three projects, Berwick Bank Offshore Wind Farm located in the outer Firth of Forth is in the pre-application stages and has the potential to deliver up to 4.1 GW of installed capacity, making it one of the largest offshore opportunities in the world<sup>37</sup>.
- 2.6.2 A number of demonstration projects have been developed or are in the process of development within Scottish Waters. The first of these, Beatrice Demonstration, served as an industry trial of deep water bottom-fixed foundations. It ceased operating during 2015 and subsequently closed in 2016<sup>38</sup>. The Levenmouth Demonstration Turbine<sup>39</sup> provided research opportunities to help drive cost reduction in offshore wind, whilst the Forthwind project<sup>40</sup> will test turbine technology. Forthwind has been consented but has recently applied for a different project in the same area. In addition, Dounreay

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<sup>30</sup> 4C Offshore (2022). Robin Rigg Offshore Wind Farm [online] Available at: <https://www.4c offshore.com/windfarms/united-kingdom/robin-rigg-united-kingdom-uk20.html> (accessed 23/06/2022)

<sup>31</sup> Moray East (2022). Moray East Offshore Wind Farm Project [online] Available at: <https://www.morayeast.com/project> (accessed 23/06/2022)

<sup>32</sup> Moray West (2022). Home Page [online] Available at: <https://www.moraywest.com/about-us/project> (accessed 23/06/2022)

<sup>33</sup> Seagreen Wind Energy (2022). Home page [online] Available at: <https://www.seagreenwindenergy.com/> (accessed 23/06/2022)

<sup>34</sup> Moray East Offshore Wind Farm (2022). Moray East Powering Scotland's Future through renewable energy [online] Available at: <https://www.morayeast.com/> (accessed 29/06/2022)

<sup>35</sup> Seagreen (2022) Building Scotland's largest offshore wind farm [online] Available at: <https://www.seagreenwindenergy.com/> (accessed 13/07/2022)

<sup>36</sup> Ocean Winds (2022) News & Articles [online] Available at: [https://www.oceanwinds.com/news/uncategorized/ocean-winds-awarded-cfd-for-its-moray-west-project/#:~:text=Ocean%20Winds%2C%20an%20international%20company,Wind%20Farm%20\(882%20MW\).](https://www.oceanwinds.com/news/uncategorized/ocean-winds-awarded-cfd-for-its-moray-west-project/#:~:text=Ocean%20Winds%2C%20an%20international%20company,Wind%20Farm%20(882%20MW).) (accessed 13/07/2022)

<sup>37</sup> SSE Renewables (2022) Berwick Bank Wind Farm [online] Available at: <https://www.berwickbank.com/> (accessed 11/07/2022)

<sup>38</sup> 4C Offshore (2022). Beatrice Demonstration Offshore Wind Farm [online] Available at: <https://www.4c offshore.com/windfarms/united-kingdom/beatrice-demonstration-united-kingdom-uk46.html> (accessed 23/06/2022)

<sup>39</sup> ORE Catapult (2022). 7MW Levenmouth Demonstration Turbine [online] Available at: <https://ore.catapult.org.uk/what-we-do/testing-validation/levenmouth/> (accessed 23/06/2022)

<sup>40</sup> Cierco (2022). Forthwind Project [online] Available at: <http://ciercoenergy.com/projects/> (accessed 23/06/2022)

Tri (also known as Pentland Floating Offshore Wind Demonstrator)<sup>41</sup>, Hywind Scotland Pilot Park (which later opened as Hywind Scotland)<sup>42</sup>, and Kincardine<sup>43</sup> were designated as Scottish Floating Demonstrations to further test and refine floating technologies. Dounreay Tri which has been consented has yet to be built out and is now part of a wider project known as Pentland/Highland. Also, it is understood that the Aberdeen Offshore Wind Farm (also known as European Offshore Wind Deployment Centre (EOWDC)), is an offshore deployment centre allowing offshore wind developers and supply chain companies to demonstrate technologies in a representative environment before commercial deployment<sup>44</sup>. It has 11 turbines with a capacity of 93.2 MW<sup>45</sup>.

- 2.6.3 As mentioned above in Section 2.2, three offshore wind farm sites were previously consented following the 2011 Sectoral Marine Plan for Offshore Wind in Scottish Territorial Waters: Beatrice, Inch Cape and Neart na Gaoithe). Of these, only Beatrice is operational. Table 1 provides a list of all consented offshore wind installations in Scotland.
- 2.6.4 All the sites and options that have come forward will be considered, where necessary, for the purpose of cumulative assessments within the forthcoming planning process.

**Table 1. Consented offshore wind installations in Scottish waters<sup>46</sup>**

Site	Location	Round or Development Category	Project Capacity (MW)	Status
Beatrice	Scotland, Highland – North Sea	Scottish Territorial Waters	588	Operational
Beatrice Demonstration	Scotland, Highland – North Sea	Deepwater Demonstration	10	Decommissioned

<sup>41</sup> Marine Scotland (2022). Dounreay Tri Floating Wind Demonstration Project [online] Available at: <https://marine.gov.scot/ml/dounreay-tri-floating-wind-demonstration-project> (accessed 23/06/2022)

<sup>42</sup> Equinor (2022). Hywind Scotland [online] Available at: <https://www.equinor.com/en/what-we-do/floating-wind/hywind-scotland.html> (accessed 23/06/2022)

<sup>43</sup> Cobra (2022). Kincardine Offshore Floating Wind Farm [online] Available at: <https://www.grupocobra.com/en/proyecto/kincardine-offshore-floating-wind-farm/> (accessed 23/06/2022)

<sup>44</sup> Vattenfall (2022). Aberdeen Offshore Wind Farm [online] Available at: <https://group.vattenfall.com/uk/what-we-do/our-projects/european-offshore-wind-deployment-centre> (accessed 23/06/2022)

<sup>45</sup> 4C Offshore (2022). Aberdeen (EOWDC) Offshore Wind Farm [online] Available at: [https://www.4coffshore.com/windfarms/united-kingdom/aberdeen-\(eowdc\)-united-kingdom-uk47.html](https://www.4coffshore.com/windfarms/united-kingdom/aberdeen-(eowdc)-united-kingdom-uk47.html) (accessed 23/06/2022)

<sup>46</sup> 4C Offshore (2022). Global Offshore Map [online] Available at: <https://www.4coffshore.com/offshorewind/> (accessed 23/06/2022)

Site	Location	Round or Development Category	Project Capacity (MW)	Status
Dounreay Tri (also known as Pentland Floating Offshore Wind Demonstrator)	Scotland, Highland – Scottish Continental Shelf (Fair Isle)	Scottish Floating Demonstration	12	Consented
Aberdeen (or EOWDC)	Scotland, Grampian – North Sea	Demonstration	93.2	Operational
Forthwind	Scotland, Fife – North Sea	Demonstration	29.9	Consented
Hywind Scotland Pilot Park (later opened as Hywind Scotland)	Scotland, Grampian – North Sea	Scottish Floating Demonstration	30	Operational
Inch Cape	Scotland, Tayside – North Sea	Scottish Territorial Waters	1,080	Consented
Kincardine – phase 1	Scotland, Aberdeenshire – North Sea	Scottish Floating Demonstration	2	Operational
Kincardine – phase 2	Scotland, Aberdeenshire – North Sea	Scottish Floating Demonstration	48	Operational
Levenmouth Demonstration Turbine	Scotland, Fife – North Sea	Demonstration	7	Operational
Moray East	Scotland, Highland – North Sea	Crown Estate Round 3, DECC SEA 2	950	Operational (fully operational August 2022)
Moray West	Scotland, Highland – North Sea	Crown Estate Round 3, DECC SEA 2	882	Consented
Near na Gaoithe	Scotland, Lothian - North Sea	Scottish Territorial Waters	448	Under construction
Robin Rigg	Scotland, Dumfries &	Crown Estate Round 1	174	Operational

Site	Location	Round or Development Category	Project Capacity (MW)	Status
	Galloway – Irish Sea			
Seagreen	Scotland, Tayside – North Sea	Crown Estate Round 3, DECC SEA 2	500	Under construction

### 3 Offshore wind technologies and the potential for environmental effects

#### 3.1 Introduction

- 3.1.1 To help inform the assessment, the following paragraphs set out an overview of possible technologies that could be deployed as a result of the Draft Plan alongside a summary of the environmental effects that could arise as a result of their implementation. This overview is based on current technologies that have reached, or are anticipated to reach, technological and commercial readiness in time for the expected implementation of the Draft Plan.
- 3.1.2 The following paragraphs should not be viewed as an exhaustive list of offshore wind technologies but rather as an indicative summary. Beyond the technologies discussed below, it is possible that other designs could emerge and reach technological and commercial readiness in time for deployment. It should also be noted that it is not within the remit of the Draft Plan and the accompanying SEA to determine the specific technologies that will be installed in the sites arising from the DPOs.
- 3.1.3 The basic components of an offshore wind installation associated with INTOG are<sup>47</sup>:
- wind turbine(s);
  - turbine foundation(s), including both bottom-fixed and floating;
  - cables, including export cables, array cables, connection cables from TOG projects to oil and gas platforms, and any associated cable protection;
  - offshore substation; and
  - onshore substation.
- 3.1.4 The potential for impacts can differ depending on the stage of development, such as those that may arise during construction, operation, and decommissioning<sup>48</sup>. It is also recognised that there is a distinction between potential environmental effects associated with IN projects and TOG projects. IN projects may be located in shallow waters but the AoS for TOG projects have a water depth that generally exceeds 100 m and, therefore, it is considered highly unlikely that bottom fixed foundation technologies will be used and more likely that floating technologies will be used. The following

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<sup>47</sup> The Crown Estate (2019). A Guide to an Offshore Wind Farm [online] Available at: <https://www.thecrownestate.co.uk/media/2860/guide-to-offshore-wind-farm-2019.pdf> (accessed 23/06/2022)

<sup>48</sup> OSPAR (2022). Offshore Renewables [online] Available at: <https://www.ospar.org/work-areas/eiha/offshore-renewables> (accessed 23/06/2022)

paragraphs provide a generic review of all the different technologies that might be involved and their potential environmental effects for either IN and/or TOG projects to ensure a worst case envelope of effects is considered. This will be further refined in the assessment stage of the SEA once further information on the location and details of the projects is available from individual lease applications.

## 3.2 Bottom-fixed technologies

- 3.2.1 Bottom-fixed foundations are likely to continue to remain viable options for deployment, although they may be a less likely option for projects that result from the Draft Plan. The most common types are monopile, gravity-based, and space frame (jacket and tripod) foundations<sup>49</sup>.
- 3.2.2 Monopile foundations are the most commonly used foundation type to date and are considered to be a proven technology by the offshore wind industry in water depths up to approximately 40m<sup>50</sup>. They comprise a cylindrical steel tube that is usually driven directly into the seabed or inserted into drilled sockets and grouted into place, depending on local ground conditions. Monopiles can also be adhered to the seabed via suction buckets or caissons. To date, monopiles have typically been deployed in shallow waters less than 30m in depth.
- 3.2.3 Jacket structure foundations are particularly suited to waters greater than 30m in depth and for supporting larger turbines<sup>51</sup>. Jackets can also be used in a wider range of ground conditions, where the ground is either too hard or too soft to suit monopiles. There are several different versions of jacket structures, including three legged, four legged, “twisted” and “true X-braced”. Three and four legged versions are currently the most widely used. Drilled and grouted piles or suction buckets or caissons can be used to attach jacket structures to the seabed depending on the ground conditions.
- 3.2.4 Gravity base foundations (GBS) are the least common design but have been used successfully in shallow waters and benign ground conditions. First-generation GBS were solid concrete structures, without cells or holes<sup>52</sup>. Later generations of GBS include holes or cells, which reduces their weight for transport and installation. Once the GBS structure is installed, the holes or cells are filled with ballast, achieving the final design weight that supports the design loads.

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<sup>49</sup> European Wind Energy Association (2013). Deep water – The next step for offshore wind energy [online] Available at: [http://www.ewea.org/fileadmin/files/library/publications/reports/Deep\\_Water.pdf](http://www.ewea.org/fileadmin/files/library/publications/reports/Deep_Water.pdf) (accessed 23/06/2022)

<sup>50</sup> The Crown Estate (2019). A Guide to an Offshore Wind Farm [online] Available at: <https://www.thecrownestate.co.uk/media/2860/guide-to-offshore-wind-farm-2019.pdf> (accessed 23/06/2022)

<sup>51</sup> *ibid*

<sup>52</sup> Esteban, D.M. et al. (2019). Gravity-Based Foundations in the Offshore Wind Sector. *Journal of Marine Science and Engineering* 7, 64: doi:10.3390/jmse7030064.

## 3.3 Floating technologies

- 3.3.1 At present, three floating offshore wind demonstration projects have received consent in Scotland: Dounreay Trì (also known as Pentland Floating Offshore Wind Demonstrator), Hywind Scotland and Kincardine. Of these three, Hywind Scotland, the first floating wind farm in the world, was officially opened and began delivering electricity to the Scottish grid in October 2017<sup>53</sup>. Kincardine was fully commissioned and operational in October 2021<sup>54,55</sup>. The outcome of the latest offshore wind leasing round, ScotWind, which was announced in January 2022 is for 11 new floating projects which will add a further 15 GW to the Scottish market<sup>56</sup>. Floating technology is, therefore, most likely to be the preferred option for projects that are proposed as a result of the Draft Plan.
- 3.3.2 Floating wind technologies are relatively recent innovations, and as such, are still undergoing a process of technological development. The Technology Readiness Level (TRL) index places a technology along a development spectrum from preliminary research (TRL 1) to comprehensive system demonstration (TRL 9)<sup>57</sup>. Based on this metric, three floating foundation designs are classified as technologically mature and could therefore be considered as possible candidates for deployment in deep waters around Scotland: the spar buoy, tension leg platform, and semi-submersible. Variants on these also exist, including multi-turbine foundations<sup>58</sup>.
- 3.3.3 The spar buoy design consists of a large cylindrical body that relies on ballast to remain upright and stable<sup>59</sup>. Stability is achieved by situating the centre of gravity lower in the water than the centre of buoyancy, with heavier components to the bottom of the structure and lighter elements nearer to or above the

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<sup>53</sup> Equinor (2017). World's first floating wind farm has started production [online] Available at: <https://www.equinor.com/en/news/worlds-first-floating-wind-farm-started-production.html> (accessed 25/06/2022)

<sup>54</sup> 4C Offshore (2022). Kincardine - phase 1 Floating Wind Farm [online] Available at: <https://www.4coffshore.com/windfarms/united-kingdom/kincardine---phase-1-united-kingdom-uk2h.html> (accessed 29/06/2022).

<sup>55</sup> 4C Offshore (2022). Kincardine - phase 2 Floating Wind Farm [online] Available at: <https://www.4coffshore.com/windfarms/united-kingdom/kincardine---phase-2-united-kingdom-uk4n.html> (accessed 29/06/2022)

<sup>56</sup> Offshore Wind Scotland (2022). Welcome to Offshore Wind Scotland [online] Available at: <https://www.offshorewindscotland.org.uk/> (accessed 29/06/2022)

<sup>57</sup> CATAPULT (2015). Floating wind: technology assessment – Interim findings [online] Available at: <https://ore.catapult.org.uk/app/uploads/2018/01/Floating-wind-technology-assessment-June-2015.pdf> (accessed 25/06/2022)

<sup>58</sup> International Renewable Energy Association (2016). Floating Foundations: A Game Changer for Offshore Wind Power [online] Available at: [https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2016/IRENA\\_Offshore\\_Wind\\_Floating\\_Foundations\\_2016.pdf](https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2016/IRENA_Offshore_Wind_Floating_Foundations_2016.pdf) (accessed 25/06/2022)

<sup>59</sup> European Wind Energy Association (2013). Deep water – The next step for offshore wind energy [online] Available at: [http://www.ewea.org/fileadmin/files/library/publications/reports/Deep\\_Water.pdf](http://www.ewea.org/fileadmin/files/library/publications/reports/Deep_Water.pdf) (accessed 25/06/2022)

surface<sup>60</sup>. The fully commissioned Hywind Scotland uses a spar buoy concept developed by Equinor (previously Statoil)<sup>61</sup>.

- 3.3.4 The tension leg platform involves tethering a highly buoyant platform to the seabed using tensioned tendons attached to a central column and arms<sup>62</sup>. The tendons are kept in place by suction or piled anchors. The downward force of the tendons offsets the excessive buoyancy of the platform, keeping the installation steady in the water<sup>63</sup>.
- 3.3.5 The semi-submersible platform merges elements of the preceding two concepts by combining a structure made up of columns linked by connecting bracings and submerged pontoons with catenary or taut spread mooring lines and drag anchors<sup>64</sup>.
- 3.3.6 All three types of foundation are 'turbine agnostic', which means that theoretically they can accommodate any type of turbine<sup>65</sup>. However, research is being undertaken to determine if outfitting floating foundations with bespoke turbines could help optimise performance and reduce costs<sup>66</sup>.
- 3.3.7 Although these represent the most mature designs, it is possible that less advanced designs may achieve technological and commercial readiness in time for deployment. Additional floating foundation designs and new concepts may also emerge and evolve to become candidates for deployment.

## 3.4 Potential environmental effects

- 3.4.1 A summary of the key effects of both conventional bottom fixed technologies and floating technologies is presented below against each SEA topic. This summary is based on the assessment of environmental effects included in the SEA that was previously undertaken for the 2020 Sectoral Marine Plan for

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<sup>60</sup> Carbon Trust (2015). Floating Offshore Wind: Market and Technology Review [online] Available at: <https://www.carbontrust.com/resources/floating-offshore-wind-market-technology-review> (accessed 25/06/2022)

<sup>61</sup> 4C Offshore (2022). Hywind Scotland Pilot Park Offshore Wind Farm [online] Available at: <http://www.4coffshore.com/windfarms/hywind-scotland-pilot-park-united-kingdom-uk76.html> (accessed 25/06/2022)

<sup>62</sup> International Renewable Energy Agency (2016). Floating Foundations: A Game Changer for Offshore Wind Power [online] Available at: [https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2016/IRENA\\_Offshore\\_Wind\\_Floating\\_Foundations\\_2016.pdf](https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2016/IRENA_Offshore_Wind_Floating_Foundations_2016.pdf) (accessed 25/06/2022)

<sup>63</sup> Muelhner, E. (2017). Tension Leg Platform (TLP) – Encyclopedia of Maritime and Offshore Engineering [online] Available at: <http://onlinelibrary.wiley.com/doi/10.1002/9781118476406.emoe400.abstract.jsessionid=D3E0027CCB57F4D0137AAB67FE0AB443.f03t02?userIsAuthenticated=false&deniedAccessCustomisedMessage=> (accessed 11/07/2022)

<sup>64</sup> International Renewable Energy Agency (2016). Floating Foundations: A Game Changer for Offshore Wind Power [online] Available at: [https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2016/IRENA\\_Offshore\\_Wind\\_Floating\\_Foundations\\_2016.pdf](https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2016/IRENA_Offshore_Wind_Floating_Foundations_2016.pdf) (accessed 11/07/2022)

<sup>65</sup> Carbon Trust (2015). Floating Offshore Wind Market Technology Review [online] Available at: <https://www.carbontrust.com/resources/floating-offshore-wind-market-technology-review> (accessed 11/07/2022)

<sup>66</sup> *ibid*

Offshore Wind Energy<sup>67</sup>. The key effects are generally similar between all technologies, with the largest differences between fixed bottom and floating wind regarding effects on benthic habitat, and potential reductions in the size of piles or amount of piling required during construction. The distinction between potential environmental effects associated with IN projects and TOG projects is also considered in the following paragraphs.

## Biodiversity, Flora and Fauna

### Benthic habitats and species

- 3.4.2 There is the potential for habitat loss or disturbance to benthic communities during installation, decommissioning and continued disturbance during operation due to maintenance and repair activities. This could be especially detrimental to sensitive/designated habitats such as reefs and their associated species which may take time to recover. Seabed habitat would be lost from the placement of devices and support structures on the seabed required by any of the turbine technologies. Gravity-base foundations would potentially have the greatest negative effect by directly placing large blocks on/into the seabed. There is also the potential for adverse effects from sourcing of fill or dredged material for use in the gravity-based foundation. This could potentially affect marine fauna from dredging activities, turbidity and habitat disturbance. Floating technologies would have the smallest effect, with the loss of small, discreet areas of benthic habitat associated with the placement of gravity anchors significantly smaller than that associated with fixed bottom technology. However, chains attaching the floating structures to the seafloor should also be considered because they may have an effect over a much wider area and would be a continual disturbance during operation.
- 3.4.3 There is the potential for noise impacts during surveys, clearance of unexploded ordnance, installation and decommissioning for any of the offshore wind technologies, in particular from the particle motion element of noise which benthic species are known to be more sensitive to. There are also potential effects on benthic invertebrates from induced electromagnetic fields (EMF) associated with operational cables. There is, for example, some evidence to suggest the potential for EMF associated with cabling and grid connection infrastructure to affect the early life history of crustaceans, which may have consequent effects on population dynamics<sup>68</sup>.

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<sup>67</sup> Scottish Government (2019). Offshore wind energy - draft sectoral marine plan: strategic environmental assessment [online] Available at: <https://www.gov.scot/publications/draft-sectoral-marine-plan-offshore-wind-energy-strategic-environmental-assessment/pages/15/> (accessed 11/07/2022)

<sup>68</sup> Harsanyi, P.; Scott, K.; Easton, B.A.A.; de la Cruz Ortiz, G.; Chapman, E.C.N.; Piper, A.J.R.; Rochas, C.M.V.; Lyndon, A.R. The Effects of Anthropogenic Electromagnetic Fields (EMF) on the Early Development of Two Commercially Important Crustaceans, European Lobster, *Homarus gammarus* (L.) and Edible Crab, *Cancer pagurus* (L.). J. Mar. Sci. Eng. 2022, 10, 564. <https://doi.org/10.3390/jmse10050564>

- 3.4.4 Seabed disturbances from export and interarray cable installation activities are considered temporary and have a relatively limited effect through resuspension of sediments, loss of habitat, trenching in intertidal environments and potential damage to stony or rocky reef in areas of hard substrate. Where cables are buried, it is generally anticipated that the seabed will return to its original state. Where cable protection measures are required this can result in a permanent loss or change of habitat.
- 3.4.5 Indirect adverse effects to benthic habitats may also occur. Particularly sensitive habitats such as shellfish growing waters or fish spawning grounds could be damaged from sediment dispersion and deposition in the construction and decommissioning phases of work.
- 3.4.6 It is anticipated that many of the construction and decommissioning effects may be temporary and reversible (i.e. removal of the gravity base structure, support structures, caissons or gravity anchors and rehabilitation of the seabed).
- 3.4.7 Wind turbines, of any technological design, have the potential for creating artificial habitats for marine organisms resulting from the presence of new structures. These may change the existing habitat type. They may also provide benefits through the provision of hard substrate for colonising organisms<sup>69</sup> which could last for the life of the project, or potentially longer depending on the decommissioning scheme. This impact pathway may lead to fish aggregation effects around turbine foundations and structures which in turn may lead to possible impacts on trophic food webs for fish species, marine mammals and birds. These impacts have the potential to be either beneficial or adverse<sup>70</sup>. There is also a risk of invasive species becoming established<sup>71</sup>.
- 3.4.8 There could also be a positive change from the reduction in commercial fishing (e.g. trawling) in areas where wind farms are sited, which may enhance biodiversity. For example species and habitats vulnerable to fishing activities, such as the fan mussel beds are highly sensitive to mechanical damage from mobile fishing gear, particularly trawling for *Nephrops* and, to a lesser degree, damage from creels<sup>72</sup>. The Feature Activity Sensitivity Tool (FEAST) provides information on the sensitivity of benthic habitat and species to various activities and pressures<sup>73</sup>.

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<sup>69</sup> Lindeboom, H.J. et. al. (2011). Short-term ecological effects of an offshore wind farm in the Dutch coastal zone; a compilation – in *Environmental Research Letters* [online] Available at: <http://iopscience.iop.org/article/10.1088/1748-9326/6/3/035101/meta> (accessed 11/07/2022)

<sup>70</sup> Stenberg, Claus, Støttrup, J.G., Deurs, Mikael, Berg, C.W., Dinesen, Grete, Mosegaard, Henrik, Grome, T., Leonhard, S. (2015). Long-term effects of an offshore wind farm in the North Sea on fish communities. *Marine Ecology Progress Series*. 528. 257–265. 10.3354/meps11261.

<sup>71</sup> IUCN (2010). Greening blue energy [online] Available at: <https://www.iucn.org/content/greening-blue-energy-identifying-and-managing-biodiversity-risks-and-opportunities-offshore-renewable-energy-0> (accessed 11/07/2022)

<sup>72</sup> Marine Scotland (2011) Scotland's Marine Atlas: Information for The National Marine Plan [online] Available at: <https://www.gov.scot/publications/scotlands-marine-atlas-information-national-marine-plan/> (accessed 11/07/2022)

<sup>73</sup> The Scottish Government (2013). FEAST – Feature Activity Sensitivity Tool. [online] Available at: <http://www.marine.scotland.gov.uk/feast/> (accessed 11/07/2022)

### 3.4.9

#### Marine mammals and fish

- 3.4.10 The underwater noise and vibration created during surveys, clearance of unexploded ordnance, installation and decommissioning for any of the offshore wind technologies, has the potential to affect marine fauna such as seals, otters, cetaceans, fish and basking sharks, as well as predator/prey relationships. There will be a difference in magnitude between the different technologies as the technologies which involve piling will have a greater noise and vibration effect. There is also the possibility for cumulative effects from multiple noise sources audible to marine mammals and fish during installation and increased vessel disturbance. The noise during the construction and decommissioning phases could cause behavioural responses, displacement from natural habitats and feeding areas, physical injuries to hearing organs and potentially lethal effects.
- 3.4.11 Relating to all the technologies, there is the possibility of habitat loss, exclusion, displacement or disturbance of marine mammals and fish, as well as changes in predator/prey relationships, during device installation, operation and decommissioning. This would occur through a combination of factors including noise (and multiple noise sources), vibration, visual and light intensity changes, water quality changes, habitat disturbance or the increased presence of structures and vessels. All these potential impacts could be particularly detrimental to bottom dwelling species such as sandeel, which are important prey species for birds, marine mammals and fish.
- 3.4.12 Spawning and nursery grounds could also be affected by habitat loss and disturbance during installation, maintenance and decommissioning phases of development. Anthropogenic noises, vibrations from pile driving, water quality changes and light intensity changes pose a potential risk of disturbance, damage and/or mortality to spawning and juvenile fish.
- 3.4.13 There is also the possibility of increased suspended sediment during construction and decommissioning causing sediment deposition affecting bottom dwelling and spawning species such as sandeel, herring, fish eggs or larvae, as well as benthic prey species for marine mammals and fish.
- 3.4.14 Similarly, with regard to all offshore wind technologies, there is a potential risk of injury to marine mammals through collisions with submerged structures and associated cabling or effects during the installation, maintenance and decommissioning periods (i.e. risk of injury to seals and cetaceans during placement of foundations). There is also the potential for entanglement with derelict or discarded fishing gear around mooring lines of floating structures.
- 3.4.15 There is the potential for induced EMF associated with cabling and grid connection infrastructure to affect the behaviour and migratory patterns of some

fish and marine mammal species<sup>74,75</sup>. However, the evidence about sensitivity of species is generally considered to be scarce and uncertainties concerning EMF effects remain<sup>76,77</sup>.

- 3.4.16 Cumulative effects may also occur, particularly affecting mammals and migratory fish, which have the potential to be present throughout Scottish waters, from an increased number of barriers affecting movement such as device arrays, construction vessels and equipment.
- 3.4.17 Artificial habitats could potentially be created due to the presence of submerged infrastructure, including mooring lines/cables, which may benefit marine mammals and fish<sup>78</sup> and/or result in a potential adverse effect through shifts in predator/prey relationships<sup>79</sup>.
- 3.4.18 There could also be a positive change from the reduction in commercial fishing (e.g. trawling) in areas where wind farms are sited, which may enhance benthic habitats and species, and in turn help support fish and marine mammals.

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<sup>74</sup> Gill, A.B. and M. Desender. 2020. Risk to Animals from Electro-magnetic Fields Emitted by Electric Cables and Marine Renewable Energy Devices. In A.E. Copping and L.G. Hemery (Eds.), OES-Environmental 2020 State of the Science Report: Environmental Effects of Marine Renewable Energy Development Around the World. Report for Ocean Energy Systems (OES). (pp. 86-10). DOI: 10.2172/1633088.

<sup>75</sup> OES-Environmental (2020) Potential Environmental Effects on Animals from Marine Renewable Energy: Electromagnetic Fields [online] Available at: <https://tethys.pnnl.gov/summaries/short-science-summary-electromagnetic-fields-2020> (accessed 11/07/2022)

<sup>76</sup> Taormina, B., Bald, J., Want, A., Thouzeau, G., Lejart, M., Desroy, N., and Carlier, A. 2018. A review of potential impacts of submarine power cables on the marine environment: Knowledge gaps, recommendations and future directions. Renewable and Sustainable Energy Reviews, 96, 380-391. doi:10.1016/j.rser.2018.07.026 [online] Available at: <https://tethys.pnnl.gov/publications/review-potential-impacts-submarine-power-cables-marine-environment-knowledge-gaps> (accessed 12/07/2022)

<sup>78</sup> Stenberg, Claus, Støttrup, J.G., Deurs, Mikael, Berg, C.W., Dinesen, Grete, Mosegaard, Henrik, Grome, T., Leonhard, S. (2015). Long-term effects of an offshore wind farm in the North Sea on fish communities. Marine Ecology Progress Series. 528. 257–265. 10.3354/meps11261.

<sup>79</sup> ESS Group Inc (2006) Potential Impacts to Predator-Prey Relationships as a Result of the Proposed Cape Wind Project in Nantucket Sound [online] Available at: <https://tethys.pnnl.gov/publications/potential-impacts-predator-prey-relationships-result-proposed-cape-wind-project> (accessed 16/09/2022)

## Birds and bats

- 3.4.19 A number of studies have investigated the collision risks to birds from offshore wind turbines<sup>80,81,82,83,84,85,86</sup>. Many of these studies concur that collision risk is influenced by various factors but is largely driven by the proportion of birds flying at collision risk height<sup>87</sup>.
- 3.4.20 Some bird species are considered to be at a lower risk of collision as they typically fly at low altitudes (above the sea surface and below the swept area of the turbines)<sup>88</sup>. However, other bird species (such as large gulls and gannets) have a higher potential collision risk, as they typically fly at higher altitudes and travel large distances between breeding and wintering grounds.
- 3.4.21 Other research suggests that birds adapt their flight paths to avoid collision with turbines<sup>89,90</sup> with generally very high avoidance of turbines exhibited by seabirds<sup>91</sup>. Overall, the majority of birds on migration through Scottish waters are not considered to be at risk of significant levels of additional mortality due to collisions with Scottish offshore wind farms<sup>92</sup>. Possible exceptions are large gulls, cormorant and common tern. The ORJIP Bird Collision Avoidance Study compiled an extensive dataset of observations of bird behaviour in and around an operational offshore wind farm, concluding that the target species (Northern Gannet, Lesser Black-backed Gull, Herring Gull, Great Black-backed Gull and Black-legged Kittiwake) exhibit behaviour that significantly reduces risk of those

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<sup>80</sup> Krijgsveld, K.L., R. Lensink, H. Schekkerman, P. Wiersma, M.J.M. Poot, E.H.W.G. Meesters, S. Dirksen (2005). Baseline studies North Sea wind farms: fluxes, flight paths and altitudes of flying birds 2003 - 2004. Report 05-041. Bureau Waardenburg, Culemborg.

<sup>81</sup> Krijgsveld, K.L., R.C. Fijn, M. Japink, P.W. van Horssen, C. Heunks, M.P. Collier, M.J.M. Poot, D. Beuker, S. Dirksen (2011). Effect studies Offshore Wind farm Egmond aan Zee: Final report on fluxes, flight altitudes and behaviour of flying birds. Report 10-219. Bureau Waardenburg, Culemborg

<sup>82</sup> Cook, A.S., Johnston, A., Wright, L.J., and Burton, N.H. (2012). A review of flight heights and avoidance rates of birds in relation to offshore wind farms. Strategic Ornithological Support Services: Project SOSS-02. BTO and The Crown Estate.

<sup>83</sup> Furness, R.W., Wade, H.M., Masden E.A. (2013). Assessing vulnerability of marine bird populations to offshore wind farms. *Journal of Environmental Management*. 119; 56-66.

<sup>84</sup> Bradbury, G., Trinder, M., Furness, B., Banks, A.N., Caldow, R.W.G., Hume, D. (2014). Mapping Seabird Sensitivity to Offshore Wind Farms. *PLoS ONE* 9(9): e106366. <https://doi.org/10.1371/journal.pone.0106366>.

<sup>85</sup> Johnston, A., Cook, A., Wright, L., Humphreys, E., Burton, N. (2014). Modelling flight heights of marine birds to more accurately assess collision risk with offshore wind turbines. *Journal of Applied Ecology* 51, 31–41.

<sup>86</sup> Cook, A.S., Ward, R.M., Hansen, W.S., Larsen, L. (2018). Estimating Seabird Flight Height using LiDAR *Scottish Marine and Freshwater Science* Vol 9 No 14, 59pp. DOI: 10.7489/12131-1.

<sup>87</sup> Furness, R.W., Wade, H.M., Masden E.A. (2013). Assessing vulnerability of marine bird populations to offshore wind farms. *Journal of Environmental Management*. 119; 56-66.

<sup>88</sup> Jongbloed, R.H. (2016). Flight height of seabirds. A literature study IMARES. Report C024/16.

<sup>89</sup> *ibid*

<sup>90</sup> RPS (2021) Why a bird behaviour study is changing how we think about offshore wind development [online] Available at: <https://www.rpsgroup.com/insights/energy-research-and-development/a-bird-behaviour-study-is-changing-how-we-think-about-offshore-wind-development/> (accessed 14/09/2022)

<sup>91</sup> Skov, H., Heinänen, S., Norman, T., Ward, R.M., Méndez-Roldán, S., Ellis, I. (2018). ORJIP Bird Collision and Avoidance Study. Final report – April 2018. The Carbon Trust. 247 pp.

<sup>92</sup> WWT (2014). Strategic assessment of collision risk of Scottish offshore wind farms to migrating birds. *Scottish Marine and Freshwater Science Report* Vol 5 No 12.

seabird species colliding<sup>93</sup>. It is recognised that a fuller understanding of bird collision risk requires site-specific baseline data to inform models and the assessment<sup>94</sup>.

- 3.4.22 Diving birds could potentially collide with support devices (i.e. mooring cables or anchors if used for floating technologies) or become entangled (e.g. with derelict or discarded fishing gear around mooring lines of floating structures). However, this is likely to be site and device-specific, and the likelihood of occurrence is not currently known.
- 3.4.23 Furthermore, there is the potential to disturb diving birds foraging areas during installation, operation and decommissioning due to underwater noise, surface noise, visual and light intensity changes, water quality changes, habitat disturbance or the presence of structures and vessels.
- 3.4.24 Seabirds could also be affected by offshore transmission infrastructure components<sup>95</sup>. Installation, maintenance and decommissioning activities could potentially cause a loss of prey species in offshore feeding grounds leading to increased foraging distances or reducing foraging success. There is also the potential for displacement of bird species from offshore foraging areas to other areas due to disturbance during the construction, maintenance and decommissioning phases. There is also the potential for birds to be disturbed or attracted by light during operation which could increase the potential for collision or result in displacement to less suitable habitats.
- 3.4.25 Anecdotal evidence, and increasing numbers of localised studies, show bats of several species feeding up to 10 km offshore, and occasionally even beyond that, as well as being observed resting/ roosting on offshore installations<sup>96</sup>. Bats that use offshore routes on their migrations, may also interact with turbines and be at risk of collision. In Scotland, the only migrating species that has the potential to be affected is *Nathusius pipistrelles*.

## Ecosystem change

- 3.4.26 There is the potential for changes in primary productivity and biogeochemical processes through changes to physical processes and mixing/stratification to result in knock on impacts on higher trophic levels (fish, top predators etc.) and overall biological/ecosystem processes. This is particularly relevant to wind farms in deeper shelf seas (perhaps using floating foundation types) which

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<sup>93</sup> Skov, H., Heinänen, S., Norman, T., Ward, R.M., Méndez-Roldán, S., Ellis, I. (2018). ORJIP Bird Collision and Avoidance Study. Final report – April 2018. The Carbon Trust. United Kingdom. 247 pp.

<sup>94</sup> Bowgen, K., and Cook, A. 2018. Bird collision avoidance: Empirical evidence and impact assessments. JNCC Report No. 614, JNCC, Peterborough, ISSN 0963-8091

<sup>95</sup> Scottish Government (2019). Offshore wind energy - draft sectoral marine plan: strategic environmental assessment [online] Available at: <https://www.gov.scot/publications/draft-sectoral-marine-plan-offshore-wind-energy-strategic-environmental-assessment/pages/15/> (accessed 11/07/2022)

<sup>96</sup> Ahlen, I., Bach, L. Baagøe H.J and Pettersson J. (2007) Bats and offshore wind turbines studied in southern Scandinavia. Swedish Environmental Protection Agency.

undergo seasonal stratification, as the turbulent wakes behind structures (especially floating structures penetrating a thermocline) could alter the extent and timing of seasonal stratification<sup>97,98</sup>.

## Population and Human Health

- 3.4.27 All the offshore wind turbine technologies would provide a new renewable energy supply for the operational life of the project. Therefore, the potential effects on energy supply are the same across the different technologies.
- 3.4.28 There is the possibility of shadow flicker and noise effects, if the array is located near-shore, which could be relevant for IN projects, although such effects may not be significant in the context of most offshore wind farms due to their distance from human settlements<sup>99</sup>.
- 3.4.29 Other marine users (i.e. fishing, recreational, shipping, aquaculture) could be affected by the implementation of IN projects in undeveloped areas of the sea as a result of the adoption of INTOG. This could include the potential displacement of these activities, the risk of collision with turbine structures, and visual effects associated with the presence of the turbines. Upon decommissioning, these effects are likely to be reversible.
- 3.4.30 There is the potential for the implementation of IN projects in new areas of the sea to result in issues for navigation, although it is noted that this may be managed through the selection of appropriate sites and consultation with the Maritime and Coastguard Agency (MCA) and Northern Lighthouse Board to ensure that there are no unacceptable risks to commercial or recreational shipping.
- 3.4.31 Recreational and commercial activities could be temporarily affected by the installation, maintenance and decommissioning of new transmission infrastructure to connect the devices to the grid (i.e. cables on the seabed, terrestrial infrastructure)<sup>100</sup>.
- 3.4.32 Construction vessels, cable excavation vessels, maintenance activities and helicopter flights may affect other marine user's transit routes (e.g. dredging, oil and gas operations and freight), increasing navigational risk, particularly during the installation, maintenance and construction phases.

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<sup>97</sup> Dorrell, R. M., Lloyd, C. J., Lincoln, B. J., Rippeth, T. P., Taylor, J. R., Caulfield, C. P., Sharples, J., Polton, J. A., Scannell, B. D., Greaves, D. M., Hall, R. A., & Simpson, J. H. (2022). Anthropogenic Mixing in Seasonally Stratified Shelf Seas by Offshore Wind Farm Infrastructure. *Frontiers in Marine Science*, 9. <https://doi.org/10.3389/fmars.2022.830927>

<sup>98</sup> Christiansen, N., Daewel, U., Djath, B., & Schrum, C. (2022). Emergence of Large-Scale Hydrodynamic Structures Due to Atmospheric Offshore Wind Farm Wakes. *Frontiers in Marine Science*, 9. <https://doi.org/10.3389/fmars.2022.818501>

<sup>100</sup> Scottish Government (2019). Offshore wind energy - draft sectoral marine plan: strategic environmental assessment [online] Available at: <https://www.gov.scot/publications/draft-sectoral-marine-plan-offshore-wind-energy-strategic-environmental-assessment/pages/15/> (accessed 11/07/2022)

3.4.33 There is also the potential for interference with communications due to EMF.

### Soil (Marine Geology and Coastal Processes)

- 3.4.34 There is the potential that any of the technologies could have a direct adverse effect to the seabed from the installation, operation or decommissioning processes. There will be a difference in magnitude between the technologies depending on their location. Gravity-base and mono or multi-caisson foundations involve preparation of the seabed (dredging) and then the placement of heavy foundations and associated scour protection, technologies with monopile or multi-pile and tripod or steel jacket foundations require piling operations and floating technologies need anchors and moorings placed directly on the seabed, or could involve the use of piles.
- 3.4.35 All the technologies could potentially alter the sediment dynamics, tidal flows/fluxes and waves due to the presence of devices in the water column.
- 3.4.36 Effects such as deposition and abrasion may also occur due to the installation and decommissioning processes. The effects of scouring will primarily happen during the operational phase. However, there is the possibility of using scour protection for gravity-base and mono or multi-caisson foundation structures to alleviate risks. Scour protection creates an additional footprint, so it would only be used where it is considered necessary. Deeper water locations, which may be more relevant for projects that fall under the Draft Plan, would be less likely to need scour protection.
- 3.4.37 Effects from construction and decommissioning works, for all the technologies, are likely to be temporary. Also, the effects from seabed preparation works for gravity-base foundations and mono or multi-caisson foundations are likely to be temporary because they are usually required in geomorphologically active areas.
- 3.4.38 Gravity-base foundations have additional effects due to the sourcing of fill or dredged material to fill their base. If marine fill or dredged material is used, potential effects at the source may include: loss of substrata or habitat if taken from suitable undisturbed areas; and potential effects on hydrodynamics and water flows at the source location from the removal of sediments. If material is sourced from the terrestrial environment it will have effects associated with the removal of material and its transportation.

### Water Quality

- 3.4.39 There is a potential effect on water quality during the installation, operation and decommissioning processes, from all of the technologies, due to increased turbidity, seabed disturbance and contamination from installation, maintenance and decommissioning equipment and vessels. It is likely the magnitude of the effects will differ between the technologies. The placement of gravity-based supports and concrete foundations for the placement of caissons will have

different effects on water quality compared to piling activities. In terms of floating foundation types, the anchors and mooring lines which may be in contact with the seabed have the potential to affect water quality. Cable installation will also alter the water quality by re-suspending seabed sediments into the water column, increasing turbidity levels. The level of disturbance largely depends on the equipment being used, but the majority of sediment deposition would occur in a relatively restricted area. There is also the possibility of remobilising contaminants, especially if the cable route passes through areas of muddy sediment with high levels of anthropogenic activity.

- 3.4.40 There is potential for the requirement of dredged material for gravity base foundations, which may affect water quality through increased turbidity from sediment disturbance during dredging operations.
- 3.4.41 The construction and decommissioning effects are temporary and may be reversible, and this is true for all technologies.
- 3.4.42 The development of offshore transmission infrastructure, subsea transmission cables and landfall and transition pits all have the potential to impact similarly on water quality. This includes having the potential to cause the re-suspension of sediments and any associated hazardous substances due to excavation during installation and major repair activities, and the potential to cause accidental spillages from construction vessels and structures during operation. During construction, maintenance and decommissioning activities, there is potential for water contamination from oil or other harmful substances. This would have associated risks to humans and riparian ecology. There is the potential for sedimentation and increased turbidity of watercourses in areas where vegetation has been cleared.

### Climatic Factors

- 3.4.43 All the technologies would bring benefits due to their contribution to renewable electricity generation. In addition, the electrification of offshore oil and gas platforms and replacement of hydrocarbon power with offshore wind energy will result in a reduction in CO<sub>2</sub> emissions. The extent of the benefits would depend on the scale and duration of developments. However, it is also important to note the possible effect on blue carbon. Habitats such as seagrass meadows, saltmarsh and maerl beds are valuable carbon sinks and if they are degraded or damaged by offshore wind developments and their carbon sink reduced, the resulting increase in CO<sub>2</sub> emissions will contribute to further climate change.
- 3.4.44 Construction vessel and vehicle emissions used to complete the transmission infrastructure have the potential to affect air quality, and subsequently human health, as well as contribute to greenhouse emissions. The future possible electrification of offshore wind farm vessels may reduce the potential effects on local air quality as well as potential water quality effects associated with the

effluent from exhaust scrubbers. It would also contribute towards the decarbonisation of the industry.

### Cultural Heritage

- 3.4.45 There is the potential for installation, operation and decommissioning to affect known historic sites and their exclusion zones, including protected sites (e.g. World Heritage (WHS) sites), coastal listed buildings such as lighthouses, scheduled monuments and other unknown, submerged or non-designated archaeological assets features or paleo-landscapes. Development has the potential to directly disturb, damage or destroy submarine and coastal archaeological remains during device installation and cable trenching. There is also potential for scouring, siltation and deposition to occur around culturally important sites located in the vicinity of developments.
- 3.4.46 There is the potential for the offshore transmission infrastructure to cause loss of or damage to known or unknown buried heritage from construction and maintenance/repair activities.

### Landscape, Seascape and Visual Amenity

- 3.4.47 There is the potential for turbines and their supporting infrastructure (i.e. additional platforms, construction, maintenance or decommissioning vessels and equipment) associated with any of the offshore wind technologies, to adversely affect sensitive landscape and visual receptors such as designated or valued landscapes/seascapes. In general, greater effects are likely for near-shore devices which are only potentially relevant for the IN projects, compared to those located further offshore which are relevant for both IN projects and TOG projects, and also for larger turbines (with greater height and thus greater visibility).
- 3.4.48 Field observations of offshore wind facilities in the UK revealed that the turbines may be visible at distances of 26 miles (42 km) in daytime and 24 miles (39 km) in night-time. They may be a focus of visual attention at distances of up to 10 miles (16 km)<sup>101</sup>. These distances will be influenced by the turbine height, with smaller turbines less visible / intrusive to landscape or seascape receptors. The shape of arrays relative to the coastline also influences visual impact.
- 3.4.49 Onshore and offshore transmission infrastructure components also have the potential to alter the landscape and seascape respectively. Construction activities, including temporary lighting and construction plants may temporarily affect visual receptors.

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<sup>101</sup> Sullivan, R., Kirchler, L., Cothren, J., Winters, S. (2013). Offshore Wind Turbine Visibility and Visual Impact Threshold Distances. *Environmental Practice* 15, 33-49.

### Cumulative effects

- 3.4.50 There is also the potential for cumulative effects on receptors, due to multiple offshore wind arrays, as well as in combination with other types of plans, projects and activities. These could include cumulative effects on key mobile receptors (e.g. marine mammals, fish and birds) and prey species through displacement or physical injury, issues of navigational safety, aviation and collision risk, effects on subsea geology, sediments, and coastal processes, as well as temporary and longer-term effects on landscape and coastal character and visual receptors
- 3.4.51 It is also recognised that there may be some potential for shared infrastructure between existing offshore wind farm sites and new developments where capacity is available, therefore reducing effects from export cable installation.

## 4 The approach to the assessment

### 4.1 Purpose and scope of the assessment

- 4.1.1 The purpose of this section of the report is to determine the likelihood, nature, and significance of any environmental effects that may arise in the AoS identified as part of the development of a new Draft Plan.
- 4.1.2 As discussed earlier in Section 1.2, this joint Screening and Scoping Report represents one component of a wider assessment process that will also involve the gathering of socio-economic information, the production of an HRA, and a round of public consultation.

Relationship between this SEA and previous assessments

- 4.1.3 A considerable amount of work has already been undertaken to explore the environmental effects of a range of activities associated with offshore wind development within the UK and Scottish marine environment. Of particular relevance are the SEAs that were previously undertaken for the previous 2011 Sectoral Marine Plan for Offshore Wind Energy<sup>102</sup>, its 2013 review<sup>103</sup>, and the existing 2020 Sectoral Marine Plan for Offshore Wind Energy<sup>104</sup>.
- 4.1.4 It is expected that the SEA of the Draft Plan will update and build upon, rather than duplicate, the information and findings of the respective Environmental Reports that were produced as part of these preceding assessments. Taking this approach should help to ensure consistency in the assessment of offshore wind energy development in Scotland.
- 4.1.5 The latest evidence regarding environmental effects of offshore wind farm development, mitigation of effects and spatial data on mobile species' distribution and functional use of the sea space from available research and monitoring results will also inform the SEA of the Draft Plan. These include outputs from the ScotMER (formerly SpORRAn) process and other research programmes, such as the Offshore Renewables Joint Industry Programme

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<sup>102</sup> Scottish Government (2010) Strategic Environmental Assessment (SEA) of Draft Plan for Offshore Wind Energy in Scottish Territorial Waters: Volume 1: Environmental Report

<sup>103</sup> Scottish Government (2013) Planning Scotland's Seas: SEA of Plans for Wind, Wave and Tidal Power in Scottish Marine Waters Environmental Report [online] Available at: <https://www.gov.scot/publications/draft-sectoral-marine-plans-offshore-renewable-energy-scottish-waters-strategic/pages/11/> (accessed 11/07/2022)

<sup>104</sup> Scottish Government (2019). Offshore wind energy - draft sectoral marine plan: strategic environmental assessment [online] Available at: <https://www.gov.scot/publications/draft-sectoral-marine-plan-offshore-wind-energy-strategic-environmental-assessment/pages/15/> (accessed 11/07/2022)

(ORJIP), The Crown Estate's Offshore Wind Evidence and Change Programme (OWEC)<sup>105</sup> and the current and past BEIS Offshore Energy SEAs<sup>106</sup>.

4.1.6 Other relevant sources of information include the previous and ongoing marine SEAs that have been prepared by the Scottish Government. This includes:

- the designation of Nature Conservation MPAs (assessed in 2013)<sup>107</sup>;
- phase one (assessed in 2014)<sup>108,109</sup> and proposals for phase two management measures for inshore MPAs (due to be assessed);
- the designation of an additional suite of marine SPAs (assessed in 2018)<sup>110</sup>;
- the designation of four additional pMPAs (assessed in 2019)<sup>111</sup>;
- the designation of a deep sea marine reserve as an offshore MPA (assessed in 2019)<sup>112</sup>;
- proposals for management measures applying to Priority Marine Features (PMFs) (due to be assessed)<sup>113</sup>;

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<sup>105</sup> TCE (2022) 2021, JNCC, Offshore Wind Evidence and Change Programme, Offshore Wind Environmental Evidence Register [online] Available at: <https://beta.marinedataexchange.co.uk/details/3480/2021-jncc-offshore-wind-evidence-and-change-programme-offshore-wind-environmental-evidence-register-summary>

<sup>106</sup> DECC (2016). UK Offshore Energy Strategic Environmental Assessment OESEA3 Environmental Report Future Leasing/Licensing for Offshore Renewable Energy, Offshore Oil & Gas, Hydrocarbon Gas and Carbon Dioxide Storage and Associated Infrastructure [online] Available at: <https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3> (accessed 11/07/2022)

<sup>107</sup> Scottish Government (2013) Planning Scotland's Seas: 2013 – Possible Nature Conservation Marine Protected Areas Consultation Overview – Strategic Environmental Assessment Report [online] Available at: <https://www.gov.scot/publications/planning-scotlands-seas-2013-possible-nature-conservation-marine-protected-areas/documents/> (accessed 11/07/2022)

<sup>108</sup> Scottish Government (2014) 2014 Consultation on the Management of Inshore Special Areas of Conservation and Marine Protected Areas Overview [online] Available at: <https://www.gov.scot/publications/2014-consultation-management-inshore-special-areas-conservation-marine-protected-areas/pages/2/> (accessed 11/07/2022)

<sup>109</sup> Scottish Government (2014) MPA/SAC Consultation Environmental Assessment [online] Available at: <https://www.webarchive.org.uk/wayback/archive/3000/https://www.gov.scot/Topics/marine/marine-environment/mpanetwork/MPAMGT/consultation2014/ManagementSEA> (accessed 11/07/2022)

<sup>110</sup> Scottish Government (2018) SEA of Marine Proposed Special Protection Areas Strategic Environmental Assessment Environmental Report. Available at: [https://consult.gov.scot/marine-scotland/sea-for-15-proposed-special-protection-areas/supporting\\_documents/Marine%20SPA%20SEA%20%20Consultation%20document%20%20September%2018.pdf](https://consult.gov.scot/marine-scotland/sea-for-15-proposed-special-protection-areas/supporting_documents/Marine%20SPA%20SEA%20%20Consultation%20document%20%20September%2018.pdf) (accessed 11/07/2022)

<sup>111</sup> Marine Scotland (2019) Sustainability Appraisal of proposed Marine Protected Areas Sustainability Appraisal [online] Available at: [https://consult.gov.scot/marine-scotland/four-new-marine-protected-areas/supporting\\_documents/MPA%20Sustainability%20Appraisal%20Project%20%20Final%20with%20covers%20%20SA%20Report%20%2006%20June%202019.pdf](https://consult.gov.scot/marine-scotland/four-new-marine-protected-areas/supporting_documents/MPA%20Sustainability%20Appraisal%20Project%20%20Final%20with%20covers%20%20SA%20Report%20%2006%20June%202019.pdf) (accessed 11/07/2022)

<sup>112</sup> Marine Scotland (2019) Proposed Deep Sea Marine Reserve Strategic Environmental Assessment Environmental Report [online] Available at: [https://consult.gov.scot/marine-scotland/deep-sea-marine-reserve/supporting\\_documents/Development%20of%20deep%20sea%20reserve%20%20West%20of%20Scotland%20%20SEA%20%20Final.pdf](https://consult.gov.scot/marine-scotland/deep-sea-marine-reserve/supporting_documents/Development%20of%20deep%20sea%20reserve%20%20West%20of%20Scotland%20%20SEA%20%20Final.pdf) (accessed 11/07/2022)

<sup>113</sup> Marine Scotland (2018) SEA of Proposed Inshore PMF Management Measures Strategic Environmental Assessment Screening and Scoping Report [online] Available at: [https://consult.gov.scot/marine-scotland/priority-marine-features/supporting\\_documents/R2977%20Draft\\_ScreeningScoping\\_03July2018.pdf](https://consult.gov.scot/marine-scotland/priority-marine-features/supporting_documents/R2977%20Draft_ScreeningScoping_03July2018.pdf) (accessed 11/07/2022)

- proposals for management measures for offshore MPAs (currently under assessment);
- proposals for designation of Highly Protected Marine Areas (HPMAs) (currently under assessment);
- the management Proposals of Inshore Fisheries Groups<sup>114</sup>; and
- the Seaweed Policy Statement<sup>115</sup>.

#### 4.1.7 Scope of the assessment

4.1.8 Following a review of these previous SEAs, as well as relevant academic and grey literature, it is proposed that the scope of the present SEA assessment should include:

- Biodiversity, Flora, and Fauna;
- Population and Human Health;
- Soil (namely, Marine Geology and Coastal Processes);
- Water Quality;
- Climatic Factors;
- Cultural Heritage; and
- Landscape, Seascape, and Visual Amenity.

4.1.9 Further, the assessment should be comprehensive and include consideration of the likely significant effects on the marine and coastal environments where relevant. The potential effects associated with all offshore wind development stages, including pre-construction (e.g. UXO survey/clearance) and decommissioning phases, should also be assessed.

4.1.10 At this stage, it is considered that significant environmental effects on 'Air Quality' are unlikely to arise through the implementation of the Draft Plan. As such, it is proposed that this topic be scoped out of the assessment.

4.1.11 The SEA topic of 'Material Assets' encompasses a broad range of subtopics that include both built and natural assets and it is proposed that this topic is scoped into the assessment and that relevant issues are assessed under corresponding SEA topic areas. For example, it is proposed that potential impacts as they relate to nursery and spawning grounds be covered under the topic of 'Biodiversity, Flora, and Fauna'. Similarly, infrastructure with regard to the promotion of a diverse and decarbonised energy sector should be given consideration under the topic of 'Climatic Factors'. This includes assessing the

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<sup>114</sup> Scottish Government (2014) Management Proposals of Inshore Fisheries Groups: Strategic Environmental Assessment Post Adoption Statement [online] Available at: <https://www.gov.scot/publications/management-proposals-inshore-fisheries-groups-strategic-environmental-assessment-post-adoption/documents/> (accessed 11/07/2022)

<sup>115</sup> Scottish Government (2016) Wild seaweed harvesting: strategic environmental assessment - environmental report [online] Available at: <https://www.gov.scot/publications/wild-seaweed-harvesting-strategic-environmental-assessment-environmental-report/> (accessed 11/07/2022)

potential re-use of existing energy infrastructure, particularly in relation to North Sea Oil and Gas Rig Decommissioning. This reflects the approach taken in previous offshore wind plan SEAs<sup>116, 117, 118</sup>.

- 4.1.12 The effects on other marine users, such as the potential displacement of commercial fishing activity, recreational boating, and tourism, will be adequately considered by the accompanying SEIA. Issues of navigational safety and collision risk for vessels will be covered, as far as possible, within the topic of 'Population and Human Health'.
- 4.1.13 A summary of this proposed scope is presented in Table 2.
- 4.1.14 There is also the potential for cumulative effects due to the multiple offshore wind arrays that may be installed as a result of the Draft Plan alone, as well as in combination with other types of plans and projects, including existing planned offshore wind farm development and other forms of offshore renewable development.
- 4.1.15 The views of the Consultation Authorities, consultation bodies, Member States, and members of the public on the proposed scope are now being sought.

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<sup>116</sup> Scottish Government (2010). Strategic Environmental Assessment (SEA) of Draft Plan for Offshore Wind Energy in Scottish Territorial Waters: Volume 1: Environmental Report.

<sup>117</sup> Scottish Government (2013). Planning Scotland's Seas: SEA of Plans for Wind, Wave and Tidal Power in Scottish Marine Waters Environmental Report [online] Available at: <https://www.gov.scot/publications/draft-sectoral-marine-plans-offshore-renewable-energy-scottish-waters-strategic/pages/11/> (accessed 11/07/2022)

<sup>118</sup> Scottish Government (2019). Offshore wind energy - draft sectoral marine plan: strategic environmental assessment [online] Available at: <https://www.gov.scot/publications/draft-sectoral-marine-plan-offshore-wind-energy-strategic-environmental-assessment/pages/15/> (accessed 11/07/2022)

**Table 2. SEA topics scoped into the assessment**

SEA Topic	Potential Effects
Biodiversity, Flora, and Fauna	<ul style="list-style-type: none"> <li>▪ Loss of and/or damage to marine and coastal habitats, including benthic and intertidal habitats (for example, due to smothering of benthic habitats and substratum loss);</li> <li>▪ Effects on key receptors and prey species, including disturbance, noise effects, EMF exposure, collision risk, habitat exclusion, and barriers to wildlife movement;</li> <li>▪ Positive effects arising from habitat enhancement, such as the creation of artificial reefs, new roosting structures and exclusion of habitat damaging activity;</li> <li>▪ Effects of pollution releases on both species and habitats; and</li> <li>▪ Effects from introduction and spread of Invasive Non-Native Species (INNS).</li> </ul>
Population and Human Health	<ul style="list-style-type: none"> <li>▪ Effects arising from noise, vibration, light, dust and shadow flicker effects from all phases of development;</li> <li>▪ Effects on residential amenity stemming from construction/installation/operational activities;</li> <li>▪ Effects on commercial shipping, including navigational safety and collision risk;</li> <li>▪ Effects on aviation safety and search; and</li> <li>▪ Effects on marine and coastal recreation and access</li> </ul>
Soil (Marine Geology and Coastal Processes)	<ul style="list-style-type: none"> <li>▪ Effects on subsea geology, sediments, and coastal processes arising from changes in hydrodynamics and the existing wave regime.</li> </ul>
Water Quality	<ul style="list-style-type: none"> <li>▪ Effects on ecological status;</li> <li>▪ Effects on water quality (for example, due to increases in suspended sediment loads and turbidity as well as an increase in pollution incidents); and</li> <li>▪ Effects of the presence of structures on local currents, wave regimes, and water column mixing, as well as secondary effects on sedimentation and erosion beyond the sites.</li> </ul>
Climatic Factors	<ul style="list-style-type: none"> <li>▪ Contribution to supporting a diverse and decarbonised energy sector; and</li> <li>▪ Coastal facilities may be at risk from climate change.</li> </ul>

SEA Topic	Potential Effects
Material Assets	<ul style="list-style-type: none"> <li>▪ Potential impacts as they relate to nursery and spawning grounds (to be covered under the topic of 'Biodiversity, Flora, and Fauna').</li> <li>▪ Potential impacts on infrastructure with regard to the promotion of a diverse and decarbonised energy sector (to be given consideration under the topic of 'Climatic Factors').</li> </ul>
Cultural Heritage	<ul style="list-style-type: none"> <li>▪ Loss of and/or damage to historic environment features and their settings, including coastal and marine archaeology and historic MPAs.</li> </ul>
Landscape/Seascape	<ul style="list-style-type: none"> <li>▪ Both temporary and longer term effects on landscape and coastal character and visual receptors arising from the presence of structures including any ancillary infrastructure.</li> </ul>

## 4.2 Proposed approach to the assessment

### Assessment methodology

- 4.2.1 The SEA will be undertaken as a high level desk-based assessment, reflecting the national level perspective the Draft Plan will take. Specifically, it is proposed that the SEA apply both a baseline-led and objective-led assessment approach. The baseline-led assessment will compare the potential impacts of the Draft Plan against the current receiving environment (environmental baseline), reflecting on the sensitivity of environmental features and environmental pressures associated with offshore wind farm development, to assess the likely significance of any environmental effects that could arise. The objective-led assessment will review the overall effects of the Draft Plan against proposed SEA objectives (Table 4). Both the baseline-led and objective-led assessment approaches will interact in an iterative manner through a three-staged approach as proposed below.
- 4.2.2 The assessment is likely to draw on a number of different sources of information, including:
- Spatial information, such as that gathered using Scottish Government's Geographic Information System (GIS);
  - Results of previous SEA work highlighted in Section 4.1;
  - Research studies including those undertaken for Marine Scotland Directorate and by the offshore wind energy industry;
  - Guidance for the environmental assessment of offshore wind projects;
  - General findings from available environmental impact assessments (EIAs) of offshore wind development projects; and
  - Emerging monitoring information from existing installations where relevant.
- 4.2.3 Building on the assessment and lessons that were learnt from the 2020 Sectoral Marine Plan for Offshore Wind Energy<sup>119</sup>, the assessment of the Draft Plan is likely to involve the following stages:
- Stage 1: Identify the range of environmental effects during all project phases associated with alternative offshore wind technologies, transmission technologies, including offshore transmission infrastructure components, subsea transmission cables and landfall and transition pit;
  - Stage 2: Identify environmental effects of applying the range of effects identified in Stage 1 to the alternative DPOs and consider any

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<sup>119</sup> Scottish Government (2019). Offshore wind energy - draft sectoral marine plan: strategic environmental assessment [online] Available at: <https://www.gov.scot/publications/draft-sectoral-marine-plan-offshore-wind-energy-strategic-environmental-assessment/pages/15/> (accessed 11/07/2022)

available potential mitigation to prevent, reduce and/or offset significant adverse effects; and

- Stage 3: Assessment of potential cumulative effects as a result of the Draft Plan alone and also in-combination with other plans and projects (see Section 4.5).

- 4.2.4 Stage 2 of the assessment is likely to involve making assumptions about the potential scale (potential installed capacity) and timing of possible development within the DPOs. Although there will be some certainty over the areas for development from the leasing process, there will still be some uncertainty over the scale and timing of development, and the projects that will proceed to completion. The maximum capacity under the lease agreements for targeted oil and gas projects will be 5.7 GW, to enable projects to be identified to meet the demand of the oil and gas sector (accounting for variances in efficiency and possible attrition as per the SMP 2020<sup>120</sup>, with a final expected capacity of 4 GW). In addition, innovation projects up to 500 MW generation capacity will be supported. To test the sensitivity of the assessments to generation capacity an upper scenario of potential installed capacity of 9GW will be used. The impacts of the potential installed capacity and upper scenario will then be compared against the baseline and 'do nothing' option in seeking to determine the potential environmental effects associated with offshore wind development within the P. The assessment of the potential installed capacity and alternative option (upper scenario) aligns with the 'intermediate case' and 'upper case' scenarios that are proposed to be developed for the SEIA.
- 4.2.5 Stage 2 will also consider the potential mitigation that might be available to prevent, reduce and as fully as possible offset any significant adverse effects. It will also assess the residual risk to environmental receptors through the application of judgement informed by assessment criteria on the type and magnitude of potential effects.
- 4.2.6 For the purposes of this assessment, the indicative assessment criteria set out in Table 3 are proposed to be used to help determine the type (beneficial, adverse or neutral) and magnitude (none, negligible, minor, moderate or major) of potential effects that may result from the Draft Plan and reasonable alternatives.

**Table 3. Indicative criteria of potential effects**

Type	Magnitude (significance)	Indicative criteria
Adverse/Beneficial	Major (significant)	Large spatial scale (size/number); Major intensity (level/magnitude); Long-term (duration/frequency);

<sup>120</sup> Marine Scotland (2021) Sectoral Marine Plan for Offshore Wind for innovation and Targeted Oil and Gas Decarbonisation (INTOG) – Planning Specification and Context Report.

Type	Magnitude (significance)	Indicative criteria
		High sensitivity of features; and/or Low tolerance/reversibility of features.
	Moderate (significant)	Medium spatial scale; Moderate intensity; Medium-term; Moderate sensitivity of features; and/or Moderate tolerance/reversibility of features.
	Minor (not significant)	Small spatial scale; Low intensity; Short-term; Low sensitivity of features; and/or High tolerance/reversibility of features.
Adverse/Beneficial	Negligible (not significant)	There is likely to be a change, but the level will be indiscernible from baseline conditions.
Neutral	None	No change from baseline conditions.

4.2.7 Stage 3 of the assessment will comprise a cumulative effects assessment as detailed in Section 4.5. This stage is also proposed to involve summarising the overall effects of the Draft Plan against the proposed SEA objectives set out in Table 4. These objectives, which are based on those developed for past sectoral marine plans for offshore wind energy in Scotland, including most recently the 2020 Sectoral Marine Plan for Offshore Wind Energy<sup>121</sup>, are considered to provide a sound basis for taking forward this SEA. This 'objective-led approach' provides a useful measure to draw together and comment on the combined performance of the Draft Plan.

**Table 4. Proposed SEA Objectives<sup>122</sup>**

SEA Topic	SEA Objective
Biodiversity, Flora, and Fauna	<ul style="list-style-type: none"> <li>To safeguard marine and coastal ecosystems, including species, habitats, and their interactions;</li> <li>To avoid adverse effects on both designated and non-designated habitats and species (note: this work has been developed in parallel with the HRA work); and</li> <li>To avoid the introduction and spread of INNS.</li> </ul>
Population and Human Health	<ul style="list-style-type: none"> <li>To maintain the accessibility of natural areas for recreation;</li> <li>To minimise or prevent the discharge of pollutants into the natural environment; and</li> </ul>

<sup>121</sup> *ibid*

<sup>122</sup> The SEA objectives have been developed based on previous SEA objectives for recent relevant SEAs (Section 4.1) the immediate policy context of the Draft Plan (Section 2), as well as its broader policy context and an updated environmental baseline (Section 5).

SEA Topic	SEA Objective
	<ul style="list-style-type: none"> <li>To avoid adverse effects on human health and safety.</li> </ul>
Soil (Marine Geology and Coastal Processes)	<ul style="list-style-type: none"> <li>To avoid exacerbating coastal erosion and maintain the integrity of coastal processes;</li> <li>To maintain and protect the character and integrity of the seabed, including avoiding the pollution of seabed strata/bottom sediments; and</li> <li>To avoid significant adverse physical damage to coastal geodiversity sites from coastal infrastructure.</li> </ul>
Water Quality	<ul style="list-style-type: none"> <li>To avoid pollution of the coastal and marine water environment; and</li> <li>To maintain or work towards achieving good ecological status.</li> </ul>
Climatic Factors	<ul style="list-style-type: none"> <li>To contribute to a diverse and decarbonised energy sector;</li> <li>To ensure that adaptation to predicted climate change impacts are taken into account (for example, through consideration of resilience and changing environmental sensitivity); and</li> <li>To preserve marine carbon stocks and carbon sequestration potential (note: this objective is closely linked to the SEA topic of 'Biodiversity, Flora, and Fauna').</li> </ul>
Cultural Heritage	<ul style="list-style-type: none"> <li>To protect and, where appropriate, enhance, the historic marine environment;</li> <li>To avoid damage to known and unknown coastal and marine archaeology; and</li> <li>To avoid adverse effects on the character and setting of historic sites and buildings.</li> </ul>
Landscape/Seascape	<ul style="list-style-type: none"> <li>To avoid adverse effects on designated sites (World Heritage Sites, National Scenic Areas);</li> <li>To avoid/minimise effects on regional and local landscape areas;</li> <li>To promote the protection of seascape and coastal landscapes; and</li> <li>To avoid or minimise adverse visual effects.</li> </ul>

## 4.3 Identifying mitigation and monitoring proposals

- 4.3.1 Potential mitigation measures will be identified as an integral part of the development of the proposed AoS and DPOs. In addition, mitigation may also be identified through the assessment process (see Section 4.2).
- 4.3.2 Potential measures to mitigate adverse effects or enhance benefits associated with the Draft Plan and development within the DPOs will be identified. This will build on the recommendations and lessons learnt from the 2020 Sectoral Marine Plan for Offshore Wind Energy<sup>123</sup>, and strategic work undertaken to fill data gaps and uncertainties, and to assist with mitigating potentially significant adverse environmental effects.

<sup>123</sup> ibid

- 4.3.3 In identifying potential regional environmental sensitivities associated with development within the DPOs and requirements for mitigation measures, alternative technology (and construction method) choices are likely to be key mitigation measures. The 'avoid/ reduce (or minimise)/ offset' hierarchy will also be applied to the consideration of appropriate mitigation measures.
- 4.3.4 Monitoring proposals are likely to focus on the significant environmental effects that are identified during the course of the work undertaken to refine the AoS and develop the DPOs, as a result of the SEA, as well as following implementation of mitigation measures where appropriate. Where possible, existing data sources and indicators will be linked with relevant indicators to minimise resourcing requirements for additional data collection.

## 4.4 Consideration of reasonable alternatives

- 4.4.1 The development of the final Plan will be an iterative process that will be informed throughout by relevant environmental information and will give regular consideration to reasonable alternatives, based in part on assessment findings and input from consultees. These alternatives will be confined to the consideration of alternative offshore wind opportunities, in line with the focus of the Draft Plan.
- 4.4.2 Initially, the plan development process has sought to identify prospective AoS in which innovative projects and projects aimed at the decarbonisation of the oil and gas sector in Scotland could be pursued (see Section 2.5). The AoS will be refined into a number of potential plan options as part of the INTOG leasing process from which a set of DPO areas will be derived. The AoS and DPOs themselves constitute reasonable alternatives as they represent different options for fulfilling the objectives of the Draft Plan, based on varying levels of constraint and opportunity. Micro-siting within each DPO will also allow additional opportunities to compile and select from reasonable alternatives.
- 4.4.3 An assessment of reasonable alternatives is proposed to be undertaken at Stages 1 and 2 of the assessment described in Section 4.2. The first stage of the assessment will involve setting out the potential environmental effects associated with a range of alternative offshore wind technologies that could be implemented in Scottish marine waters. The second stage will apply the potential environmental effects identified in the first stage to spatial and locational constraints identified in the baseline data for each of the DPOs, which themselves constitute reasonable alternatives as described above.

## 4.5 Cumulative effects

- 4.5.1 The third stage of the assessment, as outlined in Section 4.2, will be the cumulative assessment. This will firstly identify the potential effects of development in multiple DPOs at a regional scale and determine where these

may have significant environmental effects, taking account of the likely scale of development under the Draft Plan at a regional level.

- 4.5.2 The cumulative assessment will then investigate the combined effects of the Draft Plan at a regional and national scale alongside other plans and projects, including the 2020 Sectoral Marine Plan for Offshore Wind Energy, ScotWind, National Grid Electricity System Operator's (ESO) Holistic Network Design (HND) under the Offshore Transmission Network Review (OTNR) and development and deployment of Carbon Capture, Utilisation and Storage (CCUS) in Scotland. Given the significant uncertainty regarding the scale or design of development, the cumulative assessment will not seek to quantify impacts, rather it will identify current and future developments that are likely to require integration into a cumulative assessment at a project level.
- 4.5.3 The Iterative Plan Review (IPR) of the 2020 Sectoral Marine Plan for Offshore Wind Energy will combine the latest information from the INTOG leasing rounds and associated planning activity, and also include the Offshore Transmission Infrastructure (OfTi) as identified by the HND. This will include consideration and assessment of the significantly higher generation ambitions that have emerged from the ScotWind leasing process (27.6 GW) when compared to the original planning assumptions (10 GW) in the 2020 Sectoral Marine Plan for Offshore Wind Energy. To facilitate the development of a consolidated Final Plan for Sectoral Marine Plan for Offshore Wind Energy, the assessments undertaken as part of the INTOG planning exercise and those for the IPR of the 2020 Sectoral Marine Plan for Offshore Wind Energy including OfTi will be brought together. This will aid understanding of any potential cumulative regional and national scale effects. The assessment work for INTOG and the IPR will be carried out in parallel and then combined into single assessment of cumulative impacts supported by outputs from Marine Scotland Science's Cumulative Effects Framework. It is anticipated that the integration of the assessments and consideration of cumulative impacts will occur in spring 2023.

## 5 Policy context and environmental baseline

### 5.1 Purpose of this section

- 5.1.1 The 2005 Act and the 2004 Regulations require Responsible Authorities to identify the broader policy context and environmental protection objectives relevant to the plan, programme, or strategy (PPS) that is being assessed. The immediate policy context for the development of the Draft Plan was set out in Section 2. The following paragraphs set out the broader policy environment in terms of relationships and interactions that could emerge between the Draft Plan and other PPS.
- 5.1.2 It is also a requirement of the 2005 Act and 2004 Regulations that Responsible Authorities provide details of the character of the environment which may be affected, including any existing pressures and the likely evolution of the environment in the absence of the PPS. The baseline information is intended to help demonstrate how the receiving environment may be impacted by the implementation of the Draft Plan.

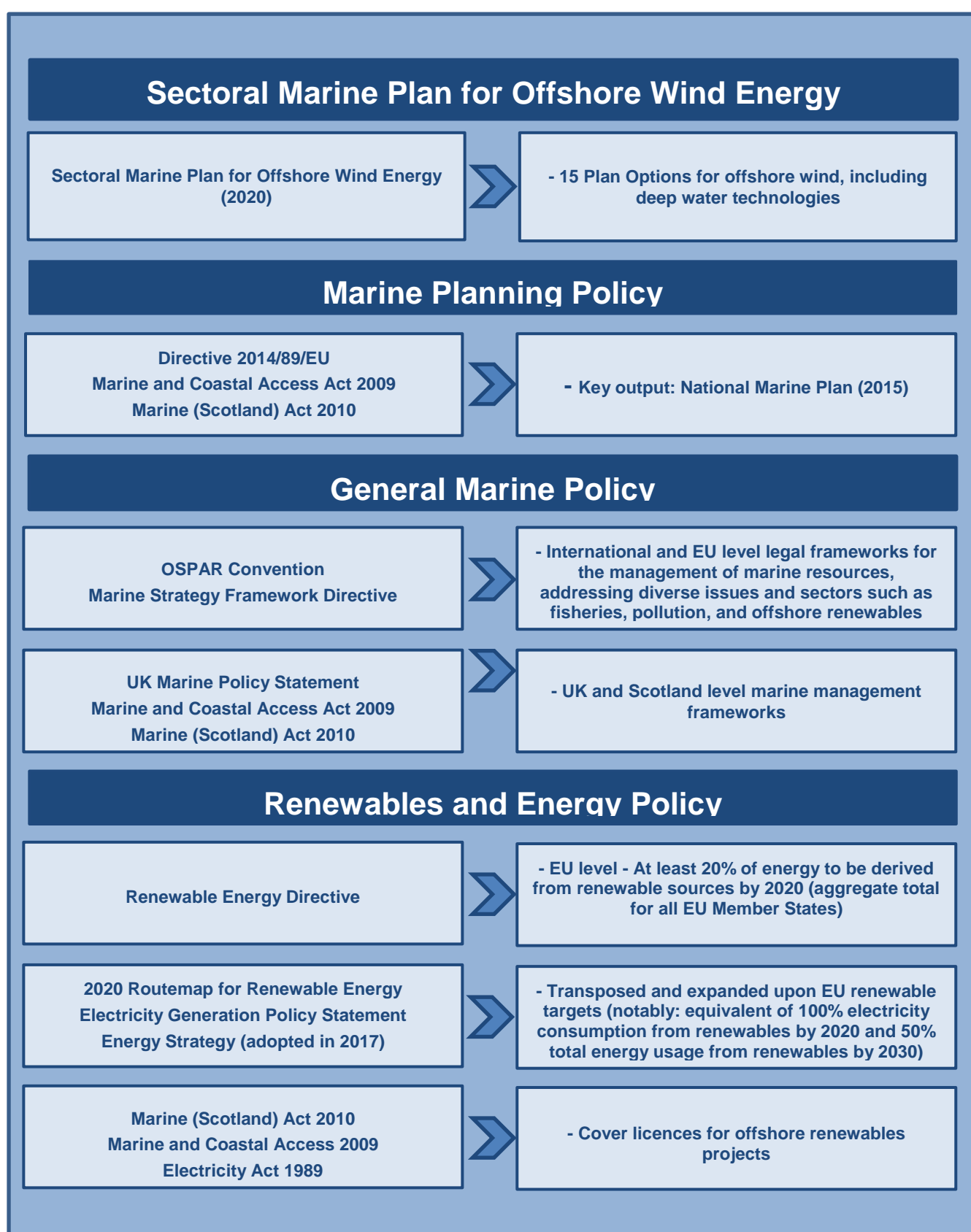
### 5.2 Policy context for marine planning and offshore wind energy in Scotland

- 5.2.1 The following paragraphs set out the broader policy context relevant to the development of the Draft Plan. This policy context is also summarised within Figure 3.
- 5.2.2 It should be noted that as the UK is no longer a member of the European Union (EU), EU legislation, as it applied to the United Kingdom (UK) on 31 December 2020, is now a part of UK domestic legislation as set out in the EU (Withdrawal) Act 2018<sup>124</sup>. References to applicable EU Directives as well as relevant UK legislation are provided in the following paragraphs.

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<sup>124</sup> European Union (Withdrawal) Act 2018 [online] Available at: <https://www.legislation.gov.uk/ukpga/2018/16/contents/enacted> (accessed 11/07/2022)

**Figure 3. Broader policy context of the development of the Draft Plan**



"Figure 3

– Diagram illustrating broader policy context of the development of the Draft Plan for INTOG"

## Marine policy

- 5.2.3 At an international level, the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic integrated and updated the 1972 Oslo and 1974 Paris Conventions on land-generated sources of marine pollution<sup>125</sup>. Specifically, it added an annex covering the protection and conservation of marine ecosystems and biodiversity<sup>126</sup>.
- 5.2.4 The EU Marine Strategy Framework Directive obligates Member States to develop adaptive management strategies to bring their marine environments to Good Environmental Status, as well as to safeguard the marine resources that underlie key economic and social activities<sup>127</sup>. It allocates responsibility for the marine environment via a regional approach that in the case of the UK, makes use of the existing cooperative framework of the OSPAR Convention<sup>128</sup>. Following the UK's departure from the EU, the UK reports progress towards Good Environmental Status through its Marine Strategy<sup>129</sup>.
- 5.2.5 The UK Marine Policy Statement provides a vision of 'clean, healthy, safe, productive, and biologically diverse oceans and seas' that is shared by all UK countries and used to guide their respective marine management strategies<sup>130</sup>.
- 5.2.6 The Marine (Scotland) Act 2010 strives to help balance competing demands on Scotland's inshore seas<sup>131</sup>. It introduced a duty to protect and enhance the marine natural and historic environment while at the same time streamlining the marine planning and licensing system<sup>132</sup>. It also contains measures intended to boost growth in areas such as marine renewables<sup>133</sup>.
- 5.2.7 The Marine and Coastal Access Act 2009 devolved new marine planning and conservation powers to Scottish Ministers in the offshore region (12-200nm), in addition to providing a framework for cooperative management of the marine environment between Scottish Ministers and UK Government<sup>134</sup>.

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<sup>125</sup> OSPAR Commission (2017). OSPAR Convention [online] Available at: <https://www.ospar.org/convention> (accessed 11/07/2022)

<sup>126</sup> *ibid*

<sup>127</sup> European Commission (2017). Our Oceans, Seas and Coasts [online] Available at: [http://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/marine-strategy-framework-directive/index\\_en.htm](http://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/marine-strategy-framework-directive/index_en.htm) (accessed 11/07/2022)

<sup>128</sup> JNCC (2013). The Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention) [online] Available at: <http://jncc.defra.gov.uk/page-1370> (accessed 28/06/2021)

<sup>129</sup> UKMMAS (2021). Introduction to UK Marine Strategy [online] Available at: <https://moat.cefas.co.uk/introduction-to-uk-marine-strategy/> (accessed 11/07/2022)

<sup>130</sup> Scottish Government (2015). UK Marine Policy Statement [online] Available at: <http://www.gov.scot/Topics/marine/seamanagement/international/MPS> (accessed 11/07/2022)

<sup>131</sup> Scottish Government (2017). Marine (Scotland) Act [online] Available at: <http://www.gov.scot/Topics/marine/seamanagement/marineact> (accessed 11/07/2022)

<sup>132</sup> *ibid*

<sup>133</sup> *ibid*

<sup>134</sup> Marine and Coastal Access Act 2009, 2009/Chapter 23 [online] Available at: <https://www.legislation.gov.uk/ukpga/2009/23/introduction> (accessed 11/07/2022)

- 5.2.8 Scotland's National Marine Plan fulfils joint requirements under the Marine (Scotland) Act 2010 and Marine and Coastal Access Act 2009 to prepare marine plans, providing a cohesive approach to the management of both inshore and offshore waters<sup>135</sup>. It enacts the principles of EU Directive 2014/89/EU<sup>136</sup> on maritime spatial planning, which recognise that a comprehensive and consistent approach to maritime planning can prevent conflicts between sectors, increase cross-border cooperation, and protect the environment by identifying potential impacts early and pursuing opportunities for multiple uses of space<sup>137</sup>. The National Marine Plan also seeks to promote development in a way that is compatible with the protection and enhancement of the marine environment<sup>138</sup>.
- 5.2.9 In the context of offshore wind, the National Marine Plan lists several objectives and policies to serve as considerations in marine planning and decision making<sup>139</sup>. Among these are the sustainable development of offshore wind in the most suitable locations; consideration of Regional Locational Guidance and the Pentland Firth and Orkney Waters Marine Spatial Plans; and the sustainable development and expansion of test and demonstration facilities for offshore wind and marine renewable devices<sup>140</sup> (Renewable Policies 1-3). The development of the Draft Plan therefore seeks to apply these policies.
- 5.2.10 Regional marine plans are currently in the process of being prepared by Regional Marine Planning Partnerships within the eleven Scottish Marine Regions (which extend out to 12nm). Regional marine plans are required to be developed in accordance with the National Marine Plan (unless relevant considerations indicate otherwise) and will be required to take into account the DPOs identified via the development of the Draft Plan, as well as co-ordination with the CES leasing regime and grid requirements and initiatives.
- 5.2.11 More recently, in 2021, the Scottish Government and the Scottish Green party Parliamentary Group have agreed to work together over the next five years to build a green economic recovery from COVID-19, respond to the climate emergency and create a fairer country<sup>141</sup>. A Shared Policy Programme, known as the Bute Agreement was agreed which focuses on areas of mutual interest to improve the way Scotland is governed and create a stable platform to meet

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<sup>135</sup> Scottish Government (2015). Scotland's National Marine Plan [online] Available at: <https://www.gov.scot/publications/scotlands-national-marine-plan/> (accessed 11/07/2022)

<sup>136</sup> European Commission (2014). Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning [online] Available at: [http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L\\_.2014.257.01.0135.01.ENG%20](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.257.01.0135.01.ENG%20) (accessed 11/07/2022)

<sup>137</sup> European Commission (2017). Maritime spatial planning [online] Available at: [https://ec.europa.eu/maritimeaffairs/policy/maritime\\_spatial\\_planning\\_en](https://ec.europa.eu/maritimeaffairs/policy/maritime_spatial_planning_en) (accessed 11/07/2022)

<sup>138</sup> Scottish Government (2015). Scotland's National Marine Plan [online] Available at: <https://www.gov.scot/publications/scotlands-national-marine-plan/> (accessed 11/07/2022)

<sup>139</sup> *ibid*

<sup>140</sup> *ibid*

<sup>141</sup> Scottish Government (2021). News: Agreement with Scottish Green Party [online] Available at: <https://www.gov.scot/news/agreement-with-scottish-green-party/> (accessed 08/07/2022)

the challenges Scotland faces<sup>142</sup>. It details collaboration on the climate emergency, economic recovery, child poverty, the natural environment, energy and constitution. It includes commitments to a strengthened framework of support for the marine renewables and offshore wind sectors and enhance marine environmental protection. In addition, the Bute House Agreement promises a “*step change in support for [...] new protections for our marine areas*” and changes that would make “*Scotland an international leader in this field*”. It identifies a number of much-needed actions to recover the health of Scotland’s seas, namely delivering fisheries management measures for all of Scotland’s MPAs; designating a suite of Highly Protected Marine Areas (HPMAs) covering 10% of Scotland’s seas; increasing protection for the inshore seafloor that falls outwith protected areas; and recovering PMFs<sup>143</sup>.

## Offshore wind and renewables policy

- 5.2.12 The EU Renewable Energy Directive 2009/28/EC states that 20% of Europe’s energy usage must derive from renewable sources by 2020. The 20% figure is an aggregate total made up of individual Member State targets that differ according to each State’s starting point and capacity to pursue additional renewable energy generation<sup>144</sup>. Mechanisms and timelines for meeting these targets are detailed in each country’s national renewable energy action plan. In November 2016, proposals for a framework of new targets including a 2030 target of at least 27% of energy supplied by renewables, was introduced<sup>145</sup>.
- 5.2.13 Scotland initially committed to obtaining 20% of its energy needs from renewables by 2020<sup>146</sup>, surpassing the 15% target set for the UK as a whole. This target was later increased from 20% to at least 30% by the 2020

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<sup>142</sup> Scottish Government (2021) Scottish Government and Scottish Green Party Shared Policy Programme: Working together to build a greener, fairer, independent Scotland [online] Available at: <https://www.gov.scot/publications/scottish-government-scottish-green-party-shared-policy-programme/documents/> (accessed 08/07/2022)

<sup>143</sup> Scottish Wildlife Trust (2022) How Scotland’s seas will be affected by the Programme for Government [online] Available at: <https://scottishwildlifetrust.org.uk/2021/10/how-scotlands-seas-will-be-affected-by-the-programme-for-government/> (accessed 22/02/2022)

<sup>144</sup> 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 [online] Available at: <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32009L0028> (accessed 11/07/2022)

<sup>145</sup> European Commission (2014). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – A policy framework for climate and energy in the period from 2020 to 2030 [online] Available at: <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52014DC0015> (accessed 11/07/2022)

<sup>146</sup> Scottish Government (2009). Renewables Action Plan [online] Available at: <https://www.webarchive.org.uk/wayback/archive/20150218203600/http://www.gov.scot/Publications/2009/07/06095830/0> (accessed 11/07/2022)

Routemap for Renewable Energy<sup>147</sup> in light of a complementary increase in the 2020 target for renewable electricity<sup>148</sup>.

- 5.2.14 The Scottish Energy Strategy<sup>149</sup>, published in December 2017, set a target of securing 50% of total energy usage from renewable sources as well as a 30% increase in the productivity of energy use across the Scottish economy by 2030. The Strategy lists renewables and low carbon solutions as a strategic priority, including exploring new opportunities for floating offshore wind.
- 5.2.15 The Offshore Wind Policy Statement (OWPS) which was published in October 2020 in parallel to Marine Scotland's 2020 Sectoral Marine Plan for Offshore Wind sets out Scottish Government's ambitions for the future of offshore wind in Scotland<sup>150</sup>.
- 5.2.16 The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019<sup>151</sup> sets targets to reduce Scotland's emissions of all greenhouse gases to net-zero by 2045 at the latest, with interim targets for reductions of at least 56% by 2020, 75% by 2030, 90% by 2040<sup>152</sup>. An update to Scotland's 2018-2032 Climate Change Plan has recently been published, reflecting the new emissions targets for Scotland and the UK as a whole<sup>153</sup>. Achievement of net-zero emissions by 2045 will require the expansion of renewable energy in Scotland, of which offshore wind is likely to form a significant contribution.
- 5.2.17 Proposals for innovative projects and projects aimed at the decarbonisation of the oil and gas sector in Scotland within the DPOs will be subject to the standard leasing, licensing and consenting processes and the need for further project-level assessment (in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) and the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) and the Habitats Regulations<sup>154</sup>. Licence decisions must also be taken in accordance with the National Marine

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<sup>147</sup> Scottish Government (2011). 2020 Routemap for Renewable Energy [online] Available at: <https://www.webarchive.org.uk/wayback/archive/20150218121205/http://www.gov.scot/Publications/2011/08/04110353/0> (accessed 11/07/2022)

<sup>148</sup> Scottish Government (2013). Electricity Generation Policy Statement – 2013 [online] Available at: <http://www.gov.scot/Publications/2013/06/5757> (accessed 11/07/2022)

<sup>149</sup> Scottish Government (2017). Scottish Energy Strategy: The future of energy in Scotland [online] Available at: <http://www.gov.scot/Resource/0052/00529523.pdf> (accessed 11/07/2022)

<sup>150</sup> Scottish Government (2020) Offshore wind policy statement [online] Available at: <https://www.gov.scot/publications/offshore-wind-policy-statement/> (accessed 11/07/2022)

<sup>151</sup> Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 [online] Available at: <https://www.legislation.gov.uk/asp/2019/15/contents/enacted> (accessed 11/07/2022)

<sup>152</sup> Scottish Government (2021). Climate Change: Reducing greenhouse gas emissions [online] Available at: <https://www.gov.scot/policies/climate-change/reducing-emissions/> (accessed 11/07/2022)

<sup>153</sup> Scottish Government (2020). Securing a green recovery on a path to net zero: climate change plan 2018–2032 – update [online] Available at: <https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/> (accessed 11/07/2022)

<sup>154</sup> Scottish Government (2020). EU Exit: habitats regulations in Scotland [online] Available at: <https://www.gov.scot/publications/eu-exit-habitats-regulations-scotland-2/> (accessed 11/07/2022)

Plan<sup>155</sup>. Further detail on these processes are contained in the Licensing and Consenting Manual<sup>156</sup>.

- 5.2.18 Licences for offshore wind energy developments are covered by the Marine (Scotland) Act 2010 for those components located within territorial sea limits (i.e. to 12nm from shore)<sup>157</sup> and by the Marine and Coastal Access Act 2009 for those lying outside the territorial boundary (i.e. beyond 12nm from shore)<sup>158</sup>. Onshore aspects such as cable connections are regulated by the Town and Country Planning (Scotland) Act 1997, with applications administered by the relevant planning authority<sup>159</sup>. Section 36 of the Electricity Act 1989 mandates that the construction, extension, and operation of any offshore wind and water driven developments with a generating capacity of at least 1MW in UK territorial waters and above 50 MW in Scottish offshore waters beyond 12 nm must receive Ministerial approval<sup>160,161</sup>.
- 5.2.19 Offshore renewable energy installations will need to be decommissioned at the end of their operational life. From 1 April 2017, Scottish Ministers have powers under the Energy Act 2004 (Part II Chapter 2), to require developers of offshore renewable energy projects in Scottish Waters and the Scottish part of a Renewable Energy Zone, to prepare a decommissioning programme, detailing how they intend to remove the installation when it comes to the end of its useful life and how the costs of doing so will be funded. This programme should include a base case of all infrastructure being removed, alongside any alternatives that the operator proposes, backed up by evidence and reasoning for the preferred option. It is accepted that decommissioning methods and processes will vary according to the individual projects.
- 5.2.20 Developers are required to assess potential decommissioning impacts in their EIA report and decommissioning programmes must be approved prior to the commencement of construction activities. Marine Scotland Directorate has published guidance for the decommissioning of offshore renewable energy

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<sup>155</sup> Marine (Scotland) Act 2010, s. 15

<sup>156</sup> Scottish Government (2018). Offshore wind, wave and tidal energy applications: consenting and licensing manual [online] Available at: <https://www.gov.scot/publications/marine-scotland-consenting-licensing-manual-offshore-wind-wave-tidal-energy-applications/> (accessed: 11/07/2022)

<sup>157</sup> Scottish Government (2014). Marine (Scotland) Act [online] Available at: <http://www.gov.scot/Topics/marine/seamanagement/marineact> (accessed 11/07/2022)

<sup>158</sup> Marine and Coastal Access Act 2009, 2009/Chapter 23 [online] Available at: <https://www.legislation.gov.uk/ukpga/2009/23/introduction> (accessed 11/07/2022)

<sup>159</sup> Town and Country Planning (Scotland) Act 1997, 1997/Chapter 8 [online] Available at: <https://www.legislation.gov.uk/ukpga/1997/8> (accessed 11/07/2022)

<sup>160</sup> Scottish Government (2006). A Strategic Framework for Scotland's Marine Environment – Annex 3 – Marine Development Consents [online] Available at: <https://www.webarchive.org.uk/wayback/archive/20150219153858/http://www.gov.scot/Publications/2004/04/19253/35971> (accessed 28/06/2021)

<sup>161</sup> Marine Scotland (2018) Marine Scotland Consenting and Licensing Guidance For Offshore Wind, Wave and Tidal Energy Applications [online] Available at: <https://www.gov.scot/publications/marine-scotland-consenting-licensing-manual-offshore-wind-wave-tidal-energy-applications/documents/> (accessed 11/07/2022)

installations<sup>162</sup>. Developers will need to adhere to this guidance and should also ensure that they have fully read and followed the current UK Government guidance on decommissioning offshore renewable energy installations, which clearly sets out the presumption in favour of full removal and the relevant international and national standards and legislation which must be adhered<sup>163</sup>. In addition, guidance for applicants on how the design envelope (also known as the ‘Rochdale Envelope’) assessment approach may be applied in the context of applications received for generating stations under section 36 of the Electricity Act 1989 has recently been published<sup>164</sup>.

## Oil and gas policy

- 5.2.21 The UK government is committed to deliver the North Sea Transition Deal for the offshore oil and gas sector in recognition of the key role that it can play in helping the UK meet its net zero commitments<sup>165</sup>. As output from the UK continental shelf declines, domestic demand is also projected to decline, and there is a clear need for determined action to be taken to build on the proven capabilities within the sector to support the transition to net zero. The UK already has the capability and skills within the existing sector to lead in new and emerging energy technologies such as CCUS and the hydrogen economy as well as to support the growth of new sectors such as offshore wind.
- 5.2.22 The British Energy Security Strategy sets out how Great Britain will accelerate homegrown power for greater energy independence<sup>166</sup>. The Strategy recognises the importance of accelerating the transition away from oil and gas to meet net zero commitments which depends critically on the development and deployment of offshore wind farms<sup>167</sup> as detailed further in the Climatic Factors policy subsection below. The North Sea Transition Authority (NSTA) has launched the 33<sup>rd</sup> oil and gas licensing round following the publication of the climate compatibility checkpoint<sup>168</sup>. ..

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<sup>162</sup> Marine Scotland (2022). Offshore renewable energy: decommissioning guidance for Scottish waters [online] Available at: <https://www.gov.scot/publications/offshore-renewable-energy-decommissioning-guidance-scottish-waters/> (accessed 11/09/2022)

<sup>163</sup> Department for Business, Energy & Industrial Strategy (2011). Decommissioning offshore renewable energy installations [online] Available at: <https://www.gov.uk/government/publications/decommissioning-offshore-renewable-energy-installations> (accessed 28/06/2021)

<sup>164</sup> Scottish Government (2022) Guidance for applicants on using the design envelope for applications under section 36 of the Electricity Act 1989 [online] Available at: <https://www.gov.scot/publications/guidance-applicants-using-design-envelope-applications-under-section-36-electricity-act-1989/documents/> (accessed 11/07/2022)

<sup>165</sup> UK Government (2022) Policy Paper: North Sea Transition Deal [online] Available at: <https://www.gov.uk/government/publications/north-sea-transition-deal/north-sea-transition-deal-accessible-webpage> (accessed 12/07/2022)

<sup>166</sup> UK Government (2022) Policy paper: British energy security strategy [online] Available at: <https://www.gov.uk/government/publications/british-energy-security-strategy> (accessed 11/07/2022)

<sup>167</sup> *ibid*

<sup>168</sup> [Climate compatibility checkpoint design - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/climate-compatibility-checkpoint-design)

- 5.2.23 The North Sea Transition Deal is about harnessing the power of the oil and gas sector and anchoring it to the UK for the energy transition<sup>169</sup>. Through the Deal, the UK's oil and gas sector and the UK Government will work together to deliver the skills, innovation and new infrastructure required to decarbonise North Sea oil and gas production as well as other carbon intensive industries. Not only will it transform the sector in preparation for a net zero future, but it will also catalyse growth throughout the UK economy. Delivering large-scale decarbonisation solutions will strengthen the position of the existing UK energy sector supply chain in a net zero world, securing new high-value jobs in the UK, supporting the development of regional economies and competing in clean energy export markets.
- 5.2.24 As part of the September 2019 Programme for Government, the Scottish Government confirmed that support for oil and gas exploration and production in the North Sea will now be conditional on the oil and gas sector's actions to help ensure a sustainable energy transition<sup>170</sup>. Scottish Government is also concluding the policymaking process on the future of unconventional oil and gas development in Scotland. The 2022-23 Programme for Government<sup>171</sup> noted that the Scottish Energy Strategy<sup>172</sup> will demonstrate how net zero obligations are fulfilled in the energy sector and how they feed into the first Just Transition plan. This includes detailed analysis of the future pathway for oil and gas in Scotland. The oil and gas sector is supported through a number of actions, namely by commissioning research and working with partners to develop CCUS in Scotland, supporting a number of demonstration projects to develop hydrogen and hydrogen fuel cells, supporting initiatives to build oil and gas skills through the Transition Training Fund, enhancing our oil and gas decommissioning capacity and capabilities through the Decommissioning Challenge Fund, and restructuring the Oil and Gas Industry Leadership Group (ILG) to the Oil and Gas and Energy Transition Strategic Leadership Group.
- 5.2.25 The Decommissioning Action Plan<sup>173</sup> launched by Scottish Enterprise and Highlands and Islands Enterprise in 2016 sets out how Scottish Government is making the most of oil and gas decommissioning opportunities<sup>174</sup>. In February 2018, in partnership with Highlands and Islands Enterprise and Scottish Enterprise, Scottish Government commissioned an Offshore Floating Asset

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<sup>169</sup> *ibid*

<sup>170</sup> Scottish Government (2022) Policy: Oil and Gas [online] Available at: <https://www.gov.scot/policies/oil-and-gas/#:~:text=As%20part%20of%20the%20September,ensure%20a%20sustainable%20energy%20transition.> (accessed 12/07/2022)

<sup>171</sup> [Scottish](#) Government (2022). A stronger and more resilient Scotland: the Programme for Government 2022 to 2023 [online] Available at: <https://www.gov.scot/publications/stronger-more-resilient-scotland-programme-government-2022-23/documents/> (accessed 15/09/2022)

<sup>172</sup> Scottish Government (2017). Scottish Energy Strategy: The future of energy in Scotland [online] Available at: <http://www.gov.scot/Resource/0052/00529523.pdf> (accessed 11/07/2022)

<sup>173</sup> Scottish Enterprise and Highlands and Islands Enterprise (2016) Oil and gas decommissioning action plan [online] Available at: <https://www.gov.scot/publications/oil-and-gas-decommissioning-action-plan/> (accessed 12/07/2022)

<sup>174</sup> Scottish Government (2022) Policy: Oil and Gas, Oil and gas decommissioning [online] Available at: <https://www.gov.scot/policies/oil-and-gas/oil-and-gas-decommissioning/> (accessed 12/07/2022)

Decommissioning Market Study which explores decommissioning opportunities in the oil and gas sector. Scottish Government is also providing funding and assistance to enhance the capability of the Scottish supply chain, with the aim of making Scotland a world leader in decommissioning.

- 5.2.26 The Decommissioning Challenge Fund (DCF) was announced by the First Minister on 8 February 2017 as a means of supporting infrastructure upgrades and innovation in retrieval and transportation methods at ports and harbours; supply chain projects to strengthen Scottish decommissioning capabilities and capacities; projects to develop high quality and comprehensive investment-grade business proposals for decommissioning; engineering scoping work at key sites to build business cases; feasibility studies to help to attract private investment. The DCF aligns with and supports cost reduction efforts related to retrieval and disposal activities, with the aim of improving the Scottish onshore decommissioning market.

## Carbon Capture, Usage and Storage policy

- 5.2.27 The Ten Point Plan<sup>175</sup> set out an ambition to establish CCUS in two industrial clusters by the mid-2020s, and four sites by 2030, capturing up to 10 Mt of carbon dioxide per year. HyNet (North West of England and North Wales) and East Coast (Humber and Teeside) Clusters have been confirmed as Track-1 clusters for the mid-2020s, with the Scottish Cluster (North East of Scotland) as a reserve cluster if a back-up is needed<sup>176</sup>. Further clusters are expected to be required through forthcoming Track-2 processes to bring forward capture and storage to meet the 10 Mtpa by 2030 target<sup>177</sup>. The Carbon Capture & Storage Association (CCSA) has set out its delivery plan to 2035<sup>178</sup>. Four CO<sub>2</sub> appraisal and storage licenses have been awarded by the North Sea Transition Authority (NSTA). In 2022, a new licence round for 13 potential CCS areas was launched by the NSTA.

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<sup>175</sup> BEIS (2020). The Ten Point Plan for a Green Industrial Revolution. November 2020. Available at <https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution>. Accessed 6 July 2022.

<sup>176</sup> BEIS (2021). Guidance. October 2021 update: Track-1 clusters confirmed. Updated 1 November 2021. Available at <https://www.gov.uk/government/publications/cluster-sequencing-for-carbon-capture-usage-and-storage-ccus-deployment-phase-1-expressions-of-interest/october-2021-update-track-1-clusters-confirmed>. Accessed 6 July 2022.

<sup>177</sup> BEIS (2021). Guidance. 1 November 2021 update: Carbon Capture, Usage and Storage (CCUS) Track-2. Updated 1 November 2021. Available at <https://www.gov.uk/government/publications/cluster-sequencing-for-carbon-capture-usage-and-storage-ccus-deployment-phase-1-expressions-of-interest/1-november-2021-update-carbon-capture-usage-and-storage-ccus-track-2>. Accessed 6 July 2022.

<sup>178</sup> CCSA (2022). CCUS Delivery Plan 2035. March 2022. Available at <https://www.ccsassociation.org/wp-content/uploads/2022/03/CCSA-CCUS-Delivery-Plan-2035-MASTER-Final.pdf>. Accessed 6 July 2022.

## 5.3 Environmental protection objectives

5.3.1 The following paragraphs present an overview of existing environmental protection objectives of relevance to the Draft Plan.

### Biodiversity, Flora, and Fauna policy

- 5.3.2 At an international level, the OSPAR Convention for the Protection of the Marine Environment of the North East Atlantic is an important driver in the protection and conservation of marine ecosystems and biodiversity, including the establishment of an ecologically coherent network of MPAs in the North East Atlantic<sup>179</sup>. The OSPAR List of Threatened and/or Declining Species and Habitats<sup>180</sup> identifies species and habitats that are considered to be priorities for protection.
- 5.3.3 Following the UK's exit from the EU, the requirements of the Habitats Directive (92/43/EEC)<sup>181</sup> and the Birds Directive (2009/147/EC)<sup>182</sup> are a part of UK domestic legislation, namely the Habitats Regulations<sup>183</sup> as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019<sup>184,185</sup>. These requirements focus on the maintenance and enhancement of biodiversity, with an emphasis on protecting rare and endangered wild species and natural habitats of European significance. The UK site network<sup>186</sup> comprises terrestrial and marine Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). Many of the terrestrial sites are also underpinned by a Site of Special Scientific Interest (SSSI) designation<sup>187</sup>.

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<sup>179</sup> OSPAR Commission (2018). Marine Protected Areas [online] Available at: <https://www.ospar.org/work-areas/bdc/marine-protected-areas> (accessed 11/07/2022)

<sup>180</sup> OSPAR Commission (2018). List of Threatened and/or Declining Species & Habitats. Available at: <https://www.ospar.org/work-areas/bdc/species-habitats/list-of-threatened-declining-species-habitats> (accessed 11/07/2022)

<sup>181</sup> Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora [online] Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0043> (accessed 06/07/2022)

<sup>182</sup> Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds [online] Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009L0147> (accessed 06/07/2022)

<sup>183</sup> The Conservation of Habitats and Species Regulations 2017, the Conservation of Offshore Marine Habitats and Species Regulations 2017, and the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 are collectively known as the Habitats Regulations

<sup>184</sup> The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 [online] Available at: <https://www.legislation.gov.uk/uksi/2019/579/contents/made> (accessed 06/07/2022)

<sup>185</sup> Scottish Government (2020). EU Exit: habitats regulations in Scotland [online] Available at: <https://www.gov.scot/publications/eu-exit-habitats-regulations-scotland-2/pages/2/> (accessed 06/07/2022)

<sup>186</sup> *ibid*

<sup>187</sup> NatureScot (2021). Sites of Special Scientific Interest [online] Available at: <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/national-designations/sites-special-scientific-interest-sssis> (accessed 11/07/2022)

- 5.3.4 At the national level, the Marine (Scotland) Act 2010<sup>188</sup> and the Marine and Coastal Access Act 2009<sup>189</sup> gave Scottish Ministers powers to designate MPAs in Scottish territorial and offshore waters, respectively.
- 5.3.5 The 2020 Challenge for Scotland's Biodiversity<sup>190</sup> is Scotland's response to the international United Nations (UN) Aichi Targets for 2020<sup>191</sup> and the EU Biodiversity Strategy to 2020<sup>192</sup>. The 2020 Challenge supplements the 2004 Scottish Biodiversity Strategy<sup>193</sup> and together they comprise the overall Scottish Biodiversity Strategy<sup>194</sup>. Key aims include preserving and restoring the health of Scotland's ecosystems at a catchment-scale and promoting climate change resilience.
- 5.3.6 In 2020, Scottish Government published a Scottish Biodiversity Strategy Post-2020: Statement of Intent which sets the direction for a new biodiversity strategy which will respond to the increased urgency for action to tackle the twin challenges of biodiversity loss and climate change<sup>195</sup>. A consultation on the new Scottish Biodiversity Strategy consultation opened on 20 June 2022 and closed on 12 September 2022<sup>196</sup>. This Strategy aims to end biodiversity loss by 2030 and restore / regenerate biodiversity by 2045<sup>197</sup>. It will ensure that conditions are in place to drive the transformation needed to manage and restore terrestrial, freshwater and marine biodiversity resources in Scotland, as well as

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<sup>188</sup> Scottish Government (2020). EU Exit: marine environmental legislation in Scotland. Marine (Scotland) Act 2010 [online] Available at: <https://www.gov.scot/publications/eu-exit-marine-environmental-legislation-scotland-2/pages/3/> (accessed 11/07/2022)

<sup>189</sup> Scottish Government (2020). EU Exit: marine environmental legislation in Scotland. Marine and Coastal Access Act 2009 [online] Available at: <https://www.webarchive.org.uk/wayback/archive/20150218140339/http://www.gov.scot/Topics/marine/seamanagement/marineact/ukbill> (accessed 11/07/2022)

<sup>190</sup> Scottish Government (2013). 2020 Challenge for Scotland's Biodiversity: A Strategy for the conservation and enhancement of biodiversity in Scotland [online] Available at: <http://www.gov.scot/Resource/0042/00425276.pdf> (accessed 11/07/2022)

<sup>191</sup> Convention on Biological Diversity (2010). Aichi Biodiversity Targets [online] Available at: <https://www.cbd.int/sp/targets/default.shtml> (accessed 11/07/2022)

<sup>192</sup> European Commission (2011) European Biodiversity Strategy to 2020 [online] Available at: <http://ec.europa.eu/environment/nature/info/pubs/docs/brochures/2020%20Biod%20brochure%20final%20lowres.pdf> (accessed 11/07/2022)

<sup>193</sup> Scottish Government (2004). Scotland's Biodiversity Strategy: It's in Your Hands – A strategy for the conservation and enhancement of biodiversity in Scotland [online] Available at: <https://www.webarchive.org.uk/wayback/archive/20150218202025/http://www.gov.scot/Publications/2004/05/19366/3/7239> (accessed 11/07/2022)

<sup>194</sup> NatureScot (2021). Scottish Biodiversity Strategy [online] Available at: <https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy> (accessed 11/07/2022)

<sup>195</sup> Scottish Government (2020). Scottish biodiversity strategy post-2020: statement of intent [online] Available at: <https://www.gov.scot/publications/scottish-biodiversity-strategy-post-2020-statement-intent/pages/2/> (accessed 06/07/2022)

<sup>196</sup> Scottish Government (2022). Scottish Biodiversity Strategy 2022 [online] Available at: <https://consult.gov.scot/environment-forestry/scottish-biodiversity-strategy-2022/> (accessed 08/07/2022)

<sup>197</sup> Scottish Government (2022). Biodiversity strategy: consultation. Available at: <https://www.gov.scot/publications/scotlands-biodiversity-strategy-consultation/#:~:text=The%20new%20Scottish%20Biodiversity%20strategy,restore%20%2F%20regenerate%20biodiversity%20by%202045> (accessed 06/07/2022)

providing a framework for prioritising and coordinating actions and investments<sup>198</sup>.

- 5.3.7 A Strategy for Marine Nature Conservation in Scotland's Seas is the main tool for enacting the principles of the 2020 Challenge within the marine environment<sup>199</sup>. It supports the development of an ecologically coherent network of MPAs in support of strategic aims such as meeting GES under the UK Marine Strategy and satisfying the requirements of the Birds and Habitats Directives<sup>200</sup>. It also proposed the Priority Marine Features (PMFs) system to guide the identification of MPAs and provide focus for marine planning and other activities.

### Population and Human Health policy

- 5.3.8 Directive 2012/18/EU (the Seveso III Directive) strengthens preceding legislation aimed at reducing the incidence of major industrial accidents as well as pre-emptively mitigating their environmental effects, with an emphasis on limiting consequences to human health<sup>201</sup>. The Directive is implemented in the UK through the Control of Major Accident Hazards Regulations 2015<sup>202</sup>.
- 5.3.9 The Bathing Water Directive 2006/7/EC safeguards public health by imposing minimum water quality standards on both terrestrial and maritime bathing waters<sup>203</sup>. Member States have a responsibility to monitor concentrations of certain bacteria and to inform the public about water quality and beach management.
- 5.3.10 The Land Reform (Scotland) Act 2003 introduced a new right of responsible access covering Scottish onshore, inland water, and coastal environments<sup>204</sup>. The Land Reform (Scotland) Act 2016 received royal assent on 22 April 2016, making minor amendments to the previous Act.
- 5.3.11 There are also measures in place to protect against human exposure to noise pollution and disturbance from vibration. These are entrenched in both the

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<sup>198</sup> Nature Scot (undated). Scotland's Biodiversity Strategy Consultation. Available at: <https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy-and-cop15/scotlands-biodiversity-strategy-2022-2045> (accessed 06/07/2022)

<sup>199</sup> Scottish Government (2011). A Strategy for Marine Nature Conservation in Scotland's Seas [online] Available at: <https://www.webarchive.org.uk/wayback/archive/3000/https://www.gov.scot/Resource/Doc/295194/0115590.pdf> (accessed 11/07/2022)

<sup>200</sup> *ibid*

<sup>201</sup> European Commission (2012) Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC [online] Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012L0018> (accessed 11/07/2022)

<sup>202</sup> The Control of Major Accident Hazards Regulations 2015, SI 2015/483 [online] Available at: <http://www.legislation.gov.uk/uksi/2015/483/introduction/made> (accessed 11/07/2022)

<sup>203</sup> 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 [online] Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006L0007> (accessed 11/07/2022)

<sup>204</sup> Land Reform (Scotland) Act 2003, 2003 asp 2 [online] Available at: <https://www.legislation.gov.uk/asp/2003/2/introduction> (accessed 11/07/2022)

Environmental Noise Directive (2002/49/EC)<sup>205</sup> at the European level and the Environmental Protection Act 1990<sup>206</sup> and Environmental Noise (Scotland) Regulations 2006<sup>207</sup> at the UK and national levels, respectively.

### Soil (Marine Geology and Coastal Processes) policy

- 5.3.12 EU Directive 2014/89/EU (the Maritime Spatial Planning Directive) consolidated and expanded upon the fundamental aspects of the Council Recommendation on Integrated Coastal Zone Management of 2002 and the Protocol to the Barcelona Convention on Integrated Coastal Zone Management of 2010<sup>208</sup>, obligating Member States to develop coastal management strategies. It aims to coordinate the development and delivery of policies across a wide spectrum of both marine and terrestrial activities, including offshore wind energy, in a way that is mindful of the natural limits of the coastal environment<sup>209</sup>.
- 5.3.13 In Scotland, Integrated Coastal Zone Management is achieved via the work of Local Coastal Partnerships<sup>210, 211</sup>. In addition, Marine Scotland Science is responsible for monitoring, research, and regulation of certain coastal activities.
- 5.3.14 At present, there is no legislative or policy tool developed specifically for the protection of soil<sup>212</sup>. However, designations and their associated management agreements and operations often extend protection to soil as a means of enhancing the biodiversity, geodiversity, landform value, and cultural resources of the site<sup>213</sup>. For example, marine geology forms part of the basis for the designation of MPAs within Scottish waters<sup>214</sup>. Specifically, MPAs strive to protect rare and representative marine species, habitats, and geodiversity, the

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<sup>205</sup> European Commission (2002) Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise – Declaration by the Commission in the Conciliation Committee on the Directive relating to the assessment and management of environmental noise [online] Available at: <http://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32002L0049> (accessed 11/07/2022)

<sup>206</sup> Environmental Protection Act 1990, 1990/Chapter 43 [online] Available at: <http://www.legislation.gov.uk/ukpga/1990/43/introduction> (accessed 11/07/2022)

<sup>207</sup> The Environmental Noise (Scotland) Regulations 2006, 2006 SSI No. 465 [online] Available at: <http://www.legislation.gov.uk/ssi/2006/465/introduction/made> (accessed 11/07/2022)

<sup>208</sup> European Commission (2016) Integrated Coastal Management [online] Available at: [http://ec.europa.eu/environment/iczm/index\\_en.htm](http://ec.europa.eu/environment/iczm/index_en.htm) (accessed 11/07/2022)

<sup>209</sup> European Commission (2014). Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning [online] Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014L0089> (accessed 11/07/2022)

<sup>210</sup> Scottish Government (2014). Managing Scotland's Coastline [online] Available at: <https://www.webarchive.org.uk/wayback/archive/3000/https://www.gov.scot/Topics/marine/marine-environment/coast> (accessed 11/07/2022)

<sup>211</sup> Marine Scotland (2018). Scottish Coastal Forum (SCF) [online] Available at: <https://www.gov.scot/publications/scottish-coastal-forum-scf/> (accessed 11/07/2022)

<sup>212</sup> Scottish Government (2009). The Scottish Soil Framework [online] Available at: <http://www.gov.scot/Publications/2009/05/20145602/0> (accessed 11/07/2022)

<sup>213</sup> *ibid*

<sup>214</sup> JNCC (2019). Nature Conservation Marine Protected Areas [online] Available at: <https://jncc.gov.uk/our-work/nature-conservation-mpas/> (accessed 11/07/2022)

latter defined as the variety of landforms and natural processes that underpin the marine landscape.

- 5.3.15 The UK Marine Strategy covers 11 elements or descriptors, including sea-floor integrity (Descriptor 6 (D6)) comprising pelagic habitats and benthic habitats<sup>215</sup>. In terms of benthic habitats, the high level objective for GES is to ensure the health of seabed habitats is not significantly adversely affected by human activities<sup>216</sup>.
- 5.3.16 The Scottish Soil Framework places the sustainable management of soils within the context of the economic, social, and environmental needs of Scotland<sup>217</sup>. The Framework identifies 13 key soil outcomes such as protecting soil biodiversity, reducing and remediating soil erosion, and tackling GHG emissions. The Framework also notes the impacts that rising sea levels and associated seasonal incursion by seawater could have on coastal soils.

### Water Quality policy

- 5.3.17 The International Convention for the Prevention of Pollution from Ships (MARPOL) regulates accidental and operational releases of pollutants into the marine environment by the shipping industry, including oil and other chemicals<sup>218</sup>.
- 5.3.18 The EU's Water Framework Directive (2000/60/EC) (WFD) was introduced as a more comprehensive approach to managing and protecting Europe's water bodies including rivers, lochs, transitional waters, coastal waters, and groundwater resources<sup>219</sup>. It sets out a requirement for an assessment of both chemical and ecological status and has a goal of bringing all European waters to 'good' chemical and ecological status. Scotland fulfils its water protection obligations under the WFD primarily through the Water Environment and Water Services (Scotland) Act 2003<sup>220</sup>, which defines the establishment of River Basin Management Plans (RBMPs)<sup>221</sup>, and the Water Environment (Controlled

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<sup>215</sup> UKMMAS (undated) Introduction to UK Marine Strategy [online] Available at: <https://moat.cefas.co.uk/introduction-to-uk-marine-strategy/> (accessed 06/07/2022)

<sup>216</sup> Defra (2019) Marine Strategy Part One: UK updated assessment and Good Environmental Status October 2019 [online] Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/921262/marine-strategy-part1-october19.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/921262/marine-strategy-part1-october19.pdf) (accessed 08/07/2022)

<sup>217</sup> Scottish Government (2009). The Scottish Soil Framework [online] Available at: <http://www.gov.scot/Publications/2009/05/20145602/0> (accessed 11/07/2022)

<sup>218</sup> MARPOL (2017). International Convention for the Prevention of Pollution from Ships (MARPOL) [online] Available at: [http://www.imo.org/en/about/conventions/listofconventions/pages/international-convention-for-the-prevention-of-pollution-from-ships-\(marpol\).aspx](http://www.imo.org/en/about/conventions/listofconventions/pages/international-convention-for-the-prevention-of-pollution-from-ships-(marpol).aspx) (accessed 11/07/2022)

<sup>219</sup> 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 [online] Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0060> (accessed 11/07/2022)

<sup>220</sup> Water Environment and Water Services (Scotland) Act 2003, asp 3 [online] Available at: [http://www.legislation.gov.uk/asp/2003/3/pdfs/asp\\_20030003\\_en.pdf](http://www.legislation.gov.uk/asp/2003/3/pdfs/asp_20030003_en.pdf) (accessed 11/07/2022)

<sup>221</sup> SEPA (2016). River Basin Management Planning [online] Available at: <http://www.sepa.org.uk/environment/water/river-basin-management-planning/> (accessed 11/07/2022)

Activities) (Scotland) Regulations 2011<sup>222</sup>. Other relevant legislation includes the Pollution prevention and Control (Scotland) Regulations 2012, which applies specifically to pollution originating from industry discharges<sup>223</sup>.

- 5.3.19 The Marine Strategy Framework Directive which is reported in the UK through the UK Marine Strategy<sup>224</sup> extends the requirements of the WFD into seas beyond 1nm. The UK Marine Strategy covers 11 elements or descriptors, including eutrophication (D5), hydrographical conditions (D7) and contaminants (D8)<sup>225</sup>. In relation to eutrophication (D5), the high level objective for GES is to minimise human-induced eutrophication in UK marine waters<sup>226</sup>. For hydrographic changes (D7), the GES objective is to ensure that the nature and scale of any permanent changes to hydrographical conditions resulting from anthropogenic activities do not have significant long-term impacts on UK habitats and species. For contaminants (D8), the GES objective is that concentrations of specified contaminants in water, sediment or marine biota, and their effects, are lower than thresholds that cause harm to sea life, and are not increasing.
- 5.3.20 The EU Floods Directive (2007/60/EC)<sup>227</sup> is implemented at the national level through the Flood Risk Management (Scotland) Act 2009<sup>228</sup>. The Directive mandates the creation of flood risk management plans for all inland and coastal areas at risk of flooding, integrating their development and deployment with existing RBMPs. Flood risk management plans are designed to minimise negative impacts due to flooding on a range of receptors, including human health, the environment, and cultural heritage.

### Climatic Factors policy

- 5.3.21 In November 2016, the United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement came into force<sup>229</sup>. The Paris Agreement is the first legally binding global climate deal and sets out aims to limit global

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<sup>222</sup> The Water Environment (Controlled Activities) (Scotland) Regulations 2011, SSI No. 206 [online] Available at: [http://www.legislation.gov.uk/ssi/2011/209/pdfs/ssi\\_20110209\\_en.pdf](http://www.legislation.gov.uk/ssi/2011/209/pdfs/ssi_20110209_en.pdf) (accessed 11/07/2022)

<sup>223</sup> The Pollution Prevention and Control (Scotland) Regulations 2012, SSI No. 306 [online] Available at: <http://www.legislation.gov.uk/ssi/2012/360/introduction/made> (accessed 11/07/2022)

<sup>224</sup> UKMMAS (2021). Introduction to UK Marine Strategy [online] Available at: <https://moat.cefas.co.uk/introduction-to-uk-marine-strategy/> (accessed 06/07/2022)

<sup>225</sup> UKMMAS (undated) Introduction to UK Marine Strategy [online] Available at: <https://moat.cefas.co.uk/introduction-to-uk-marine-strategy/> (accessed 06/07/2022)

<sup>226</sup> Defra (2019) Marine Strategy Part One: UK updated assessment and Good Environmental Status October 2019 [online] Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/921262/marine-strategy-part1-october19.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/921262/marine-strategy-part1-october19.pdf) (accessed 06/07/2022)

<sup>227</sup> European Commission (2007). The EU Floods Directive [online] Available at: [http://ec.europa.eu/environment/water/flood\\_risk/](http://ec.europa.eu/environment/water/flood_risk/) (accessed 11/07/2022)

<sup>228</sup> Flood Risk Management (Scotland) Act 2009, asp 6 [online] Available at: [http://www.legislation.gov.uk/asp/2009/6/pdfs/asp\\_20090006\\_en.pdf](http://www.legislation.gov.uk/asp/2009/6/pdfs/asp_20090006_en.pdf) (accessed 11/07/2022)

<sup>229</sup> UNFCCC (2016). The Paris Agreement [online] Available at: [http://unfccc.int/paris\\_agreement/items/9485.php](http://unfccc.int/paris_agreement/items/9485.php) (accessed 11/07/2022)

warming to well below 2°C as well as pursue further efforts to limit it to 1.5°C<sup>230</sup>. A further long term goal is to achieve net-zero levels of global greenhouse gas (GHG) emissions by the second half of this century. The Agreement also covers a range of other issues such as mitigation through reducing emissions, adaptation, and loss and damage<sup>231</sup>.

- 5.3.22 The British Energy Security Strategy sets out how Great Britain will accelerate homegrown power for greater energy independence<sup>232</sup>. The Strategy recognises the importance of accelerating the transition away from oil and gas which depends critically on the development and deployment of offshore wind farms<sup>233</sup>. It seeks to cut the processing time for offshore renewable development by over half through a number of initiatives, including reducing consent time from up to four years down to one year, making environmental considerations at a more strategic level allowing us to speed up the process while improving the marine environment, introducing strategic compensation environmental measures including for projects already in the system to offset environmental effects and reduce delays to projects, and implementing a new Offshore Wind Environmental Improvement Package including an industry-funded Marine Recovery Fund and nature-based design standards to accelerate deployment whilst enhancing the marine environment.
- 5.3.23 The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019<sup>234</sup> received Royal Assent on 31 October 2019. The Act amends the Climate Change (Scotland) Act 2009 setting targets to reduce Scotland's emissions of all greenhouse gases to net-zero by 2045 at the latest, with interim targets for reductions of at least 56% by 2020, 75% by 2030, 90% by 2040<sup>235</sup>. An update to Scotland's 2018-2032 Climate Change Plan has recently been published<sup>236</sup>, which reflects the increased ambition of the new targets for Scotland. Achievement of these targets will require the expansion of renewable energy in Scotland, of which offshore wind is likely to form a significant contribution.
- 5.3.24 The Marine (Scotland) Act 2010 specifies a duty for Ministers and the public sector to manage and progress actions within the marine environment in a way 'best calculated to mitigate, and adapt to, climate change so far as is consistent

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<sup>230</sup> European Commission (2021). Paris Agreement [online] Available at: [https://ec.europa.eu/clima/policies/international/negotiations/paris\\_en](https://ec.europa.eu/clima/policies/international/negotiations/paris_en) (accessed 11/07/2022)

<sup>231</sup> *ibid*

<sup>232</sup> UK Government (2022) Policy paper: British energy security strategy [online] Available at: <https://www.gov.uk/government/publications/british-energy-security-strategy> (accessed 11/07/2022)

<sup>233</sup> *ibid*

<sup>234</sup> Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 [online] Available at: <https://www.legislation.gov.uk/asp/2019/15/contents/enacted> (accessed 11/07/2022)

<sup>235</sup> Scottish Government (2021). Climate Change: Reducing greenhouse gas emissions [online] Available at: <https://www.gov.scot/policies/climate-change/reducing-emissions/> (accessed 11/07/2022)

<sup>236</sup> Scottish Government (2020). Securing a green recovery on a path to net zero: climate change plan 2018–2032 – update [online] Available at: <https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/> (accessed 11/07/2022)

with the proper exercise of that function'<sup>237</sup>. Scotland's National Marine Plan<sup>238</sup> considers climate change in terms of how actions undertaken within the Plan can help to mitigate GHG emissions, in addition to how these actions also need to be adapted to take into account the effects of climate change. The Plan also stipulates that the development and use of the marine environment should not have a significant impact on the national status of PMFs, several of which are known for their role in carbon sequestration.

- 5.3.25 Climate Ready Scotland: climate change adaptation programme 2019-2024<sup>239</sup>, is a five year programme to prepare Scotland for the challenges it will face as the climate continues to change. One of the outcomes of the programme is that the coastal and marine environment is valued, enjoyed, protected, and enhanced, and has increased resilience to climate change.
- 5.3.26 The UK hosted the 26<sup>th</sup> UN Climate Change Conference of the Parties (COP26) in Glasgow between 31 October and 12 November 2021<sup>240</sup>. The COP26 summit brought parties together to accelerate action towards the goals of the Paris Agreement and the UN Framework Convention on Climate Change. The outcomes achieved are outlined in the COP26 Glasgow Climate Pact<sup>241</sup>.

### Cultural Heritage policy

- 5.3.27 The UNESCO Convention on the Protection of the Underwater Cultural Heritage obligates signatories to take steps to preserve their underwater heritage both within territorial waters and as well as throughout their Exclusive Economic Zone<sup>242</sup>. Article 5 refers to activities that could incidentally affect underwater cultural heritage, such as offshore wind energy generation.
- 5.3.28 The Joint Nautical Archaeology Policy Committee Code of Practice for Seabed Developers is a voluntary code of practice<sup>243</sup>. It provides a framework that seabed developers can follow to ensure their activities are sympathetic to archaeological resources. Further sources of guidance include those that set

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<sup>237</sup> Marine (Scotland) Act 2010, asp 5 [online] Available at: [http://www.legislation.gov.uk/asp/2010/5/pdfs/asp\\_20100005\\_en.pdf](http://www.legislation.gov.uk/asp/2010/5/pdfs/asp_20100005_en.pdf) (accessed 11/07/2022)

<sup>238</sup> Scottish Government (2015). Scotland's National Marine Plan [online] Available at: <http://www.gov.scot/Publications/2015/03/6517> (accessed 11/07/2022)

<sup>239</sup> Scottish Government (2019). Climate Ready Scotland: climate change adaptation programme 2019-2024 [online] Available at: <https://www.gov.scot/publications/climate-ready-scotland-second-scottish-climate-change-adaptation-programme-2019-2024/> (accessed 11/07/2022)

<sup>240</sup> UN Climate Change Conference UK 2021 (undated) COP26 [online] Available at: <https://ukcop26.org/> (accessed 06/07/2022)

<sup>241</sup> UN Climate Change Conference UK 2021 (undated) COP26: The Glasgow Climate Pact [online] Available at: <https://ukcop26.org/wp-content/uploads/2021/11/COP26-Presidency-Outcomes-The-Climate-Pact.pdf> (accessed 06/07/2022)

<sup>242</sup> UNESCO (2001). Text of the 2001 Convention on the Protection of the Underwater Cultural Heritage [online] Available at: <http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/2001-convention/official-text/> (accessed 11/07/2022)

<sup>243</sup> The Crown Estate (2006). Maritime Cultural Heritage & Seabed Development - JNAPC Code of Practice for Seabed Development – Joint Nautical Archaeology Policy Committee [online] Available at: [http://www.jnapc.org.uk/jnapc\\_brochure\\_may\\_2006.pdf](http://www.jnapc.org.uk/jnapc_brochure_may_2006.pdf) (accessed 11/07/2022)

out protocols to deal with the marine historic environment developed specifically for the offshore renewable energy sector<sup>244</sup>.

- 5.3.29 The Marine (Scotland) Act 2010 included an article on the establishment of historic Marine Protected Areas (MPAs) to safeguard a wide range of heritage assets at the coast edge, on the foreshore, and out to sea, including the remains of ships and aircraft lost at sea; harbours, lighthouses, and other structures relating to transport and trade by sea; and the remains of human settlements at the coastal fringe. They extend and replace the protection previously afforded to underwater heritage by the Protection of Wrecks Act 1973<sup>245</sup>.
- 5.3.30 The Ancient Monuments and Archaeological Areas Act 1979 provides for the protection of archaeological heritage, including the scheduling of 'monuments'<sup>246</sup>. The Act is primarily intended for terrestrial locations but includes provision to designate submarine sites. The 1979 Act was modified by the Historic Environment (Amendment) Scotland Act 2011<sup>247</sup>.
- 5.3.31 Our Place in Time – The Historic Environment Strategy for Scotland, published in 2014, lays out a 10 year vision for Scotland's historic environment<sup>248</sup>. The vision is founded upon the fundamental aims of understanding, protecting, and valuing our historic environment, ensuring it continues to benefit Scotland's wellbeing through its cultural, social, environmental, and economic contributions.
- 5.3.32 The Historic Environment Policy for Scotland<sup>249</sup> sets out an overarching framework for historic environment policy in Scotland. Other relevant policies include the National Planning Framework<sup>250</sup> and Scottish Planning Policy<sup>251</sup>.

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<sup>244</sup> COWRIE (2007). Historic Environment Guidance for the Offshore Renewable Energy Sector [online] Available at: [https://www.wessexarch.co.uk/sites/default/files/field\\_file/COWRIE\\_2007\\_Wessex\\_%20-%20archaeo\\_%20guidance\\_Final\\_1-2-07.pdf](https://www.wessexarch.co.uk/sites/default/files/field_file/COWRIE_2007_Wessex_%20-%20archaeo_%20guidance_Final_1-2-07.pdf) (accessed 11/07/2022)

<sup>245</sup> Protection of Wrecks Act 1973, 1973/Chapter 33 [online] Available at: <https://www.legislation.gov.uk/ukpga/1973/33> (accessed 11/07/2022)

<sup>246</sup> Ancient Monuments and Archaeological Areas Act 1979, 1979/Chapter 46 [online] Available at: <https://www.legislation.gov.uk/ukpga/1979/46> (accessed 11/07/2022)

<sup>247</sup> Historic Environment (Amendment) (Scotland) Act (2011), asp 3 [online] Available at: <http://www.legislation.gov.uk/asp/2011/3> (accessed 11/07/2022)

<sup>248</sup> Scottish Government (2014). Our Place in Time – The Historic Environment Strategy for Scotland [online] Available at: <http://www.gov.scot/Publications/2014/03/8522/0> (accessed 11/07/2022)

<sup>249</sup> Historic Environment Scotland (2019). Historic Environment Policy for Scotland (HEPS) [online] Available at: <https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps/> (accessed 11/07/2022)

<sup>250</sup> Scottish Government (2014). National Planning Framework 3: A Plan for Scotland: Ambition, Opportunity, Place and Scottish Planning Policy [online] Available at: <https://www.gov.scot/publications/national-planning-framework-3/> (accessed 11/07/2022)

<sup>251</sup> Scottish Government (2020). Scottish Planning Policy [online] Available at: <https://www.gov.scot/publications/scottish-planning-policy/> (accessed 11/07/2022)

## Landscape, Seascape, and Visual Amenity policy

- 5.3.33 The European Landscape Convention strives to promote landscape protection, management, and planning as well as achieve a more concerted approach to addressing landscape issues at the European scale<sup>252</sup>. The Convention presents a highly inclusive definition of landscape, specifying that protection and enhancement activities should apply equally to both ‘outstanding’ as well as less remarkable or degraded landscapes. This definition encompasses natural, rural, urban, and peri-urban landscapes across land, marine, and inland water environments.
- 5.3.34 At a national level, the role of Scotland’s natural heritage and landscapes in informing land use planning is set out in Scottish Planning Policy<sup>253</sup>. Additionally, National Planning Framework 3 acknowledges the multiple benefits we derive from landscapes, such as improved human health and wellbeing as well as contributions to our quality of life<sup>254</sup>. The vulnerability of landscapes to climate change is also noted. Once the emerging National Planning Framework 4<sup>255</sup> is finalised it will be incorporated into the statutory Development Plan for making planning decisions.
- 5.3.35 NatureScot’s Landscape Policy Framework strives to ‘safeguard and enhance the distinct identity, the diverse character, and the special qualities of Scotland’s landscapes as a whole’<sup>256</sup>. Both Scottish Planning Policy and National Planning Framework 3 give significant protection to wild land areas<sup>257</sup>. The National Marine Plan also sets out the consideration of wild land in addition to largely undeveloped coasts, noting that development should be considered in line with Scottish Planning Policy when planning for and taking decisions which may impact on such areas.
- 5.3.36 NatureScot has also produced guidance on ‘Siting and Designing Wind Farms in the Landscape’ that includes a section on coastal landscapes and the potential impact offshore wind farms may have on inland and offshore land and seascape character and views, including views from boats and ferries<sup>258</sup>. It also

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<sup>252</sup> European Landscape Convention (2000) Text of the ELC [online] Available at: <https://rm.coe.int/1680080621> (accessed 11/07/2022)

<sup>253</sup> Scottish Government (2020). Scottish Planning Policy [online] Available at: <https://www.gov.scot/publications/scottish-planning-policy/> (accessed 11/07/2022)

<sup>254</sup> Scottish Government (2014). National Planning Framework 3: A Plan for Scotland: Ambition, Opportunity, Place and Scottish Planning Policy [online] Available at: <https://www.gov.scot/publications/national-planning-framework-3/> (accessed 11/07/2022)

<sup>255</sup> Scottish Government (2021) Draft NPF4 [online] Available at: <https://www.transformingplanning.scot/national-planning-framework/draft-npf4/> (accessed 15/09/2022)

<sup>256</sup> NatureScot (2017). NatureScot Landscape Policy Framework [online] Available at: <https://www.nature.scot/professional-advice/landscape/framework-landscape-policy/naturescot-landscape-policy-framework> (accessed 11/07/2022)

<sup>257</sup> NatureScot (2021). Landscape policy: wild land [online] Available at: <https://www.nature.scot/professional-advice/landscape/landscape-policy-and-guidance/landscape-policy-wild-land> (accessed 11/07/2022)

<sup>258</sup> NatureScot (2014). Siting and Designing Wind Farms in the Landscape – Version 2 [online] Available at: <https://www.nature.scot/siting-and-designing-wind-farms-landscape-version-3a> (accessed 11/07/2022)

states that existing landmarks like historical or navigational features (such as lighthouses), distinctive coastal landforms, coastal settlements, and areas valued for recreation should be avoided when selecting locations for wind energy development. Additional advice is provided by their 'Offshore Renewables – guidance on assessing the impact on coastal landscape and seascape' publication<sup>259</sup>.

- 5.3.37 It is recognised that individual regions or council areas are likely to have differing policies on the management of landscape and seascape, and therefore the level of constraint may differ dependent on the regional policy.

## 5.4 Initial environmental baseline

- 5.4.1 The following paragraphs provide an indication of the content and level of detail likely to be included in the environmental baseline that will inform the assessment of the Draft Plan. The topics covered by the baseline information will reflect the proposed scope of the assessment (see Section 4.1).
- 5.4.2 A national overview of the baseline environment that encompasses those topics agreed for consideration within for the SEA will be provided. To provide further understanding of the baseline at a regional level, a Regional Locational Guidance (RLG) document will be prepared in parallel to the SEA, which is intended to support the SEA, HRA and SEIA. The RLG will involve collating environmental and socio-economic baseline data based on existing GIS data and other gathered information for the identified AoS. The RLG will be used to identify suitable options for inclusion in the sectoral marine planning process and to inform key stakeholders and other interested parties of the key regional issues in relation to potential development under the plan.
- 5.4.3 Under each SEA topic, current trends and pressures will be explored, alongside an indication of how the baseline may evolve in the absence of the Draft Plan. Information to support the baseline will be drawn from a range of sources such as:
- Scotland's Marine Atlas, published in March 2011 and supplemented by updated information provided by NMPI<sup>260</sup>;
  - Scotland's Marine Assessment 2020<sup>261</sup>;
  - GeMS database/EMODnet habitat map;

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<sup>259</sup> NatureScot (2012). Offshore Renewables – guidance on assessing the impact on coastal landscape and seascape [online] Available at: <https://www.nature.scot/guidance-offshore-renewables-assessing-impact-coastal-landscape-and-seascape-guidance-scoping> (accessed 11/07/2022)

<sup>260</sup> National Marine Plan interactive (NMPI). Available at: <http://www.scotland.gov.uk/topics/marine/seamanagement/nmpihome> (accessed 11/07/2022)

<sup>261</sup> Marine Scotland (2020). Scotland's Marine Assessment 2020 [online] Available at: <https://marine.gov.scot/sma/> (accessed 11/07/2022)

- JNCC's Marine Recorder<sup>262</sup>;
- Strategic level information on the existing environment provided in previous and ongoing SEAs undertaken by the Scottish Government;
- Environmental research studies undertaken by Marine Scotland Directorate and hosted on Marine Scotland Information;
- Scotland's Environment Web and other Scottish Government environmental sources (e.g. Dynamic Coast<sup>263</sup>);
- MEDIN data portal for available marine data across UK organisations<sup>264</sup>;
- HES portal<sup>265</sup>;
- North Sea Transition Authority database<sup>266</sup>;
- Department for Business, Energy & Industrial Strategy (BEIS) Renewable Energy Planning Database<sup>267</sup>; and
- The Crown Estate's Open Data Portal<sup>268</sup> and Marine Data Exchange<sup>269</sup>.

5.4.4 If applicable, baseline maps are likely to be included alongside narrative summaries of the environmental baseline.

### Biodiversity, Flora, and Fauna

5.4.5 Baseline information may include an overview of:

- Broad-scale habitat types;
- Designated sites, including European sites (SACs and SPAs), Ramsar sites, SSSIs with marine features and Nature Conservation MPAs;
- PMFs;
- Mobile features, including designated seal haul-out sites, and distribution of marine mammals, birds, fish and otters; and
- Fish spawning and nursery grounds.

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<sup>262</sup> JNCC (2022) Marine Recorder [online] Available at: <https://jncc.gov.uk/our-work/marine-recorder/> (accessed 16/09/2022)

<sup>263</sup> Dynamic Coast (2022). Outputs [online] Available at: <https://www.dynamiccoast.com/> (accessed 15/09/2022)

<sup>264</sup> MEDIN Portal. Available at: <https://portal.medin.org.uk/portal/start.php> (accessed 11/07/2022)

<sup>265</sup> HES (2022) Portal [online] Available at: <https://portal.historicenvironment.scot/> (accessed 16/09/2022)

<sup>266</sup> NSTA (2022) NSTA Open data [online] Available at: <https://www.nstauthority.co.uk/data-centre/> (accessed 15/09/2022)

<sup>267</sup> BEIS (2022). Renewable Energy Planning Database [online] Available at: <https://www.gov.uk/government/publications/renewable-energy-planning-database-monthly-extract> (accessed 15/09/2022)

<sup>268</sup> TCE (2022) The Crown Estate Open Data [online] Available at: <https://opendata-thecrownestate.opendata.arcgis.com/> (accessed 15/09/2022)

<sup>269</sup> TCE (2022) Marine Data Exchange [online] Available at: <https://beta.marinedataexchange.co.uk/> (accessed 15/09/2022)

- 5.4.6 Habitats will include marine, coastal, intertidal, benthic, and terrestrial habitats as appropriate. Links with the HRA will be developed further as the SEA progresses and the outcomes of the assessment stage of the HRA will inform the SEA.

### Population and Human Health

- 5.4.7 Baseline information may include an overview of:
- Population dynamics;
  - Navigation, including AIS shipping density;
  - Aviation infrastructure, radar coverage and helicopter main routes;
  - Designated bathing waters; and
  - Recreation.

### Soil (Marine Geology and Coastal Processes)

- 5.4.8 Baseline information may include an overview of:
- Marine geology and coastal processes, including seabed sediment morphology; and
  - Geodiversity and designated sites, including coastal SSSIs designated for their geological and/or geomorphological interest and physiographical features.

### Water

- 5.4.9 Baseline information may include an overview of:
- Classification of coastal and transitional water bodies under the WFD;
  - Shellfish water classifications; and
  - Potential contamination sources.
- 5.4.10 The water baseline will encompass inshore, coastal, intertidal, and marine waters.

### Climatic Factors

- 5.4.11 Baseline information may include an overview of:
- Climate change, including rising sea temperatures, ocean acidification, sea level rise;
  - GHG emissions;

- Carbon cycles, including habitats and processes capable of carbon fixation and sequestration, referred to as 'blue carbon sinks' (e.g. maerl beds).

### Cultural Heritage

5.4.12 Baseline information may include an overview of:

- Designated historical sites and shipwrecks, including World Heritage Sites (WHS), Historic MPAs, scheduled monuments, listed buildings and Gardens and Designed Landscapes; and
- Palaeolandscapes and potential for submerged archaeological remains in areas of the coast and sea that were previously above sea level.

### Landscape, Seascape, and Visual Amenity

5.4.13 Baseline information may include an overview of:

- Location and defining characteristics of designated areas, such as National Scenic Areas (NSAs), WHS, national parks and Local Landscape Areas (LLAs);
- Sites that are recognised for internationally significant geodiversity and which are included in the European Geoparks Network and the UNESCO Global Geoparks Network; and
- Scotland's Landscape Character Assessment and Coastal Character Assessment.

## 6 Consultation and next steps

- 6.1.1 This joint Screening and Scoping Report has been provided to the statutory Consultation Authorities/consultation bodies for comment and was shared with the .INTOG steering group for review and comment in August 2022.
- 6.1.2 Following the close of this consultation, the responses will be analysed and used to inform the development of the Draft Plan and Environmental Report that will be made available for public consultation.
- 6.1.3 Table 5 sets out this indicative timeline.
- 6.1.4 The assessment work for INTOG and the IPR of the 2020 Sectoral Marine Plan for Offshore Wind Energy will be carried out in parallel and then combined into single assessment of cumulative impacts supported by outputs from Marine Scotland Science's Cumulative Effects Framework. It is anticipated that the integration of the assessments and consideration of cumulative impacts will occur in spring 2023.

**Table 5. Indicative timeline for the development of a Draft Plan for INTOG**

Indicative timeline	Development of Draft Plan for INTOG	Stage of SEA
July to August 2022	Initial stakeholder consultation through the INTOG steering group on: <ul style="list-style-type: none"> <li>• 'Suite' of consultation documents including the joint SEA Screening and Scoping Report, a report presenting the initial pre-screening stages of the HRA, and a report presenting the proposed methodology for the SEIA.</li> </ul>	Screening and Scoping
Summer 2023	Statutory Consultation on: <ul style="list-style-type: none"> <li>• The Draft Sectoral Marine Plan for Offshore Wind Energy supporting Innovation and Targeted Oil and Gas Decarbonisation (the 'Draft Plan');</li> <li>• SEA Environmental Report;</li> <li>• SEIA;</li> <li>• HRA;</li> <li>• Overarching SA; and</li> <li>• Regional Locational Guidance (RLG).</li> </ul>	Environmental Report
Autumn 2023	Publication of Consultation Analysis Report.	N/A
Winter 2023	Publication of finalised Plan and accompanying Post-Adoption Statement.	Post-Adoption Statement



# Appendix A SEA Screening Report



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## 1.0 Introduction

1.1 It is considered that the Sectoral Marine Plan for Offshore Wind Energy supporting Innovation and Targeted Oil and Gas Decarbonisation (the 'Draft Plan') falls under Section 5(4) of the Environmental Assessment (Scotland) Act 2005 (the '2005 Act'). Given the potential scope of the plan's geographical impacts, this joint Screening and Scoping report has also been undertaken in accordance with The Environmental Assessment of Plans and Programmes Regulations 2004 (the '2004 Regulations').

## 2.0 Screening

2.1 This Screening Report gives a preliminary indication of the type of environmental effects that may arise from the implementation of innovative offshore wind projects and projects seeking to support oil and gas decarbonisation around Scotland.

**Table A1. Likely significance of identified environmental effects on environment**

Criteria for determining the likely significance of the effects on the environment	Likely to have significant environmental effects?	Summary of significant environmental effects (negative and positive)
1(a) the degree to which the PPS sets a framework for projects and other activities, either with regard to the location, nature, size and operating conditions or by allocating resources	Yes	The Draft Plan forms the basis for the development of innovative offshore wind projects and offshore wind projects that aim to decarbonise oil and gas installations. In support of this, prospective Areas of Search (AoS) have been identified where such development could occur.
1(b) the degree to which the PPS influences other PPS including those in a hierarchy	Yes	The Draft Plan will support and inform the existing Sectoral Marine Plan for Offshore Wind Energy 2020.
1I the relevance of the PPS for the integration of environmental considerations in particular with a view to promoting sustainable development.	Yes	The Draft Plan will play a key role in contributing to the collaborative action that is being taken towards decarbonising the energy sector.

1(d) environmental problems relevant to the PPS	Yes	Scotland's seas face a number of threats, such as invasive species, overfishing, and changes in salinity and acidity due to climate change. However, many aspects of the marine environment remain poorly understood and are therefore not yet covered by relevant protective frameworks. As a result, the marine environment remains vulnerable to change and development. Marine planning aims to incorporate environmental considerations into the offshore development process.
1(e) the relevance of the PPS for the implementation of Community legislation on the environment (for example, PPS linked to waste management or water protection)	Yes	<p>It is intended that the Draft Plan will support Scotland's efforts in meeting its renewable energy generation targets under the recent update to Scotland's 2018-2032 Climate Change Plan .</p> <p>Water protection objectives (e.g. WFD) and the principles of maritime spatial planning as laid out by EU Directive 2014/89/EU on maritime spatial planning are also relevant to the Draft Plan.</p>
2 (a) the probability, duration, frequency and reversibility of the effects	Yes	It is considered likely that the implementation of the Draft Plan will lead to environmental effects. Certain effects will occur during the lifespan of the project and may be irreversible. The frequency of effects will vary depending on the receptor and activity from which the effect arises.
2 (b) the cumulative nature of the effects	Yes	The Draft Plan is of national scale and provides a prospective framework within which several offshore wind arrays may be installed. As such, there is potential for cumulative effects when considered across multiple sites as well as in combination with other types of marine activity, including other forms of offshore renewable development.

2 (c) transboundary nature of the effects (i.e. environmental effects on other EU Member States)	No	Given that sites may be located some distance from shore, and that the offshore wind installations may affect highly mobile species, the potential for transboundary impacts to arise is recognised. As a result, the SEA of the Draft Plan will be undertaken in accordance with both the 2005 Act and the 2004 Regulations.
2 (d) the risks to human health or the environment (for example, due to accidents)	No	The Draft Plan is not expected to directly impact upon human health. However, it will be important to recognise potential hazards to other marine users.
2 (e) the magnitude and spatial extent of the effects	Yes	The proposed AoS are shown on Figure 2. These AoS cover a large area encompassing both Scottish territorial and offshore waters out to 200nm.
2 (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; or (iii) intensive land-use.	Yes	Scotland's marine environment fulfils a multitude of functions and is recognised for its ecological and social importance. However, existing pressures make Scottish seas sensitive to further change and disturbance caused by development.  Many marine natural and cultural features are either poorly documented or are unknown. This is particularly true of deep waters. As such, there is a risk of damage or loss to natural and cultural assets including seabed habitats and offshore archaeology, seascapes, and underwater palaeolandscapes.
2 (g) the effects on areas or landscapes which have a recognised national, community or international protection status	Yes	Some degree of change in the visual character of landscapes or seascapes remains a possibility, with the potential for associated impacts on the visual setting of cultural heritage features as well as on residential amenity.

1.1 **.0 Conclusion.1** It has been concluded that the Draft Plan is likely to give rise to significant environmental effects, and as such, a full SEA is

required. The views of the Consultation Authorities and UK consultation bodies are now sought, as required under the 2005 Act and the 2004 Regulations.

## Appendix B                      Abbreviations

AIS	Automatic Identification System
BEIS	Department for Business, Energy and Industrial Strategy
CCS	Carbon Capture and Storage
CCSA	Carbon Capture & Storage Association
CCUS	Carbon Capture, Usage and Storage
CEC	Crown Estate Commission
CES	Crown Estate Scotland
CfD	Contract for Difference
DECC	Department of Energy and Climate Change
DOLPHYN	Deepwater Offshore Local Production of HYdrogeN
DPO	Draft Plan Option
EC	European Commission
EEC	European Economic Community
EEZ	exclusive economic zone
EIA	Environmental Impact Assessment
EMF	electro-magnetic field
EOWDC	European Offshore Wind Deployment Centre
EU	European Union
GBS	gravity base foundations
GeMS	Geodatabase of Marine Features in Scotland
GES	Good Environmental Status
GHG	greenhouse gas(es)
GIS	Geographic Information System
GW	gigawatt(s)
HES	Historic Environment Scotland
HND	Holistic Network Design
HRA	Habitats Regulations Appraisal
INNS	invasive non-native species

INTOG	Innovation and Targeted Oil and Gas Decarbonisation
IPF	Initial Plan Framework
IPR	Iterative Plan Review
MaRS	Marine Resource System
MARPOL	International Convention for the Prevention of Pollution from Ships
MPA	Marine Protected Area
MW	megawatt(s)
NMPi	National Marine Plan interactive
nm	nautical mile(s)
NSTA	North Sea Transition Authority
OfTi	Offshore Transmission Infrastructure
ORJIP	Offshore Renewables Joint Industry Programme
OSPAR	Oslo and Paris Conventions
PO	Plan Option
PPS	plans, programmes, and strategies
RLG	Regional Locational Guidance
ROC	Renewables Obligations Certificate
SA	Sustainability Appraisal
SEA	Strategic Environmental Assessment
SEIA	socio-economic impact assessment
SEPA	Scottish Environment Protection Agency
SMP	Sectoral Marine Plan
SNH	Scottish Natural Heritage
SSSI	Site of Special Scientific Interest
TRL	Technology Readiness Level
UK	United Kingdom
UN	United Nations
UNESCO	United Nations Education, Scientific, and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
WFD	Water Framework Directive

WHS	World Heritage Site
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