



Department for  
Energy Security  
& Net Zero

**ATKINS**

Member of the SNC-Lavalin Group

# Energy National Policy Statements (EN-1 to EN-5) Review

Information to Inform a Habitats Regulations  
Assessment

Department of Energy Security and Net Zero

March 2023



# Notice

This document and its contents have been prepared and are intended solely as information for the Department of Energy Security and Net Zero DESNZ and use in relation to the Habitats Regulations Assessment of the Energy National Policy Statements Review.

Atkins Limited assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/ or its contents.

No liability is accepted for any costs claims or losses arising from the use of this document, or any part thereof, for any purpose other than that which it has specifically been prepared or for use by any party other than DESNZ.

The information which Atkins Limited has provided has been prepared by an environmental specialist in accordance with the Code of Professional Conduct of the Chartered Institute of Ecology and Environmental Management (CIEEM). Atkins Limited confirms that the opinions expressed are our true and professional opinions.

This document does not purport to provide legal advice.

This document has 86 pages including the cover.

## Document history

Document title: Information to Inform a Habitats Regulations Assessment

Document reference: 5205016

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
Rev 1.0	Draft for client comment	AP / SS	TL / PW	JP	JP	04.05.2021
Rev 2.0	Draft for issue	SS	TL / PW	CWa	CW	04.06.2021
Rev 3.0	Update following NPS amendment	PW	AW	CWa	PMcE	19.07.2022
Rev. 4.0	Update following NPS amendment	AoS Team	AoS Team	CW	PMcE	Oct. 2022
Rev. 5.0	Update following NPS amendment	PW	AW	CWa	PMcE	Jan. 2023

## Client signoff

Client	Department for Energy Security and Net Zero
Project	Energy National Policy Statements (EN-1 to EN-5) Review
Job number	5205016
Client signature/ date	

# Contents

Chapter	Page
<b>Non-Technical Summary</b>	<b>5</b>
Purpose of this report	5
Requirements for HRA	5
Summary of findings	6
<b>1. Introduction</b>	<b>7</b>
1.1. The Revised Energy National Policy Statements	7
1.2. Purpose and Background to the Report	8
1.3. Report Structure	8
<b>2. The Habitats Regulations Assessment Process and Application</b>	<b>9</b>
2.1. Relevant Law and Policy	9
2.2. Relevant Case Law	10
2.3. Relevance of and Co-ordination with other HRAs	12
2.4. Habitats Regulations Assessment Process Overview	12
<b>3. HRA Screening</b>	<b>13</b>
3.1. Scoping International Sites for Screening	13
3.2. Approach to Screening	13
3.3. Step 1: Determine whether the plan is directly connected with or necessary to the management of the International Site	14
3.4. Step 2: Describe the plan and describe and characterise any other plans or projects which, in combination, have the potential for having significant effects on the International Site	14
3.5. Step 3: Identify the potential effects on the International Site both alone and in combination with other plans and projects	20
3.6. Step 4: Assess the likely significance of any effects on International Sites	31
3.7. Summary of screening assessment	38
<b>4. Appropriate Assessment</b>	<b>39</b>
4.1. Approach to Appropriate Assessment	39
4.2. Assessment of adverse effects on integrity of International Sites	39
4.3. In-combination effects	44
4.4. Summary of Appropriate Assessment	44
<b>5. Assessment of Alternative Solutions</b>	<b>45</b>
5.1. Approach to Assessment of Alternative Solutions	45
5.2. Step 1: Define the objectives or purpose of the plan and the problem it is causing	45
5.3. Step 2: Understand the need for the plan	45
5.4. Step 3: Financially, legally and technically feasible alternative solutions	46
5.5. Step 4: Alternative solutions with a lesser effect on the integrity of the International Site	46
<b>6. Imperative Reasons of Overriding Public Interest (IROPI)</b>	<b>48</b>
6.1. Approach to considering IROPI	48
6.2. Case for IROPI	48
6.3. Compensation	52
<b>7. Conclusion</b>	<b>55</b>
<b>Appendices</b>	<b>56</b>

<b>Appendix A. Consultation Comments</b>	<b>57</b>
<b>Appendix B. Activities potentially affecting qualifying features in the absence of details on location, scale, design, avoidance or mitigation</b>	<b>81</b>
B.1. Construction activities	81
B.2. Water abstraction and discharge	82
B.3. Changes to drainage	82
B.4. Combustion of materials	83
B.5. Vehicle and personnel movements	83
B.6. Physical presence of site: offshore	83
B.7. Physical presence of site: onshore	84
B.8. Decommissioning and restoration	84

## Tables

Table 3-1: Policy Provisions Protecting International Sites	17
Table 3-2: Potential impacts that could arise as a result of the types of development set out in the NPSs	22
Table 3-3: Likely significant effects that could arise as a result of development coming forward under the NPSs	32
Table 3-4: Example plans and projects with potential for in-combination effects with the NPSs	37
Table 4-1: Potential Mitigation Measures for Adverse Effects	41
Table 5-1: Plan and Alternatives considered for EN-1	46
Table A-1: Consultee Comments on Methodology Statement (May 2021)	58
Table A-2: Consultee Comments on Draft HRA (December 2021)	66

# Non-Technical Summary

## Purpose of this report

The Department for Energy Security and Net Zero (DESNZ) is undertaking a review of five of the six National Policy Statements (NPS) for Energy. This Habitats Regulations Assessment (HRA) accompanies the NPSs through this process. There are six NPSs which set out policy for nationally significant energy infrastructure:

- Overarching National Policy Statement for Energy (EN-1);
- National Policy Statement for Natural Gas Electricity Generating Infrastructure (EN-2);
- National Policy Statement for Renewable Energy Infrastructure (EN-3);
- National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4);
- National Policy Statement for Electricity Networks Infrastructure (EN-5); and,
- National Policy Statement for Nuclear (EN-6).

The National Policy Statement for Nuclear (EN-6) is not being updated at this time. This report presents the methodology and findings of the HRA undertaken for the updated NPSs, i.e. EN-1 to EN-5.

## Requirements for HRA

In England and Wales, under the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended)<sup>1</sup> (collectively referred to throughout this document as the 'Habitats Regulations') an 'Appropriate Assessment' is required to be undertaken for proposed plans or projects which are not necessary for the management of an International Site but which are likely to have a significant effect on one or more International Sites either individually, or in combination with other plans or projects. These sites include:

- Special Areas of Conservation (SACs)<sup>2</sup>, originally designated under European Council Directive 92/43/EEC (referred to as the Habitats Directive); and
- Special Protection Areas (SPAs), originally designated under the Conservation of Wild Birds Directive (Council Directive 2009/147/EC (which codifies Directive 79/409/EEC)) for rare, vulnerable and regularly occurring migratory bird species and internationally important wetlands.

The National Planning Policy Framework (NPPF)<sup>3</sup> states that listed or proposed Ramsar sites<sup>4</sup>, potential SPAs (pSPA), possible SACs (pSAC) and any site identified, or required, as compensatory measures for adverse effects on any of the above-named sites. All the above sites are hereafter referred to as International Sites.

---

<sup>1</sup> Following the changes made to the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) in the UK no longer form part of the EU's Natura 2000 ecological network and now form part of the UK's national site network. In this document they are referred to as International Sites.

<sup>2</sup> Includes candidate SACs (cSAC) and Sites of Community Importance (SCI).

<sup>3</sup> Ministry of Housing, Communities and Local Government (2021) National Planning Policy Framework (NPPF). Paragraph 181.

<sup>4</sup> Wetland sites of international importance, as designated under the Ramsar Convention 1971.

The Guidelines on the Assessment of Transboundary Impacts of Energy Developments on Natura 2000 Sites Outside the UK (2015)<sup>5</sup>, as referenced in The Planning Inspectorate Advice Notes Ten<sup>6</sup> and Twelve<sup>7</sup>, states that the principles of the Habitats Directive (and therefore the Habitats Regulations) should be applied to any energy development where significant effects could occur for International Sites outside of the UK. As such, potential for transboundary effects has been considered in this HRA.

## Summary of findings

As the NPSs EN-1 to EN-5 do not set out specific locations for development, the HRA is high-level and strategic and assesses the policy content of the NPSs and the potential effects of energy infrastructure development arising from the plan. As the exact location of infrastructure cannot be known until specific proposals come forward, it is not possible to identify potential effects on specific International Sites. Therefore, effects are considered in generic terms.

Due to the lack of detail and following the precautionary principle, adverse effects on the integrity of one or more International Sites as a result of the energy infrastructure development cannot be ruled out. However, the content of NPSs EN-1 to EN-5 provide a robust commitment to the identification, avoidance and minimisation of impacts on International Sites, detailed assessment, mitigation and consenting guidance for the Secretary of State (SoS). Therefore, taking that commitment into account, adverse effects on the integrity of International Sites as a result of the NPSs are considered unlikely.

Despite the confidence in the conclusion that the NPSs themselves will not result in adverse effects on the site integrity of International Sites, Section 6 provides the case for imperative reasons of overriding public interest ('IROPI') for information and sets out why the Government considers that EN-1 to EN-5 are needed. This information is applicable to NPSs EN-1 to EN-5 themselves, and is provided without prejudice to or implication for any project-level HRA, which may result in the refusal of consent for a particular application.

Where projects may result in adverse impacts on the integrity of one or more International Sites, measures must be implemented to avoid and mitigate impacts, and, if this is not possible, the project must be demonstrated to meet the tests for absence of alternative solutions, imperative reasons of overriding public interest (IROPI) and secure and deliver adequate compensation for any remaining adverse impacts arising from the development. In embracing a holistic approach, as championed by the NPSs, where there are multiple projects in planning for which compensation for one or more International Sites would be required, a co-ordinated strategic approach is recommended.

---

<sup>5</sup> DECC (2015) Guidelines on the assessment of transboundary impacts of energy developments on Natura 2000 sites outside the UK, available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/408465/trans-boundary\\_guidelines.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/408465/trans-boundary_guidelines.pdf)

<sup>6</sup> The Planning Inspectorate (2017) Advice Note Ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects, available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/06/Advice-note-10v4.pdf>

<sup>7</sup> The Planning Inspectorate (2020) Advice Note Twelve: Transboundary Impacts and Process, available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-twelve-transboundary-impacts-and-process/>

# 1. Introduction

## 1.1. The Revised Energy National Policy Statements

The Government believes that the UK's energy generation portfolio has an important role to play as the UK transitions towards a low-carbon economy. As such, it is necessary to revise and update the National Policy Statements (NPS) for energy infrastructure to facilitate delivery of energy infrastructure capable of meeting the energy demand of the UK, whilst working towards 'net zero' greenhouse gas emissions by 2050 and a 68% reduction in the UK's emissions by 2030.

An overarching National Policy Statement for Energy (EN-1), in conjunction with five technology-specific NPSs, was published in 2011 and set out Government policy for the delivery of major energy infrastructure. Taken together, they provide the framework for development consent decisions on applications for new energy infrastructure. The five technology-specific NPSs are as follows:

- National Policy Statement for Natural Gas Electricity Generating Infrastructure (EN-2);
- National Policy Statement for Renewable Energy Infrastructure (EN-3);
- National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4);
- National Policy Statement for Electricity Networks Infrastructure (EN-5); and,
- National Policy Statement for Nuclear (EN-6).

The National Policy Statement for Nuclear (EN-6) is not being updated at this time. The revised draft EN-1 refers to nuclear power as part of the energy mix, but EN-1 states '*As set out in the Written Ministerial Statement of 7 December 2017<sup>8</sup>, EN-6 only has effect in relation to nuclear electricity generation deployable by the end of 2025, and also continues to provide information that may be important and relevant for projects which will deploy after 2025. This NPS (EN-1) will have effect<sup>9</sup> in relation to any new applications for nuclear electricity generation deployable after 2025, particularly in so far as it continues to establish the need for energy generation, including nuclear*'. Therefore, whilst EN-6 is not considered within this HRA, the potential for new nuclear energy infrastructure is considered.

In reviewing and, where necessary, revising the remaining five energy NPSs, they need to be subject to an accompanying Appraisal of Sustainability (AoS) and Habitats Regulations Assessment (HRA) to ensure that any changes made to the NPSs are assessed for their respective implications. In the case of the HRA, implications for European designated sites for nature conservation will be addressed. The associated AoS and HRA reports will be submitted alongside the NPSs for statutory consultation.

### 1.1.1. Further NPS Updates

The NPSs have been further updated in response to consultation comments (provided in Appendix A) and recently published strategies of relevance to the Energy NPSs. Clarity has also been provided with regard to the Welsh Governments (and Natural Resources Wales) responsibilities regards licencing, permits and consenting.

Notably, text has been added to include reference to the Government's Net Zero Strategy published in October 2021<sup>10</sup>, which sets out the vision for transitioning to a net zero economy and the policies and proposals for decarbonising all sectors of the UK economy to meet 2050 net zero targets. The Energy NPSs have also been amended to acknowledge the British Energy Security Strategy (BESS)<sup>11</sup>, which will help deliver secure, clean and affordable British energy in the long-term and includes increased targets for offshore wind (including floating wind) and civil nuclear power deployment.

Additional text has also been added with regard to Biodiversity Net Gain and how reference should be made to relevant strategies, including Nature Recovery Networks and Local Nature Recovery Strategies in planning delivery of off-site biodiversity units. EN-1 acknowledges that principles for marine net gain are in development and may become mandatory in the future; at present only onshore projects and terrestrial components of

---

<sup>8</sup> <https://questions-statements.parliament.uk/written-statements/detail/2017-12-07/HCWS321>

<sup>9</sup> Subject to the transitional arrangements set out at section 1.6 below.

<sup>10</sup> <https://www.gov.uk/government/publications/net-zero-strategy>

<sup>11</sup> <https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy>



offshore projects will be mandatory under the Environment Act 2021. The HRA has been amended with reference to updates where relevant.

## 1.2. Purpose and Background to the Report

This report presents the HRA methodology and findings for the HRA of the revised energy NPSs under the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended)<sup>12</sup> (collectively referred to as the 'Habitats Regulations' throughout this document).

The duty to undertake the HRA relates to the energy NPSs themselves as strategic plans. Each energy NPS is a 'plan', which provides a strategic framework within which subsequent 'project' level assessment will be undertaken as required, as and when individual projects are proposed.

The NPSs apply to England and Wales, including territorial waters (up to 12 nautical miles (NM) off the coast), and the Renewable Energy Zone. The NPSs do not set out specific locations for development and, therefore, the HRA is an assessment of the policy content only. As such it is high-level and strategic in nature and it does not constitute or take the place of a project HRA for any energy infrastructure development that may fall under the NPSs.

The function of the HRA report will be to highlight any potential risks to International Sites through the text/policy approaches of the energy NPS documents themselves. It summarises the findings for the five revised NPSs and considers the applicability of in-combination effects.

## 1.3. Report Structure

The Non-Technical Summary sets out the context of the report, summarises the HRA process and summarises the assessment findings. The remainder of the report is structured as follows:

- **Chapter 1** (this chapter) introduces the purpose and background to the energy NPSs and this report;
- **Chapter 2** sets out the Habitats Regulations Assessment process and its application;
- **Chapter 3** describes the Screening findings;
- **Chapter 4** describes the Appropriate Assessment findings;
- **Chapter 5** describes the assessment of Alternative Solutions;
- **Chapter 6** discusses Imperative Reasons of Overriding Public Interest (IROPI) and compensation; and,
- **Chapter 7** provides a conclusion to the report.

---

<sup>12</sup> Following the changes made to the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) in the UK no longer form part of the EU's Natura 2000 ecological network and now form part of a UK national site network. In this document they are referred to as International Sites.



## 2. The Habitats Regulations Assessment Process and Application

### 2.1. Relevant Law and Policy

Under the Habitats Regulations an assessment is required where a plan or project may give rise to significant effects upon an International Site. These sites include Special Areas of Conservation (SACs), originally designated under the Habitats Directive, and Special Protection Areas (SPAs), originally designated under the Conservation of Wild Birds Directive (Council Directive 2009/147/EC, which codifies Directive 79/409/EEC).

These sites now form part of the UK's national site network and, going forward, will include any SACs and SPAs newly designated by the UK.

The legislation relevant to the UK's national network of International Sites comprises the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Offshore Marine Habitats and Species Regulation 2017 (as amended)<sup>13</sup>, known together as the Habitats Regulations. In addition, it is a matter of UK Government policy<sup>14</sup> that sites designated under the 1971 Ramsar Convention for their internationally important wetlands (Ramsar sites), both listed and proposed, are also considered in this process and afforded the same protection as sites within the national site network, along with potential SPAs (pSPAs) and possible SACs (pSACs). Hereafter, all the above sites are referred to as International Sites. Furthermore, sites identified, or required, as compensatory measures for adverse effects on International Sites are also included.

The Guidelines on the Assessment of Transboundary Impacts of Energy Developments on Natura 2000 Sites Outside the UK (2015)<sup>15</sup>, as referenced in The Planning Inspectorate Advice Notes Ten<sup>16</sup> and Twelve<sup>17</sup>, states that the principles of the Habitats Directive (and therefore the Habitats Regulations) should be applied to any energy development where significant effects could occur for International Sites outside of the UK. As such, potential for transboundary effects has been considered in this HRA.

Areas of land or sea outside of the boundary of an International Site may be important ecologically in supporting the populations for which the International Site has been designated or classified, such that they are 'functionally linked' and should be taken into account in a HRA<sup>18</sup>.

Regulation 110 states that the Habitat Regulations shall apply in relation to an NPS as it applies to a land use plan, (with some exceptions). Regulation 105 (1) states that where a land use plan:

- a) is likely to have a significant effect on an International Site or a European offshore marine site (either alone or in combination with other plans or projects), and
- b) is not directly connected with or necessary to the management of that site,

---

<sup>13</sup> Including amendment by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (see earlier explanation).

<sup>14</sup> Ministry of Housing, Communities and Local Government (2021) National Planning Policy Framework (NPPF). Paragraph 181.

<sup>15</sup> DECC (2015) Guidelines on the assessment of transboundary impacts of energy developments on Natura 2000 sites outside the UK, available at:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/408465/trans-boundary\\_guidelines.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/408465/trans-boundary_guidelines.pdf)

<sup>16</sup> The Planning Inspectorate (2017) Advice Note Ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects, available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/06/Advice-note-10v4.pdf>

<sup>17</sup> The Planning Inspectorate (2020) Advice Note Twelve: Transboundary Impacts and Process, available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-twelve-transboundary-impacts-and-process/>

<sup>18</sup> Tyldesley, D. and Chapman, C., (2013) The Habitats Regulations Assessment Handbook, March 2021 edition UK: DTA Publications Limited.

the plan-making authority for that plan must, before the plan is given effect, make an appropriate assessment of the implications for the site in view of that site's conservation objectives”.

It is confirmed that the five energy NPSs are not directly connected with or necessary to the management of any International Sites. Therefore, there is a requirement for screening for likely significant effects and, if likely significant effects cannot be ruled out, for appropriate assessment.

Regulation 107(1) of the Habitats Regulations states that:

“If the plan-making authority is satisfied that, there being no alternative solutions, the land use plan must be given effect for imperative reasons of overriding public interest (which, subject to paragraph (2), may be of a social or economic nature), it may give effect to the land use plan notwithstanding a negative assessment of the implications for the International Site or the European offshore marine site (as the case may be)”.

Furthermore, Regulation 109 states:

“Where in accordance with regulation 107 a land use plan is given effect, notwithstanding a negative assessment of the implications for an International Site or a European offshore marine site, the appropriate authority must secure that any necessary compensatory measures are taken to ensure that the overall coherence of Natura 2000 is protected”.

However, with reference to the underlined text above, although the process is broadly the same, it will be the coherence of the UK national site network that is protected. This amendment was made to the Habitats Regulations by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

Should the later stages of HRA be reached (outlined in Section 2.2 below) and an Annex 1 priority habitat or Annex 2 priority species (qualifying features marked by an asterisk) is going to be affected, this has an influence on the reasons permitted as imperative reasons of overriding public interest. According to Regulation 107(2) the permissible reasons are limited to those relating to:

- a. human health, public safety or beneficial consequences of primary importance to the environment; or
- b. any other reasons which the plan-making authority, having due regard to the opinion of the appropriate authority, considers to be imperative reasons of overriding public interest.

The ‘appropriate authority’ in England and Wales is now the relevant Secretary of State (SoS) or Welsh Minister, respectively. This no longer includes the European Commission. This amendment was made to the Habitats Regulations by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

## 2.2. Relevant Case Law

This HRA takes into account recent European and UK case law that applies to International Sites and guidance that was not available at the time the HRA was produced for the 2011 energy NPSs. According to UK EU withdrawal agreements, EU case law that has shaped and influenced the HRA process up to 31st December 2020, remains relevant in the UK and to the assessment<sup>19</sup>. Other than amendments to keep all stages of the HRA process within UK auspices, no fundamental change has been made to the function and implementation of the Habitats Regulations following amendment by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Therefore, reference to European case law up to 31st December 2020 is in-keeping with a good practice approach of always using the most current available guidance.

The following pieces of case law are considered to be relevant and their implications for plan-level HRA are discussed below.

### 2.2.1. People over Wind

The People over Wind, Peter Sweetman v Coillte Teoranta (April 2018) judgment ruled that Article 6(3) of the Habitats Directive should be interpreted as meaning that mitigation measures should be assessed as part of an Appropriate Assessment and should not be taken into account at the screening stage. The precise wording of the ruling on this point is as follows:

*“Article 6(3)... in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening*

---

<sup>19</sup> Tyldesley, D. and Chapman, C., (2013) The Habitats Regulations Assessment Handbook, March 2021 edition UK: DTA Publications Limited. [Refer to A.2.1 Legal Consequences of leaving the EU].

stage, to take account of measures intended to avoid or reduce the harmful effects of the plan or project on that site”.

In light of the above, the HRA Screening stage will not rely upon avoidance or mitigation measures to draw conclusions as to whether the NPSs could result in ‘likely significant effects’ on International Sites, with any such measures being considered at the Appropriate Assessment stage as relevant.

### 2.2.2. Holohan

The HRA will fully consider the *Holohan v An Bord Pleanala* (November 2018) judgment which stated that:

*“Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that an ‘appropriate assessment’ must, on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site.*

*Article 6(3) of Directive 92/43 must be interpreted as meaning that the competent authority is permitted to grant to a plan or project consent which leaves the developer free to determine subsequently certain parameters relating to the construction phase, such as the location of the construction compound and haul routes, only if that authority is certain that the development consent granted establishes conditions that are strict enough to guarantee that those parameters will not adversely affect the integrity of the site.*

*Article 6(3) of Directive 92/43 must be interpreted as meaning that, where the competent authority rejects the findings in a scientific expert opinion recommending that additional information be obtained, the ‘appropriate assessment’ must include an explicit and detailed statement of reasons capable of dispelling all reasonable scientific doubt concerning the effects of the work envisaged on the site concerned”.*

Following this judgment, the potential for effects on species and habitats, including those not listed as qualifying features, to result in secondary effects upon the qualifying features of International Sites, including the potential for complex interactions and dependencies will be considered. In addition, the potential for offsite impacts, such as through impacts to functionally linked land, and or species and habitats located beyond the boundaries of International Sites, but which may be important in supporting the ecological processes of the qualifying features, will also be taken into account.

### 2.2.3. Dutch Nitrogen

The 2018 ‘Coöperatie Mobilisation for the Environment and Vereniging Leefmilieu v College van gedeputeerde staten van Limburg and College van gedeputeerde staten van Gelderland (Dutch Nitrogen)’ judgment stated that:

*“Article 6(3) of Directive 92/43 must be interpreted as meaning that an ‘appropriate assessment’ within the meaning of that provision may not take into account the existence of ‘conservation measures’ within the meaning of paragraph 1 of that article, ‘preventive measures’ within the meaning of paragraph 2 of that article, measures specifically adopted for a programme such as that at issue in the main proceedings or ‘autonomous’ measures, in so far as those measures are not part of that programme, if the expected benefits of those measures are not certain at the time of that assessment”.*

The Dutch Nitrogen judgment also states that according to previous case law:

*“...it is only when it is sufficiently certain that a measure will make an effective contribution to avoiding harm to the integrity of the site concerned, by guaranteeing beyond all reasonable doubt that the plan or project at issue will not adversely affect the integrity of that site, that such a measure may be taken into consideration in the ‘appropriate assessment’ within the meaning of Article 6(3) of the Habitats Directive”.*

This HRA will therefore only consider the existence of conservation and/ or preventative measures if the expected benefits of those measures are certain at the time of the assessment. The HRA will also ensure that if a threshold approach is applied it will consider the risk of significant effects being produced even if below the threshold values to ensure that there is no adverse effect on integrity of the International Sites.

### 2.3. Relevance of and Co-ordination with other HRAs

An individual HRA may be intrinsically linked to other HRAs through the need to consider in-combination effects under the Habitat Regulations and the assessment findings of plan-level HRAs when undertaking lower tier or project-level HRAs. It has been specifically flagged within EN-3 that there is a need to co-ordinate with The Crown Estate and applicants are expected to demonstrate compliance with mitigation measures identified by The Crown Estate in any plan-level HRA produced as part of its leasing rounds. This need is acknowledged here and as it makes use of existing assessment work, it can only lead to a more robust assessment that also achieves the best outcome for International Sites. It is possible that under the other NPSs there will be a need to co-ordinate with other relevant plan HRAs at both plan and project stage. However, no specific HRAs are detailed in the other NPSs, apart from HRA(s) for The Crown Estate leasing rounds in EN-3.

### 2.4. Habitats Regulations Assessment Process Overview

It has become generally accepted that the requirements of Habitats Regulations Assessment process comprise four stages<sup>20 21 22</sup>:

- **Stage One: Screening** - the process that identifies the potential for likely effects upon an International Site of a project or plan, either alone or in combination with other projects or plans and considers whether these effects are likely to be significant;
- **Stage Two: Appropriate Assessment** - the consideration of the impact on the integrity of the International Site of the project or plan, either alone or in combination with other projects or plans, in respect of the International Site's structure and function and its conservation objectives. Additionally, where adverse impacts are identified, an assessment of the potential mitigation of those impacts is undertaken. The assessment of the potential adverse effect on the integrity of the site is undertaken including the effect of such mitigation;
- **Stage Three: Assessment of Alternative Solutions** - the process which examines alternative ways of achieving the objectives of the project or plan that might avoid or reduce adverse effects on the integrity of the International Site;
- **Stage Four: Assessment where no alternative solutions exist and where adverse impacts remain** - following the identification of imperative reasons of overriding public interest (IROPI), if it is deemed that the project or plan should be allowed to proceed, compensatory measures are identified, secured and their effectiveness ascertained.

---

<sup>20</sup> European Commission (2001) Assessment of plans and projects significantly affecting Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.

<sup>21</sup> Guidance on the use of Habitats Regulations Assessment - <https://www.gov.uk/guidance/appropriate-assessment>.

<sup>22</sup> Tyldesley, D. and Chapman, C., (2013) The Habitats Regulations Assessment Handbook, March 2021 edition UK: DTA Publications Limited.

## 3. HRA Screening

### 3.1. Scoping International Sites for Screening

Prior to screening it is necessary to identify all International Sites that may be affected by the project or plan. The extent of the search is determined by the methodology and scope being used and will depend on the nature of the project or plan as to how far-reaching the impacts could be.

The NPSs apply to England and Wales, including territorial waters (up to 12 nautical miles (NM) off the coast), and the Renewable Energy Zone. In addition, the SoS will examine applications for border-crossing oil and gas pipelines, for example, a pipeline that has one end in England or Wales and the other in Scotland. Therefore, as the NPSs have a national coverage, it must be assumed that any of the English and Welsh International Sites, plus those in Scotland as relevant, could be affected as development could be anywhere in those locations. In the UK, including Scotland and Northern Ireland, there are presently 656 SACs and 284 SPAs<sup>23</sup>, and 149 Ramsar sites designated across terrestrial and marine environments<sup>24</sup>. These are the numbers of fully designated sites and additional sites require assessment under HRA where these are added as a matter of UK policy under the NPPF, i.e., proposed or possible sites and compensation sites.

Furthermore, using the 'source-pathway-receptor' approach and considering the potential far-reaching effects from energy infrastructure developments, such as offshore windfarms or power stations, it is conceivable that mobile species from International Sites in Northern Ireland and other countries may be affected. This is considered to potentially be the case for marine mammals, migratory fish, seabirds and migratory birds, many of which travel long distances to utilise other habitats, move within their natural range or during migration. Therefore, they can potentially be affected outside the boundary of the International Site of which they are a qualifying feature. It is also possible for qualifying species to be affected within International Sites, where these lie close to new development or the development is expected to have long-ranging impacts. Although impacts to mobile species from offshore wind are the most likely transboundary effect, the assessment should not be limited to this, and all potential sources of transboundary effect considered for scoping in / out of an assessment. This includes sites close to the boundary of the Renewable Energy Zone, or sites in proximity to new energy development, particularly coastal sites. This could include International Sites outside of the UK. As stated in Section 2.1, potential for transboundary effects has been considered.

### 3.2. Approach to Screening

Guidance from the European Commission<sup>25</sup> recommends that screening should follow the following steps:

- **Step 1:** Determine whether the plan is directly connected with or necessary to the management of the International Site;
- **Step 2:** Describe the plan and describe and characterise any other plans or projects which, in combination, have the potential for having significant effects on the International Site;
- **Step 3:** Identify the potential effects on the International Site both alone and in combination with other plans and projects; and,
- **Step 4:** Assess the significance of any effects on International Sites.

Each of these steps is considered in turn below.

In line with the precautionary principle, it is important to note that the burden of evidence is to show, on the basis of objective information, that the project or plan will have no likely significant effect (LSE) on an International Site. If there may be an LSE, or there is uncertainty and an LSE cannot be ruled out, this would trigger the need for an appropriate assessment. As a result of European case law<sup>26</sup>, irrespective of the normal English meaning of 'likely', in this statutory context a 'likely significant effect' is a 'possible significant effect',

---

<sup>23</sup> <https://jncc.gov.uk/> - excludes sites within the UK Overseas Territory of Gibraltar.

<sup>24</sup> <https://jncc.gov.uk/> - excludes Overseas Territory and Crown Dependencies.

<sup>25</sup> European Commission (2001) Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.

<sup>26</sup> Waddenzee judgement (7th September 2004) Case C-127/02



one whose occurrence cannot be ruled out on the basis of objective evidence i.e. ‘no reasonable scientific doubt remains as to the absence of such effects’<sup>27</sup>.

The Waddenzee judgement<sup>28</sup> also provides further clarification regarding the term ‘significant’: “where a plan or project not directly connected with or necessary to the management of a site is likely to undermine the site’s conservation objectives, it must be considered likely to have a significant effect on that site. The assessment of that risk must be made in the light inter alia of the characteristics and specific environmental conditions of the site concerned by such a plan or project.”

Measures intended to avoid or reduce effects upon International Sites are not taken account of during screening. This is consistent with European case law<sup>29</sup>.

### 3.3. Step 1: Determine whether the plan is directly connected with or necessary to the management of the International Site

The NPSs EN-1 to EN-5 are not directly connected with or necessary to the management of any International Sites. As such, it is necessary to undertake screening to determine whether the proposals are likely to have an LSE on any International Sites (Steps 2 to 4 below).

### 3.4. Step 2: Describe the plan and describe and characterise any other plans or projects which, in combination, have the potential for having significant effects on the International Site

#### 3.4.1. Purpose and contents of the Energy NPSs

The NPSs set out national policy for energy infrastructure in England and Wales. They form the framework for development consent decisions on applications for new energy infrastructure by the SoS. It should be noted that not all energy projects will be covered by the NPSs, as they relate only to nationally significant infrastructure projects (NSIPs). Generally, this relates to energy generation projects of more than 50 MW capacity in England and 350MW capacity in Wales, although this varies by technology. It also includes the associated networks for the transmission of power or fuel.

EN-1 sets out the policy and regulatory framework, the need for various types of energy infrastructure, the assessment principles when considering NSIP applications, generic impacts that could occur and mitigation measures relevant to all types of energy infrastructure. EN-1 states that there is an urgent need for a wide range of generating technologies in order to meet demand and provide flexibility. The known technologies included within the scope of EN-1 includes the following:

- Offshore Wind (including floating wind);
- Solar photovoltaics (PV);
- Wave;
- Tidal Range;
- Tidal Stream;
- Pumped Hydro;
- Energy from Waste (including Advanced Conversion Technologies (ACTs)), with or without Carbon Capture and Storage (CCS);
- Biomass with or without CCS;
- Natural Gas with or without CCS;
- Low carbon hydrogen; and

---

<sup>27</sup> Tyldesley, D. and Chapman, C., (2013) The Habitats Regulations Assessment Handbook, March 2021 edition UK: DTA Publications Limited.

<sup>28</sup> Waddenzee judgement (7th September 2004) Case C-127/02

<sup>29</sup> People over Wind v Coillte Teoranta (12th April 2018) Case C-323/17

- Nuclear (large-scale nuclear, Small Modular Reactors, Advances Modular Reactors and large fusion power plants).

Storage and interconnectors, although not energy-generating their role, are important electricity infrastructure for providing resilience and flexibility in the network. Storage of surplus electricity in times of low demand allows increased reliability in electricity supply when demand is higher, forming part of a robust energy supply system. Interconnectors provide capacity by linking with other markets, i.e. markets in other countries, to accommodate for shortfalls in the domestic market. There is scope for projects to combine offshore wind generation with market-to-market interconnection.

EN-1 states “*new coal or large-scale oil-fired electricity generation are not consistent with the trajectory of our carbon budgets and the transition to net zero and so are not included within this NPS, and the government is taking active steps to phase them out of the energy system*”. Note that hydrogen and CCS do not have specific NPSs and are primarily covered by EN-1. EN-2 states that, whilst the NPS relates to energy from natural gas, it may be relevant to hydrogen, particularly as co-firing plants may also use hydrogen. EN-2 and EN-3 also refer to the potential for CCS alongside combustion technologies. In order to ensure a thorough assessment of all potential technologies has been undertaken, hydrogen and CCS have been considered in their own right in this HRA.

EN-2 relates to natural gas fired generating stations. It encourages carbon capture and storage, combine heat and power networks, and biomass and hydrogen co-firing, where appropriate.

EN-3 has a focus on offshore wind generation, but also covers the following technologies:

- Biomass and Waste Combustion;
- Tidal stream;
- Pumped hydro storage; and
- Solar PV.

EN-4 relates primarily to the infrastructure to import and distribute gas and oil, including:

- Underground natural gas storage;
- Liquefied natural gas (LNG) import facilities;
- Natural gas reception facilities; and
- Gas and oil pipelines.

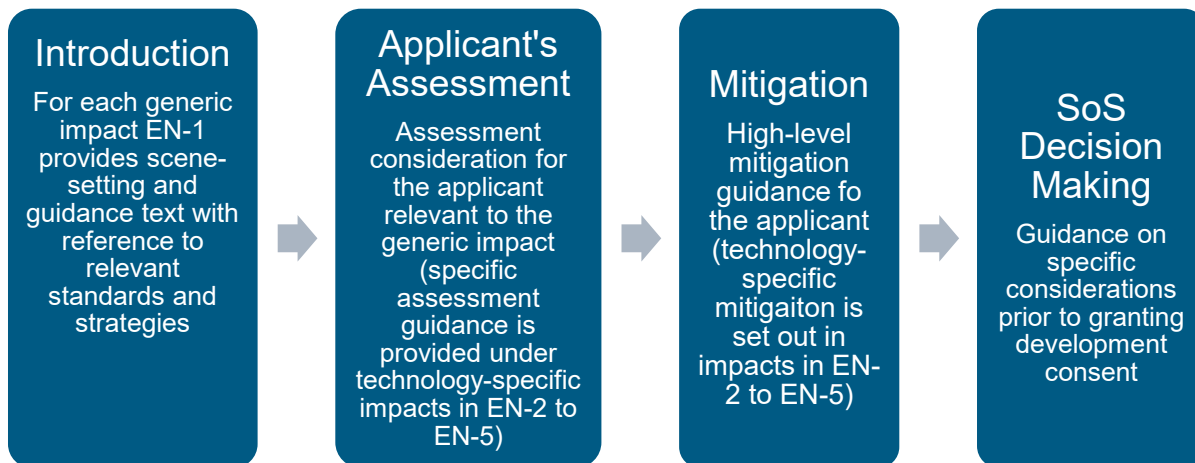
EN-5 relates to electricity networks and therefore relates to the distribution of energy generated via development set out in EN-2 and EN-3. This includes:

- Transmission systems (the long distance transfer of electricity through 400kV and 275kV lines);
- Distribution systems (lower voltage lines from 132kV to 230kV from transmission substations to the end-user) which can either be carried on towers / poles or underground; and
- Associated infrastructure, e.g. substations and converter stations to convert DC power to AC power and vice versa.

### NPS Approach and Policy Provisions

Although the NPSs are policy documents, they do not include specific individual policies that can be assessed for their potential to have LSEs on International Sites. However, there is clear guidance on what should be considered by the applicant and advice to the SoS with regard to consenting such projects. The general structure set out in EN-1 in discussing generic impacts, shown below in Figure 3-1, is mirrored within all NPSs. Within EN-2 to EN-5 information under these heading are given for each potential impact arising from a technology and, therefore, provides comprehensive coverage of assessment requirements and what will be considered and given weight during consenting. Where relevant additional introductory information is provided regards the Government’s expectations and requirements, to which scale of technology the NPS is applicable, the consenting process (e.g. as for Offshore wind within EN-1), factors influencing site selection and design by applicant and technical considerations for the SoS. As a result, the NPS are detailed and robust policy documents.





**Figure 3-1 Structure of technology-specific policy information provided in the Energy NPSs**

Taking a very simplistic view, development could result in adverse effects on International Sites via the effect pathways identified, both alone and in-combination. This is examined in more detail in Section 3.5 below. However, it is important to note that the NPS text afford the natural environment significant protection in the approach and requirements outlined, in the advice to applicants and to the SoS in decision making. These commitments, which are allied with current energy and net zero strategies, go some way to ensure that adequate planning and assessment support the consenting processes. Furthermore, the NPS encourage nature-based design, application of biodiversity and environmental net gain and champion a holistic approach, particularly where this will streamline applications and ultimately provide a better outcome for the natural environment. The delivery of biodiversity net gain and marine net gain could be provided by a package of measures that also meets the requirements for avoiding or mitigating impacts to International Sites<sup>30</sup>.

There are four key elements (as drawn out in the AoS) identified within EN-1 that help to protect International Sites:

- Proposals need to be accompanied by an Environmental Statement (ES) (under the Infrastructure Planning Regulations 2017), which describes the likely significant effects of the proposal on the environment, including specific reference to biodiversity ensures that the direct, indirect, secondary, transboundary and short to long-term effects. Where development is subject to EIA, EN-1 suggests that the ES should clearly set out any effects on internationally designated sites of ecological or geological conservation importance, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity, including irreplaceable habitats;
- EN-1 outlines mitigation measures that are likely to reduce direct and indirect effects on International Sites;
- EN-1 recognises that impacts to International Sites might occur and information to allow effective consideration must be provided, including an assessment of alternative solutions, a case for IROPI and compensation. EN-1 advises applicants to seek the views of the Statutory Nature Conservation Body (SNCB) and Defra/ Welsh Government with regard to the proposed compensation plan to ensure the development will not hinder the achievement of the conservation objectives for the International Site;
- EN-1 notes that the BESS committed to establishing strategic compensation for renewables NSIPs, to offset environmental effects but also to reduce delays for individual projects.

Section 5.4 'Biodiversity and Geological Conservation' of EN-1 discusses the obligations placed on applicants in order to conserve biodiversity and features of geological interest and states that '*In taking decisions, the Secretary of State should ensure that appropriate weight is attached to designated sites of international, national, and local importance*'. The Habitats Regulations are specifically discussed and it is stated that the SoS must consider whether the project may have a likely significant effect on an International Site, either alone

<sup>30</sup> However, it should be noted that delivering BNG does not remove the need to meet the requirements to protect the integrity of the national site network and if impact on integrity cannot be avoided then losses and compensation would be bespoke and removed from the BNG process (Principle 1, Natural England JP039, Biodiversity Metric 3.1 User Guide)

or in combination with other plans or projects. This would commit the applicant to determining (whilst seeking the advice of the appropriate SNCB) whether an Appropriate Assessment (AA) is required.

In addition, the NPSs include a number of provisions which ensure that relevant legislation, policy and strategy targets are met. Key provisions within the NPSs with respect to the natural environment and HRA are outlined in Table 3-1 below, alongside an assessment of whether the provision will help to avoid adverse effects on the integrity of International Sites by virtue of maintaining the site's conservation objectives. The general text stating the fact that a HRA has been undertaken and its broad scope, as outlined in Section 1.7 of EN-1 and subsequently EN-2 to EN-5, is excluded from Table 3-1 as this text does not offer any protection to International Sites.

For the reasons outlined above, it is concluded that the NPSs recognise the importance of International Sites and provide a framework for their protection through ensuring robust assessment and application of the mitigation hierarchy.

**Table 3-1: Policy Provisions Protecting International Sites**

NPS	Policy Provision Text	Will the provision help to avoid adverse effects on International Sites?
EN-1	Applicants can request and agree 'Evidence Plans' with SNCBs, which is a way to agree and record upfront the information the applicant needs to supply with its application, so that the HRA can be efficiently carried out.	Yes. Forward planning and early consultation and collaboration with SNCBs will ensure HRA is approached in the best way and likely to achieve 'no adverse effects on site integrity'.
EN-1	If, during the pre-application stage, the SNCB indicates that the proposed development is likely to adversely impact the integrity of an International Site, the applicant must include with their application such information as may reasonably be required to assess a potential derogation under the Habitats Regulations. This is also required should the SNCB give such an indication at a later stage in the development consent process.	No. Although in itself not contributing to avoiding harm, at the request of the SNCB, the applicant is to provide derogations information. This would ideally be at the pre-application stage, but there is scope for later provision of such information on a 'without prejudice' basis.
EN-1	All Marine Protected Areas (MPAs) given equal consideration regardless of the legislation they were designated under. This is because all sites contribute to the network of MPAs and therefore to overall network integrity.	Yes. This policy text considers the MPAs as a network of sites. Although HRA is not relevant to all the MPAs, this approach is in the spirit of HRA in considering the coherence and integrity of the network of sites.
EN-2	It is important to consider environmental impacts and mitigation measures holistically across terrestrial and marine environments. This is particularly important when considering new facilities as the siting of this infrastructure will likely be within already constrained and busy estuarine environments.	Yes. Taking an integrated/ holistic approach to considering environmental impacts and mitigation will assist with undertaking HRA and achievement of no adverse effects.
EN-3	An assessment of the effects of installing cable across the intertidal/ coastal zone should demonstrate compliance with mitigation measures identified by The Crown Estate in any plan-level HRA produced as part of its leasing round.	Yes. The need to comply with existing and associated HRAs improves the robustness of HRA process.
EN-3	Future leasing rounds may continue to be supported by separate plan level HRA or, in	Yes.

NPS	Policy Provision Text	Will the provision help to avoid adverse effects on International Sites?
	<p>appropriate cases, may be the subject of a coordinated approach to the HRA, where there is overlap between the activities of more than one competent authority in relation to offshore development.</p> <p>Applicants are expected to demonstrate compliance with mitigation measures identified by The Crown Estate in any plan-level HRA produced as part of its leasing rounds and with any future statutory requirements, guidance or mitigation measures developed to deliver the commitments in the BESS.</p>	<p>The need to comply with existing and associated HRAs improves the robustness of HRA process.</p>
EN-3	<p>Repowering will require EIA and HRA.</p>	<p>Yes.</p> <p>Commits repowering projects to undertaking HRA.</p>
EN-3	<p>EN-3 has strengthened biodiversity considerations with regard to ‘wider ecosystem impacts and interactions, such as food webs’.</p>	<p>Yes.</p> <p>This will help to capture impacts on supporting processes of qualifying species within a HRA.</p>
EN-3	<p>The BESS proposes an Environmental Improvement Package which includes nature-based design standards and minimum requirements to enable developments to mitigate their impacts on the marine environment.</p>	<p>Yes.</p> <p>Having minimum requirements that enable mitigation of impacts will contribute towards the achievement of no adverse effects on site integrity during HRA.</p>
EN-3	<p>The NPS has been strengthened to put the onus on applicants to show that at a project level the alternatives test and IROPI have been met before compensatory measures are explored.</p>	<p>Yes.</p> <p>To be provided on a ‘without prejudice’ basis, but also reinforces the HRA derogations process.</p>
EN-3	<p>Involve SNCBs and Defra in the planning process to enable discussions about adverse effects and compensation. The views of these bodies should be sought as to the suitability and effectiveness of the compensation plan and whether it can be secured to ensure the development will not hinder the achievement of the conservation objectives for the protected site.</p>	<p>Yes.</p> <p>Engagement with SNCBs and Defra will ensure that appropriate advice is obtained with respect to identifying adverse effects and achieving the aims of the Habitats Regulations.</p>
EN-3	<p>The BESS has committed to establishing strategic compensation to offset environmental impacts but also to reduce delays for individual projects. Strategic compensation refers to environmental actions by/ on behalf of government or third parties to offset the impacts of multiple marine developments on protected sites and MPAs. This may include central coordination for measures delivered across a series of projects or biogeographic region. The Government is still developing its policies on strategic compensation and guidance will be published in due course.</p>	<p>No.</p> <p>However, this provision indicates that there is scope for strategic compensation, which will help project HRAs moving through the derogations (HRA Stage 3 and 4 tests) to gain consent.</p>

NPS	Policy Provision Text	Will the provision help to avoid adverse effects on International Sites?
EN-3	<p>The Government will work collaboratively with industry and stakeholders to develop strategic compensation for projects currently in the consenting process as well as for future developments. Not every impact for every project will initially fall within the strategic compensation proposals, so applicants should continue to discuss with the SNCBs and Defra the need for site specific or strategic compensation at the earliest opportunity.</p>	<p>No.</p> <p>However, this provision indicates that there is scope for strategic compensation, which will help projects moving through the derogations to gain consent.</p>
EN-3	<p>Applicant should develop a Site Integrity Plan (SIP) to allow the cumulative impacts of underwater noise to be reviewed closer to the construction date, when there is more certainty in other plans and projects.</p>	<p>Yes.</p> <p>Consideration of cumulative impacts will be required as part of the in-combination assessment at either Stage 1 Screening or Stage 2 Appropriate Assessment.</p>
EN-4	<p>In relation to liquified natural gas import facilities it is stressed that it is important to consider environmental impacts and mitigation measures holistically across terrestrial and marine environments.</p>	<p>Yes.</p> <p>Taking an integrated/ holistic approach to considering environmental impacts and mitigation will assist with undertaking HRA and achievement of no adverse effects.</p>
EN-4	<p>Where relevant, applicants should undertake modelling to predict and understand both dredging and construction impacts on hydrology, sediment transport and geomorphology, as well as direct habitat loss, and impacts on species from increased underwater noise.</p>	<p>No.</p> <p>But this requirement will facilitate assessment work and help to establish potential effects to be assessed during HRA.</p>
EN-4	<p>With respect to choosing a [gas and oil] pipeline route, applicants should seek to avoid or minimise adverse effects [from usage below the surface]. Additional survey work may be required to support environmental assessments depending on evidence available and findings of desktop studies.</p>	<p>No.</p> <p>But the environmental assessment work may include HRA and there is a requirement to avoid or minimise effects, which would contribute to achieving no adverse effects on site integrity.</p>
EN-5	<p>In the past, adverse impacts on MPAs have caused consenting delays, and in some cases a need for compensatory measures under the Habitats Regulations, or measures of equivalent environmental benefit under the Marine and Coastal Access Act 2009, for previous existing offshore wind proposals. Therefore, developers should consider and address routing and minimisation of environmental impacts both onshore and offshore at an early state in the development process.</p> <p>Refers to EN-3 re consideration of impacts in the marine environment.</p>	<p>Yes.</p> <p>Commits to early identification and minimisation of impacts in relation to electrical networks infrastructure, which will help in achieving no adverse effects during HRA.</p>

### 3.4.2. Plans and projects with potential for in-combination effects

The energy NPSs could interact with other plans and projects to result in in-combination effects, as explained further in Section 3.5 below. Given the high-level nature of the NPSs, the consideration of in-combination

effects has assumed development of any type supported in EN-1 to EN-5 could come forward. Table 3-4 lists the types of plan and project that have potential for in-combination effects with development of energy infrastructure. The relevant plans will be dependent on the location and scale of any infrastructure coming forward. The scope of an in-combination assessment is largely set by the International Sites with regard to identifying other plans and projects being assessed for potential impacts upon them and not based on any fixed geographical distance or area. This allows for capture of potential far-reaching effects, as often identified via the source-pathway-receptor approach and in relation to migratory and mobile qualifying species.

Given the high-level and strategic nature of the HRA for the energy NPSs it is not possible to undertake an in-combination assessment at this time; however, the approach is discussed for information and will be applicable (reviewed on a case-by-case basis) to lower tier and project HRAs associated with the NPSs.

### 3.5. Step 3: Identify the potential effects on the International Site both alone and in combination with other plans or projects

In HRA, it is usual to consider construction, operation and decommissioning effects separately, where they are applicable. Although potential effects throughout construction and operation are different, given the strategic nature of this assessment and the high-level potential effects being considered, they have not been dealt with separately within the assessment process. It is presumed that, using the precautionary principle and on a worst-case scenario basis, the effects of decommissioning will be similar to those of construction and, therefore, also covered by the effects considered.

It is acknowledged that there will be infrastructure-specific effects that may not be identified until the project stage, due to the high-level nature of the assessment. Where possible, potential specific effects have been flagged, but detailed consideration of effects will only be made at project-level HRA for individual proposed infrastructure developments.

The energy NPSs do not contain specific policies, site proposals or objectives that could strictly be assessed in their own right. However, the NPSs allow for and facilitate development of a nature and scale that has potential to impact International Sites.

In line with accepted practice, it is appropriate to undertake a targeted 'source-pathway-receptor' approach to identifying sites for screening. This allows for the movement of mobile/ migratory species such as birds, fish and marine mammals and their potential to interact with infrastructure to be taken into account. Energy infrastructure development, as facilitated by the NPSs, could occur anywhere within England and Wales, thereby potentially affecting any of the International Sites across the UK and more widely across Europe, depending on the location of development. As such, detailed assessment of particular sources, pathways and receptors is not possible. However, this screening identifies key potential effect pathways associated with the types of energy development set out in the NPSs, which can be used to inform the scope of project-level HRAs.

The various types of energy infrastructure development that could arise as a result of the NPSs, possible activities associated with them and the potential resulting effects on International Sites are set out in Table 3-2. For each energy technology, this identifies the potential 'source' (the type of development and typical resultant activities during construction, operation and decommissioning of infrastructure) and the 'pathway' (type of effect) that these activities could give rise to. Table 3-2 notes which NPS sets out detail for each technology (note that all are also included in EN-1, as it is an overarching document). [Appendix B](#) sets out more detail on how the likely activities arising from each energy infrastructure technology may give rise to the effects identified.

The relevant receptors (the International Sites, species and habitats that will be affected) can then be identified at the project level. The technologies or effects identified in Table 3-2 may only affect certain International Sites. In particular, coastal and marine technologies, namely offshore wind and tidal stream (both set out in EN-3), are most likely to affect coastal and marine International Sites. In addition, power stations, including those fired by hydrogen (EN-1), natural gas (EN-2), biomass and waste (EN-3) usually utilise large amounts of water, and therefore, will be situated on the coast or next to another large body of water, potentially affecting coastal and marine International Sites, as well as onshore International Sites. Coastal and marine energy infrastructure may also be more likely to affect International Sites in other countries, due to the proximity of these sites with other countries and given that some marine species are highly mobile and move between territorial waters of different countries. However, effects depend on particular species and populations, including factors such as how mobile they are, their ecology and migration routes, which cannot be known until particular sites are under consideration at the project stage. In addition, coastal and marine sites may be more likely to result in cross-





boundary effects. For example, Dogger Bank SAC is the largest sandbank in UK waters and extends into both Dutch and German waters, therefore proposals for any development affecting this site would need to be consulted on with authorities in neighbouring countries.

Nevertheless, potential for effects on the marine and coastal environment are not limited to projects in this area. Inland projects could affect coastal and marine International Sites due to proximity or if they are linked, for example by a watercourse. Furthermore, many International Sites with highly mobile species such as birds or bats, can have functionally linked land or habitat connectivity outside the International Site that is important to the population and necessary for its survival. Similarly, cross-boundary effects are not limited to coastal and marine sites and are particularly likely to occur if the International Site affected is designated for migratory species. Inland waterbodies and upland habitats play important roles in supporting waders and waterfowl found on the coast for some of the year on passage, over winter and during the breeding season.

**Table 3-2: Potential impacts that could arise as a result of the types of development set out in the NPSs**

Type of energy infrastructure development	Assumptions	Possible Activities (construction, operation and decommissioning)	Possible Impact Pathways	Likely Significant Effects
EN-1: Hydrogen	Hydrogen production and the infrastructure needed is uncertain at this stage. Production, conversion to electricity, storage and transport need to be considered. Effects listed relate to clean hydrogen.	Construction activities Vehicle and personnel movements Physical presence of site (including storage sites) Combustion of materials Water abstraction and discharge Changes to drainage Decommissioning and restoration activities	<b>Construction/ decommissioning:</b> Land take Reduction in air quality Change in water quality Changes in water quantity/ flow/ drainage Noise, light, vibrations and visual disturbance Introduction of invasive non-native species	<b>Construction/ decommissioning:</b> Habitat loss/ fragmentation/ degradation Species loss/ population fragmentation Smothering/ enrichment of habitats Species disturbance impacts Out-competition or disease among native species/ change in vegetation composition
			<b>Operation:</b> Reduction in air quality Changes in water quality Changes in water quantity/ flow/ drainage Noise, light, vibrations and visual disturbance Introduction of invasive non-native species	<b>Operation:</b> Habitat degradation Species disturbance impacts Species displacement from feeding areas, migratory routes, breeding sites or other sites used for roosting, moulting or resting etc. Loss/ displacement of prey species Loss of feeding/ foraging areas Out-competition or disease among native species/ change in vegetation composition
EN-1: Nuclear	Radioactive waste would be transported and stored off-site.	Construction activities Vehicle and personnel movements	<b>Construction/ decommissioning:</b> Land take Reduction in air quality Change in water quality/ temperature	<b>Construction/ decommissioning:</b> Habitat loss/ fragmentation/ degradation Species loss / population fragmentation Smothering/ enrichment of habitats



Type of energy infrastructure development	Assumptions	Possible Activities (construction, operation and decommissioning)	Possible Impact Pathways	Likely Significant Effects
	<p>Due to the large volume of water for cooling required, nuclear power stations are likely to be coastal. Safety systems in place in the designs of new nuclear power stations and compliance with the UK's robust legislative and regulatory regime mean that the risk of radiological release from nuclear power (both during normal operation and as a result of an unplanned release) is very small.</p>	<p>Physical presence of site (including storage sites)            Water abstraction and discharge            Changes to drainage            Decommissioning and restoration activities</p>	<p>Changes in water quantity/ flow/ drainage            Noise, light, vibrations and visual disturbance (including underwater)            Introduction of invasive non-native species            Radiation</p> <p><b>Operation:</b>            Land contamination            Change in water quality/ temperature (specifically in the marine environment)            Changes in water quantity/ flow/ drainage            Noise, light, vibrations and visual disturbance (including underwater)            Introduction of invasive non-native species            Impingement &amp; entrainment of fish            Coastal change/ change in coastal processes</p>	<p>Species disturbance impacts            Out-competition or disease among native species/ change in vegetation composition</p> <p><b>Operation:</b>            Habitat degradation            Species loss/ population fragmentation            Species disturbance impacts            Species displacement from feeding areas, migratory routes, breeding sites or other sites used for roosting, moulting or resting etc.            Loss/ displacement of prey species            Loss of feeding/ foraging areas            Out-competition or disease among native species/ change in vegetation composition</p>
EN-1: Carbon Capture and Storage (CCS)	<p>Carbon capture would be part of a power station, although retrofitting carbon capture technologies</p>	<p>Construction activities            Vehicle and personnel movements            Physical presence of site            Water abstraction and discharge            Changes to drainage</p>	<p><b>Construction/ decommissioning:</b>            Land take            Reduction in air quality            Change in water quality            Changes in water quantity/ flow/ drainage</p>	<p><b>Construction/ decommissioning:</b>            Habitat loss/ fragmentation/ degradation            Species loss/ population fragmentation            Smothering/ enrichment of habitats            Species disturbance impacts            Out-competition or disease among native species/ change in vegetation composition</p>

Type of energy infrastructure development	Assumptions	Possible Activities (construction, operation and decommissioning)	Possible Impact Pathways	Likely Significant Effects
	<p>may require additional land take<sup>31</sup>.</p> <p>Transport of carbon would be by pipeline or ship.</p> <p>Captured carbon will be stored offshore.</p>		<p>Noise, light, vibrations and visual disturbance</p> <p>Introduction of invasive non-native species</p> <p><b>Operation:</b></p> <p>Land contamination</p> <p>Change in water quality</p> <p>Noise, light, vibrations and visual disturbance (including underwater)</p> <p>Impingement &amp; entrainment of fish</p>	<p><b>Operation:</b></p> <p>Habitat degradation</p> <p>Species loss/ population fragmentation</p> <p>Species disturbance impacts</p> <p>Species displacement from feeding areas, migratory routes, breeding sites or other sites used for roosting, moulting or resting etc.</p> <p>Loss/ displacement of prey species</p> <p>Loss of feeding/ foraging areas</p>
EN-2: Natural Gas	<p>&gt;50 MW capacity in England and &gt;350 MW capacity in Wales.</p> <p>&gt;300 MW – requires Carbon Capture Readiness (CCR) (note that a separate consultation on proposals for Decarbonisation</p>	<p>Construction activities</p> <p>Vehicle and personnel movements</p> <p>Physical presence of site</p> <p>Combustion of materials</p> <p>Water abstraction and discharge</p> <p>Changes to drainage</p> <p>Decommissioning and restoration activities</p>	<p><b>Construction/ decommissioning:</b></p> <p>Land take</p> <p>Reduction in air quality</p> <p>Change in water quality</p> <p>Changes in water quantity/ flow/ drainage</p> <p>Noise, light, vibrations and visual disturbance</p> <p>Introduction of invasive non-native species</p>	<p><b>Construction/ decommissioning:</b></p> <p>Habitat loss/ fragmentation/ degradation</p> <p>Species loss/ population fragmentation</p> <p>Smothering/ enrichment of habitats</p> <p>Species disturbance impacts</p> <p>Out-competition or disease among native species/ change in vegetation composition</p>

<sup>31</sup> EN-1 states that the carbon capture plant required for a new build power CCS plant can be included as associated development in the application for development consent for the relevant thermal generating station, and will then be considered as part of that application. However, in order to be precautionary and recognise that applications for retrofitting CCS may come forward, the carbon capture plant has been considered here.

Type of energy infrastructure development	Assumptions	Possible Activities (construction, operation and decommissioning)	Possible Impact Pathways	Likely Significant Effects
	<p>Readiness may alter this in future).</p> <p>Access to water for cooling and possibly combined cycle gas turbines.</p>		<p><b>Operation:</b></p> <p>Land contamination</p> <p>Reduction in air quality</p> <p>Change in water quality/ temperature</p> <p>Changes in water quantity/ flow/ drainage</p> <p>Noise, light, vibrations and visual disturbance</p> <p>Introduction of invasive non-native species</p> <p>Impingement &amp; entrainment of fish</p> <p>Climate change effects on habitats and species</p>	<p><b>Operation:</b></p> <p>Habitat degradation</p> <p>Species loss/ population fragmentation</p> <p>Smothering/ enrichment of habitats</p> <p>Species disturbance impacts</p> <p>Out-competition or disease among native species/ change in vegetation composition</p> <p>Loss/ displacement of prey species</p>
<p>EN-3: Offshore Wind (including floating wind)</p>	<p>&gt;100MW in England and &gt;350MW in Wales</p> <p>Requires Crown Estate lease within 12 nm from coast.</p> <p>Beyond the 12 nm limit where, under international law, the UK is able to construct wind farm installations or other structures to produce renewable energy in the Renewable Energy Zone.</p>	<p>Construction activities</p> <p>Physical presence of site</p> <p>Cable protection</p> <p>Decommissioning activities</p>	<p><b>Construction/ decommissioning:</b></p> <p>Land/ seabed take</p> <p>Benthic scouring</p> <p>Change in (marine) water quality</p> <p>Noise, light, vibrations and visual disturbance (including underwater)</p> <p><b>Operation:</b></p> <p>Change in (marine) water quality</p> <p>Introduction of invasive non-native species</p>	<p><b>Construction/ decommissioning:</b></p> <p>Habitat loss/ fragmentation/ degradation</p> <p>Species loss/ population fragmentation</p> <p>Species disturbance impacts (specifically marine species)</p> <p>Species displacement from feeding areas, migratory routes, breeding sites or other sites used for roosting, moulting or resting etc.</p> <p>Loss/ displacement of prey species</p> <p>Loss of feeding/ foraging areas</p> <p><b>Operation:</b></p> <p>Habitat degradation</p> <p>Species loss/ population fragmentation</p>

Type of energy infrastructure development	Assumptions	Possible Activities (construction, operation and decommissioning)	Possible Impact Pathways	Likely Significant Effects
			Coastal change/ change in coastal processes Changes to electromagnetic fields Bird strike	Species disturbance impacts (specifically marine species) Species displacement from feeding areas, migratory routes, breeding sites or other sites used for roosting, moulting or resting etc. Loss/ displacement of prey species Loss of feeding/ foraging areas
EN-3: Solar PV	>50 MW in England >350 MW in Wales	Construction activities Physical presence of site Vehicle and personnel movements Decommissioning and restoration activities	<b>Construction/ decommissioning:</b> Land take Changes in water quantity/ flow/ drainage Noise, light, vibrations and visual disturbance Introduction of invasive non-native species	<b>Construction/ decommissioning:</b> Habitat loss/ fragmentation/ degradation Species loss/ population fragmentation Species disturbance impacts Out-competition or disease among native species/ change in vegetation composition
			<b>Operation:</b> Changes in water quantity/ flow/ drainage Noise, light, vibrations and visual disturbance	<b>Operation:</b> Habitat degradation Species disturbance impacts
EN-3: Pumped Hydro Storage	> 50 MW in England >350 MW in Wales	Construction activities Physical presence of site Water abstraction and discharge Decommissioning and restoration activities	<b>Construction/ decommissioning:</b> Land take Changes in water quality Changes in water quantity/ flow/ drainage Noise, light, vibrations and visual disturbance	<b>Construction/ decommissioning:</b> Habitat loss/ fragmentation/ degradation Species loss/ population fragmentation Species disturbance impacts Out-competition or disease among native species/ change in vegetation composition

Type of energy infrastructure development	Assumptions	Possible Activities (construction, operation and decommissioning)	Possible Impact Pathways	Likely Significant Effects
			Introduction of invasive non-native species  <b>Operation:</b> Changes in water quality/ temperature Noise, light, vibrations and visual disturbance Impingement & entrainment of fish	<b>Operation:</b> Habitat degradation Species loss/ population fragmentation Species disturbance impacts Loss/ displacement of prey species
EN-3: Tidal stream	>100 MW in England > 350 MW in Wales	Construction activities Physical presence of site Decommissioning and restoration activities	<b>Construction/ decommissioning:</b> Land/ seabed take Benthic scouring Changes in (marine) water quality Noise, light, vibrations and visual disturbance (including underwater) Introduction of invasive non-native species  <b>Operation:</b> Coastal change/ change in coastal processes Collision of marine species with turbines Noise, light, vibrations and visual disturbance (including underwater)	<b>Construction/ decommissioning:</b> Habitat loss/ fragmentation/ degradation Species loss/ population fragmentation Species disturbance impacts (specifically marine species) Species displacement from feeding areas, migratory routes, breeding sites or other sites used for roosting, moulting or resting etc. Loss/ displacement of prey species Loss of feeding/ foraging areas Out-competition or disease among native species/ change in habitat composition  <b>Operation:</b> Habitat loss/ fragmentation/ degradation Species loss/ population fragmentation Species disturbance impacts (specifically marine species, including seabirds) Species displacement from feeding areas, migratory routes, breeding sites or other

Type of energy infrastructure development	Assumptions	Possible Activities (construction, operation and decommissioning)	Possible Impact Pathways	Likely Significant Effects
			Changes to electromagnetic fields Introduction of invasive non-native species	sites used for roosting, moulting or resting etc. Loss/ displacement of prey species Loss of feeding/ foraging areas Out-competition or disease among native species/ change in habitat composition
EN-3: Biomass	>50 MW in England >350 MW in Wales >300 MW – requires CCR Requires imported biomass Access to water for cooling	Construction activities Vehicle and personnel movements Physical presence of site Combustion of materials Water abstraction and discharge Changes to drainage Decommissioning and restoration activities	<b>Construction/ decommissioning:</b> Land take Reduction in air quality Change in water quality/ temperature Changes in water quantity/ flow/ drainage Noise, light, vibrations and visual disturbance Introduction of invasive non-native species	<b>Construction/ decommissioning:</b> Habitat loss/ fragmentation/ degradation Species loss/ population fragmentation Species disturbance impacts Out-competition or disease among native species/ change in habitat composition
			<b>Operation:</b> Reduction in air quality Change in water quality/ temperature Noise, light, vibrations and visual disturbance	<b>Operation:</b> Habitat degradation Species disturbance impacts
EN-3: Energy from Waste	>50 MW in England >350 MW in Wales Requires proximity to sources of waste	Construction activities Vehicle and personnel movements Physical presence of site Combustion of materials	<b>Construction/ decommissioning:</b> Land take Reduction in air quality Change in water quality Changes in water quantity/ flow/ drainage	<b>Construction/ decommissioning:</b> Habitat loss/ fragmentation/ degradation Species loss/ population fragmentation Species disturbance impacts

Type of energy infrastructure development	Assumptions	Possible Activities (construction, operation and decommissioning)	Possible Impact Pathways	Likely Significant Effects
		Water abstraction and discharge  Changes to drainage Decommissioning and restoration activities	Noise, light, vibrations and visual disturbance  <b>Operation:</b> Reduction in air quality Change in water quality Noise, light, vibrations and visual disturbance Introduction of invasive non-native species Climate change effects on habitats and species	<b>Operation:</b> Habitat degradation Species disturbance impacts
EN-4: Gas supply infrastructure and gas and oil pipelines	Storage capacity of at least 43 million standard cubic metres (Mcm) or Delivery flow rate of at least 4.5 million standard cubic metres of gas per day (Mcm/d)	Construction activities Physical presence of site Maintenance dredging Flaring / venting of gas	<b>Construction/ decommissioning:</b> Land take Reduction in air quality Change in water quality Changes in water quantity/ flow/ drainage Noise, light, vibrations and visual disturbance Introduction of invasive non-native species Land contamination  <b>Operation:</b> Reduction in air quality Change in water quality Climate change effects on habitats and species	<b>Construction/ decommissioning:</b> Habitat loss/ fragmentation/ degradation Species loss/ population fragmentation Species disturbance impacts Loss of feeding/ foraging areas Out-competition or disease among native species/ change in habitat composition  <b>Operation:</b> Habitat loss/ fragmentation/ degradation Species loss/ population fragmentation Loss of feeding/ foraging areas



Type of energy infrastructure development	Assumptions	Possible Activities (construction, operation and decommissioning)	Possible Impact Pathways	Likely Significant Effects
EN-5: Electricity networks	Connecting existing and new power stations to areas of negative charge	Construction activities Physical presence of site	<p>Coastal change/ change in coastal processes</p> <p><b>Construction/ decommissioning:</b>            Land take            Change in water quality            Changes in water quantity/ flow/ drainage            Noise, light, vibrations and visual disturbance            Introduction of invasive non-native species</p> <p><b>Operation:</b>            Bird/ bat strike</p>	<p><b>Construction/ decommissioning:</b>            Habitat loss/ fragmentation/ degradation            Species loss/ population fragmentation            Species disturbance impacts            Out-competition or disease among native species/ change in habitat composition</p> <p><b>Operation:</b>            Species loss/ population fragmentation</p>

### 3.6. Step 4: Assess the likely significance of any effects on International Sites

LSEs will occur if development undermines the conservation objectives of an International Site. Conservation objectives for International Sites in England broadly comprise the following targets:

- Maintain or restore the extent and distribution of qualifying habitats and habitats of qualifying species;
- Maintain or restore the structure and function (including typical species) of qualifying natural habitats;
- Maintain or restore the structure and function of the habitats of qualifying species;
- Maintain or restore the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;
- Maintain or restore the populations of qualifying species; and
- Maintain or restore the distribution of qualifying species within the site.

For International Sites in Wales, a vision and performance indicators are set out for each qualifying feature. These vary depending on the type of qualifying feature, but generally reflect those listed above, such as maintaining or restoring the extent, structure and function of qualifying habitats; ensuring sufficient area, distribution and quality of suitable habitat is present to support populations of qualifying species; and maintain or increase the population and extent of qualifying species. In addition, conservation objectives for International Sites in Wales often include factors affecting qualifying features to be under control. It should be noted that Ramsar Sites do not have conservation objectives and so the conservation objectives of relevant/similar SPAs and/or SACs (depending on the Ramsar criteria) can be used by proxy when determining LSEs on Ramsar Sites.

The conservation objectives should be read in conjunction with the Supplementary Advice on Conservation Objectives or Regulation 37 Document<sup>32</sup>, where this is available for an International Site. The supplementary advice provides extra detail on how the attribute targets can be met. However, the supplementary advice is only relevant to project-level assessments. Due to the strategic nature of this assessment for the NPSs, they are not considered further.

Given the strategic nature of the NPSs, and that they do not include any site-specific allocations for energy infrastructure, it cannot be known at this stage what type of energy infrastructure will come forward in which locations. The NPSs do not restrict the location of energy development, and they allow development of the nature and scale that could potentially affect International Sites, as set out in Table 3-2. As such, it is possible that the NPSs could lead to likely significant effects on International Sites.

Table 3-3 draws on the potential effects identified in the final column of Table 3-2 and sets out the types of qualifying feature that are likely to be sensitive to these effects and the typical conservation objectives of International Sites that could be undermined by such effects. The wording of the typical conservation objectives for International Sites in England has been used but applies equally to sites in England or Wales. 'Factors affecting qualifying features to be under control' has not been explicitly added to the table but could apply to any of the potential likely significant effects.

---

<sup>32</sup> Regulation 37 Documents are produced in Wales under Regulation 37 (3) of The Conservation of Habitats and Species Regulations 2017 (as amended), which requires the statutory nature conservation body to advise as to operations which may cause deterioration of natural habitats or the habitats of the species, or disturbance of species, for which the site has been designated. These set out conservation advice for Marine Protected Areas

**Table 3-3: Likely significant effects that could arise as a result of development coming forward under the NPSs**

Possible impact pathways (which could cause likely significant effect)	Type of likely significant effect	Type of qualifying feature that could be significantly affected	Conservation objectives that could be undermined
Land/ seabed take	Habitat loss/ fragmentation Loss of feeding/ foraging areas	All habitat and species	<ul style="list-style-type: none"> <li>Maintain or restore extent and distribution of qualifying habitats and habitats of qualifying species.</li> </ul>
Reduction in air quality	Habitat degradation Smothering/ enrichment of habitats	Nutrient-sensitive habitats (including soils and water) and plants	<ul style="list-style-type: none"> <li>Maintain or restore the structure and function (including typical species) of qualifying natural habitats;</li> <li>Maintain or restore the structure and function of the habitats of qualifying species;</li> <li>Maintain or restore the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely.</li> </ul>
Noise, light, vibrations and visual disturbance (including underwater)	Species disturbance impacts Species displacement from feeding areas, migratory routes, breeding sites or other sites used for roosting, moulting or resting etc. Loss/ displacement of prey species	Bird species Bat species Nocturnal bird and insect species Migratory bird species Mammal species Fish species	<ul style="list-style-type: none"> <li>Maintain or restore the populations of qualifying species;</li> <li>Maintain or restore the distribution of qualifying species within the site.</li> </ul>
Change in water quality/ temperature	Habitat degradation Species disturbance impacts Species displacement from feeding areas, migratory routes, breeding sites or other sites used for roosting, moulting or resting etc.	Freshwater habitats (such as rivers and lakes) Marine habitats Wetland habitats (including groundwater dependent terrestrial ecosystems) Coastal habitats (saltmarsh, sand dunes)	<ul style="list-style-type: none"> <li>Maintain or restore the structure and function (including typical species) of qualifying natural habitats;</li> <li>Maintain or restore the structure and function of the habitats of qualifying species;</li> <li>Maintain or restore the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;</li> </ul>

Possible impact pathways (which could cause likely significant effect)	Type of likely significant effect	Type of qualifying feature that could be significantly affected	Conservation objectives that could be undermined
	Loss/ displacement of prey species	Aquatic species (freshwater, brackish and marine)	<ul style="list-style-type: none"> <li>• Maintain or restore the distribution of qualifying species within the site;</li> <li>• Maintain or restore the populations of qualifying species.</li> </ul>
Changes in water quantity/ flow/ drainage	Habitat degradation Species disturbance impacts Species displacement from feeding areas, migratory routes, breeding sites or other sites used for roosting, moulting or resting etc. Loss/ displacement of prey species	Freshwater habitats Marine habitats Wetland habitats Aquatic species (freshwater, brackish and marine)	<ul style="list-style-type: none"> <li>• Maintain or restore the extent and distribution of qualifying habitats and habitats of qualifying species;</li> <li>• Maintain or restore the structure and function (including typical species) of qualifying natural habitats;</li> <li>• Maintain or restore the structure and function of the habitats of qualifying species;</li> <li>• Maintain or restore the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;</li> <li>• Maintain or restore the distribution of qualifying species within the site;</li> <li>• Maintain or restore the populations of qualifying species.</li> </ul>
Land contamination	Habitat degradation Species loss	Terrestrial habitats and species Wetland habitats and species	<ul style="list-style-type: none"> <li>• Maintain or restore the structure and function (including typical species) of qualifying natural habitats;</li> <li>• Maintain or restore the structure and function of the habitats of qualifying species;</li> <li>• Maintain or restore the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely.</li> </ul>

Possible impact pathways (which could cause likely significant effect)	Type of likely significant effect	Type of qualifying feature that could be significantly affected	Conservation objectives that could be undermined
Impingement and entrainment of fish	Species loss Loss/ displacement of prey species	Fish species	<ul style="list-style-type: none"> <li>Maintain or restore the distribution of qualifying species within the site.</li> </ul>
Benthic scouring	Habitat loss/ fragmentation/ degradation Loss of feeding/ foraging areas	Marine habitats Fish species Bird species Marine mammals	<ul style="list-style-type: none"> <li>Maintain or restore the extent and distribution of qualifying habitats and habitats of qualifying species;</li> <li>Maintain or restore the structure and function (including typical species) of qualifying natural habitats;</li> <li>Maintain or restore the structure and function of the habitats of qualifying species;</li> <li>Maintain or restore the distribution of qualifying species within the site.</li> </ul>
Coastal change/ change in coastal processes	Habitat loss/ fragmentation/ degradation Loss of feeding/ foraging areas	Coastal habitats Fish species Bird species Marine mammals	<ul style="list-style-type: none"> <li>Maintain or restore the extent and distribution of qualifying habitats and habitats of qualifying species;</li> <li>Maintain or restore the structure and function (including typical species) of qualifying natural habitats;</li> <li>Maintain or restore the structure and function of the habitats of qualifying species;</li> <li>Maintain or restore the distribution of qualifying species within the site.</li> </ul>
Collision of marine species with turbines	Species loss Loss/ displacement of prey species	Bird species Fish species Marine mammals Other marine species	<ul style="list-style-type: none"> <li>Maintain or restore the populations of qualifying species.</li> </ul>

Possible impact pathways (which could cause likely significant effect)	Type of likely significant effect	Type of qualifying feature that could be significantly affected	Conservation objectives that could be undermined
Bird/ bat strike	Species loss	Bird species Bat species	<ul style="list-style-type: none"> <li>Maintain or restore the populations of qualifying species.</li> </ul>
Climate change effects on habitats and species	Habitat loss/ fragmentation/ degradation Species loss / population fragmentation	All habitats and species	<ul style="list-style-type: none"> <li>Maintain or restore the extent and distribution of qualifying habitats and habitats of qualifying species;</li> <li>Maintain or restore the structure and function (including typical species) of qualifying natural habitats;</li> <li>Maintain or restore the structure and function of the habitats of qualifying species;</li> <li>Maintain or restore the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely.</li> </ul>
Changes to electromagnetic fields	Species disturbance impacts	Marine species	<ul style="list-style-type: none"> <li>Maintain or restore the populations of qualifying species;</li> <li>Maintain or restore the distribution of qualifying species within the site.</li> </ul>
Introduction of invasive non-native species	Out-competition or disease among native species / change in habitat composition	All habitats and species	<ul style="list-style-type: none"> <li>Maintain or restore the structure and function (including typical species) of qualifying natural habitats;</li> <li>Maintain or restore the structure and function of the habitats of qualifying species;</li> <li>Maintain or restore the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;</li> <li>Maintain or restore the distribution of qualifying species within the site;</li> </ul>

Possible impact pathways (which could cause likely significant effect)	Type of likely significant effect	Type of qualifying feature that could be significantly affected	Conservation objectives that could be undermined
			<ul style="list-style-type: none"> <li>Maintain or restore the populations of qualifying species.</li> </ul>



### 3.6.1. In-combination assessment

The potential for LSE on International Sites needs to be considered ‘alone’ and ‘in-combination’. Where an LSE alone is concluded, the consideration of potential in-combination effects with other plans or projects can be taken forward to appropriate assessment. If, however, there is an effect, but it is not considered to have an LSE on an International Site, i.e. the effect is minor and not significant, it is necessary to undertake an in-combination assessment at screening stage. The non-significant effect may, in-combination with effects from another plan or project, have an LSE on the International Site.

Cumulative effects may increase the effects on qualifying features in an additive or synergistic way. For example, cumulative effects may:

- Increase the sensitivity or vulnerability of the qualifying features;
- Result in impacts on qualifying features more intensely over an area;
- Result in impacts to qualifying features over a larger area; and/ or
- Affect new areas of the same qualifying feature.

Where it can be demonstrated that projects will have no impact or no appreciable effect, then there is no requirement to undertake an in-combination assessment. In short, there is nothing to combine with that might then have a potential effect on an International Site.

Due to the strategic and high-level nature of the NPSs, it is not possible to screen out International Sites from appropriate assessment and it is not possible to rule out the potential for in-combination effects to occur. The types of plans and projects with potential for in-combination effects are listed in Table 3-4, along with types of effects that could occur in-combination. National-level plans requiring HRA, including other NPSs, may also have potential in-combination effects with the NPSs.

The HRA Handbook<sup>33</sup> advises that plans and projects at the following stages may be relevant to an in-combination assessment:

- Applications lodged but not yet determined;
- Projects subject to periodic review;
- Projects authorised but not yet started;
- Projects started but not yet completed;
- Known projects that do not require external authorisation;
- Proposals in adopted plans; and
- Proposals in draft plans formally published or submitted for final consultation, examination or adoption.

**Table 3-4: Example plans and projects with potential for in-combination effects with the NPSs**

Example Plans and Projects	Potential In-combination Effects
National Policy Statements	<ul style="list-style-type: none"> <li>• Noise, vibration and light disturbance;</li> <li>• Air, land and water pollution;</li> <li>• Changes to water quantity/ flow and coastal change;</li> <li>• Species injury and mortality;</li> <li>• Species displacement;</li> <li>• Changes in habitat extent, composition and structure.</li> </ul>
Local Development Plans	
Local Transport Plans	
Local Minerals and Waste Plans	
River Basin Management Plans	
Water Resource Management Plans	
Shoreline Management Plans	
Marine Plans	
Nationally Significant Infrastructure Projects and associated development	

<sup>33</sup> Tyldesley, D. and Chapman, C., (2013) The Habitats Regulations Assessment Handbook, March 2021 edition UK: DTA Publications Limited.

**Example Plans and Projects**

**Potential In-combination Effects**

Other development: commercial, housing, minerals or waste developments

Such in-combination effects are more likely to arise when multiple projects have similar impacts; due to effects exceeding the limit of what the relevant habitats or species can tolerate, therefore becoming significant. Any project or plan being screened for potential effects on the same International Sites should be included in the in-combination assessment. This includes non-energy infrastructure development and smaller scale development that is not an NSIP. In-combination effects can be by virtue of proximity, connectivity and/ or timing. The most common combined effects include additive air quality, water quality/ quantity and habitat/ species disturbance impacts. In-combination effects are discussed at appropriate assessment stage.

The scope for transboundary effects has been considered within this assessment. Following the relevant guidelines<sup>34</sup> (see Section 2.1), the Habitats Regulations should be applied to any energy development where significant effects could occur for International Sites outside of the UK. This will include assessing effects in combination and potentially require consideration of plans and projects within other jurisdictions, including other UK jurisdictions not covered by the NPSs e.g. Scotland and Northern Ireland, and neighbouring states.

### 3.7. Summary of screening assessment

The screening assessment has confirmed that the NPSs are not directly connected with or necessary to the management of International Sites.

It is clear that the NPSs recognise the importance of International Sites and provide a framework for their protection. However, as the NPSs are high-level and do not identify specific sites for energy development, it is not possible to determine whether any resulting energy projects will have effects on International Sites at this stage, or which International Sites will be affected. In following the precautionary principle, the NPSs could lead to development of a nature and scale that could have likely significant effects on International Sites either alone or in-combination with other plans and projects. Therefore, they have been screened in for appropriate assessment, which will allow potential mitigation to be considered.

---

<sup>34</sup> DECC (2015) Guidelines on the assessment of transboundary impacts of energy developments on Natura 2000 sites outside the UK, available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/408465/transboundary\\_guidelines.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/408465/transboundary_guidelines.pdf)

## 4. Appropriate Assessment

### 4.1. Approach to Appropriate Assessment

Although the NPSs provide policy provisions that protect International Sites, the screening stage was unable to conclude that there would be no likely significant effects arising from the NPSs either alone or in-combination with respect to emerging energy infrastructure development. Therefore, the NPSs were taken to Stage 2 to allow consideration of mitigation measures.

The following likely significant effects were identified from the possible impact pathways outlined in Table 3-2 above:

- Habitat loss/ fragmentation/ degradation, e.g. resulting from land take and changes to supporting processes such as air or water quality;
- Species loss / population fragmentation from direct impacts (e.g. collision with infrastructure) and habitat change;
- Smothering/ enrichment of habitats from changes in air quality;
- Species disturbance impacts from noise, light, vibration or visual disturbance sources, or changes in electromagnetic fields;
- Species displacement from feeding areas, migratory routes, breeding sites or other sites used for roosting, moulting or resting etc. due to onsite activity/ disturbance and changes to habitats;
- Loss/ displacement of prey species from direct impacts and habitat change;
- Loss of feeding/ foraging areas from land take or habitat change; and,
- Out-competition or disease among native species / change in vegetation composition resulting from introduction of invasive non-native species.

These effects could occur on any International Sites within England and Wales, or further afield. Effects further afield are most likely for offshore wind, coastal development (most likely to be gas fired power stations but could include other technologies as well) and development close to country borders.

An appropriate assessment is therefore required as ‘a likely significant effect cannot be excluded on the basis of objective information’. That is to say, ‘if the plan or project is likely to undermine the site’s conservation objectives, the assessment of that risk being made in the light inter alia of the characteristics and specific environmental conditions of the site concerned by such a plan or project’ (in accordance with the Waddenzee judgement, paragraph 45 and 49).

The appropriate assessment can only consider the potential effect pathways identified during Stage 1 Screening against the conservation objectives for International Sites. Depending on the qualifying features, the conservation objectives for SACs and SPAs typically cover the extent, distribution, structure and function of qualifying natural habitats, supporting processes relied upon by habitats (and species) and the population and distribution of qualifying species. In conjunction with the supplementary advice<sup>35</sup> for an International Site, the conservation objectives provide a framework for assessment and information on how qualifying features may be adversely affected. Ramsar sites do not have conservation objectives; however, as they often overlay SACs and SPAs, the conservation objectives for these sites can be applied to the Ramsar site.

### 4.2. Assessment of adverse effects on integrity of International Sites

The purpose of the appropriate assessment stage is to identify whether the plan would have adverse impacts on the integrity of the affected International Site(s). The integrity of a site is defined as “the coherence of the site’s ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/ or the populations of the species for which the site is, or will be designated”<sup>36</sup>. European Commission guidance on the provisions of Article 6 (and therefore relevant to Regulation 105 of the Habitat

---

<sup>35</sup> Such as the relevant Supplementary Advice on Conservation Objectives or Regulation 37 document.

<sup>36</sup> Natural England (2019) MPA Conservation Advice Glossary of Terms. Available here: [https://designatedsites.naturalengland.org.uk/pdfs/MPA\\_CAGlossary\\_March2019.pdf](https://designatedsites.naturalengland.org.uk/pdfs/MPA_CAGlossary_March2019.pdf)

Regulations), emphasises that site integrity involves its ecological functions and that the assessment of adverse effect should focus on and be limited to the site's conservation objectives<sup>37</sup>.

A number of protective provisions have been written in to the NPSs (as assessed in Table 3-1 above) and several of these are considered to help avoid adverse effects on International Sites. In brief, this avoidance is through a commitment to undertaking HRA, early engagement and collaboration with the relevant SNCB, the taking of a strategic / integrated approach, compliance with associated HRAs and placing a duty on the applicant to consider alternative and IROPI case before compensatory measures are explored. The policy provisions thereby ensure that the HRA process is integral to energy infrastructure planning and development and is robustly followed.

The effects set out in Table 3-3 could result in adverse effects on the integrity of International Sites, although this depends on the nature and location of any development coming forward under the NPSs. Due to the strategic nature of the documents and the fact they do not identify specific locations for development, it is not possible to undertake a detailed assessment of potential for adverse effects on integrity of International Sites. Furthermore, the NPSs cover a large range of potential energy infrastructure developments, which would show some variation in the specific impacts they may have on different qualifying features. In determining the effects that EN-1 to EN-5 might have on the integrity of one or more International Site(s), with respect to a specific International Site's conservation objectives it is necessary to consider potential mitigation. Potential mitigation measures for the effects identified are outlined below.

#### 4.2.1. Mitigation measures

In accordance with the People over Wind case, mitigation measures were not taken into account at the screening stage but are to be considered in this appropriate assessment. The NPSs set out mitigation measures, including mitigation for generic impacts in EN-1 and technology specific mitigation in EN-2 to EN-5. However, the generic provisions in the NPSs do not provide sufficient certainty that no adverse effects will occur, as details of specific projects are yet to be determined and, therefore, it is not possible to determine what effects will occur and whether it is possible to mitigate such effects. In addition, the NPSs recognise that it may not be possible to avoid or mitigate all effects. However, the risk itself is mitigated through the requirement within the NPSs for project-level HRA.

It is feasible that avoidance and mitigation measures could be applied at the project HRA level and this may be sufficient to avoid or mitigate any adverse effect on International Site integrity. However, mitigation of this kind is project-specific and without a project it can only be considered in generic terms at this strategic level.

In all cases it will be important to plan and design projects to avoid impacts wherever possible. General avoidance and mitigation measures include:

- Choosing spatial locations, routes or scales that have less of an impact, but are still retain functionality;
- Use of alternative construction or operation methods that minimise potential impacts;
- Sensitive layout or design;
- Scheduling (construction, operation and decommissioning) so that potentially damaging activities avoid important stages of the life-cycle of key species (e.g. migration, breeding and overwintering periods); and
- Developing adaptive management plans and procedures.

Generic mitigation measures that could be implemented to avoid or reduce adverse effects on the integrity of International Sites as a result of development that could be permitted through the NPSs are listed in Table 4-1 below. Note that it may be possible to avoid effects on International Sites through siting development in a different location and this should be explored for each project in turn, although it is noted that locations are usually somewhat constrained by the nature of the project. For example, water-cooled gas power stations need to be near a suitable water source and wind farms need to be located where wind conditions are suitable, and all projects need sufficient land for construction and operation. The mitigation measures listed below are generally standard measures, known to be effective. Those that are less standard or more novel approaches to mitigation, which are likely to have a higher level of uncertainty with regards to their effectiveness, are described as such. Note that the suggested mitigation measures set out below are not exhaustive, and the most appropriate measures will be project specific and informed by the nature of the project and exact effects likely to arise.

---

<sup>37</sup> European Commission (2018) Managing Natura 2000 Sites. The Provision of Article 6 of the 'Habitats' Directive 92/43/EEC.

**Table 4-1: Potential Mitigation Measures for Adverse Effects**

Possible impact pathway/ potential adverse effect	Mitigation Measure
All	<ul style="list-style-type: none"> <li>• Sensitive in site selection, layout, design and programming as far as reasonably practicable to minimise impacts.</li> </ul>
Land/ seabed take	<ul style="list-style-type: none"> <li>• Excluding impacts within International Sites; place and configure site so valuable habitats can be retained, if possible;</li> <li>• Habitat outside an International Site that provides wider feeding resource or habitat connectivity and is important in maintaining the conservation status of a qualifying feature is functionally linked to the designation. Impacts to functionally linked land and habitat connectivity features will need to be mitigated to prevent fragmentation and direct impacts on qualifying species. This may include avoidance and sensitive routing of infrastructure and access, timing the works to avoid disturbance, screening or creating alternative wildlife corridors as close as possible to those affected as a result of development.</li> </ul>
Reduction in air quality	<ul style="list-style-type: none"> <li>• Ensure efficient movement of vehicles to, from and around the site, such as using delivery vehicles to remove waste from the site;</li> <li>• Prioritise the use of more sustainable modes of transport for both haulage and travel to work;</li> <li>• Implement construction and operational protocols to minimise dust;</li> <li>• Consider use of catalytic reduction (minimises emissions of nitrous oxides).</li> </ul>
Noise, light, vibrations and visual disturbance (including underwater)	<ul style="list-style-type: none"> <li>• Consideration of site uses during design, with activities with potential to cause noise/ vibration impacts away from sensitive receptors;</li> <li>• Use of noise barriers, or bunds;</li> <li>• Undertake activities resulting in higher levels of noise and / or vibration (particularly construction) outside of the breeding season, or, if the site is designated for overwintering birds, outside the overwintering season;</li> <li>• Keep vehicles, plant and bunded storage facilities maintained and frequently inspected to minimise the risk of any fuel/ oil or chemical spills;</li> <li>• Restrict use of artificial lighting in proximity to sensitive receptors;</li> <li>• Limit operating times to reduce need for artificial lighting;</li> <li>• Sensitive lighting design, including low heights and cut-offs for external lights.</li> </ul>
Change in water quality/ temperature (fresh and marine)	<ul style="list-style-type: none"> <li>• Ensure wastewater is suitably treated before release back into the environment. This could include allowing it to cool before release (note that this is not a standard measure as it would require the design of development to include a holding area and cooling system for wastewater prior to release. Its effectiveness depends on the temperature of water when it is released, as this may still differ from the ambient water temperature to some extent);</li> </ul>

Possible impact pathway/ potential adverse effect	Mitigation Measure
	<ul style="list-style-type: none"> <li>• Minimise water use through water efficiency, and use/ re-use water where possible;</li> <li>• Design of the cooling system should include intake and outfall locations that avoid or minimise adverse impacts, including consideration of alternative water supply arrangements (note that this is a less standard measure and must be an integral part of design. It may not be achievable for all developments, as it depends on the size and nature of the waterbody involved and distribution of sensitive species within this);</li> <li>• Design the cooling water outfall to increase the momentum of the discharge, to help propel the thermal plume, and promote sufficient mixing and dispersal and decay of associated biocide products (if these are required) and reduce the risk of recirculation;</li> <li>• Use of alternatives to water cooling in power plants (gas, biomass and energy from waste), such as dry/ air cooling or closed-cycle cooling;</li> <li>• For offshore construction and maintenance, marine vessels should only carry small quantities of fuel and other potential pollutants and should be well maintained.</li> </ul>
Changes in water quantity/ flow/ drainage	<ul style="list-style-type: none"> <li>• Minimise water use through water efficiency, and re-use water where possible;</li> <li>• Implement suitable drainage, such as sustainable drainage systems (SuDS), on site to manage flooding.</li> </ul>
Land contamination	<ul style="list-style-type: none"> <li>• Implementing pollution control procedures, such as designated areas for storage and unloading, with measures to contain any spills to these areas;</li> <li>• Emergency response procedures should be in place in the event that an incident does occur, and relevant equipment should be kept on-site.</li> </ul>
Impingement and entrainment of fish	<ul style="list-style-type: none"> <li>• Design development so that it does not obstruct any watercourses (note that this will not be possible for some technologies);</li> <li>• Install fish guards on any water abstraction equipment (this will help to prevent fish entrainment but fish could still become impinged on the guard);</li> <li>• Locate water abstraction equipment away from most fish-populated areas of aquatic sites, if possible, or away from sensitive areas, such as fish nurseries (note that this is a less standard measure and must be an integral part of design. It may not be achievable for all developments, as it depends on the size and nature of the waterbody involved and distribution of relevant species within this).</li> </ul>
Benthic scouring	<ul style="list-style-type: none"> <li>• Sensitive siting of cable routes to avoid the most important benthic habitats.</li> </ul>
Coastal change/ change in coastal processes	<ul style="list-style-type: none"> <li>• Minimise physical changes to the coast, where possible;</li> <li>• See mitigation above for land take.</li> </ul>



Possible impact pathway/ potential adverse effect	Mitigation Measure
Collision of marine species with turbines	<ul style="list-style-type: none"> <li>• Site turbines located away from known migration routes/ key feeding grounds where possible;</li> <li>• Integrate sensors that shut down a turbine or give a warning signal when a collision risk is identified (this is a less standard measure and emerging technology; therefore, the level of effectiveness may need monitoring).</li> </ul>
Bird/ bat strike	<ul style="list-style-type: none"> <li>• Site wind turbines and electricity lines away from known migration routes key feeding grounds and flight lines between breeding colonies and foraging grounds;</li> <li>• Integrate sensors that shut down a turbine or give a warning signal when a collision risk is identified (this is a less standard mitigation measure and emerging technology; therefore, the level of effectiveness may need monitoring);</li> <li>• Reduce risk of turbine collision through design modifications. This could include raising of wind turbine rotor height, which is an effective mitigation measure for seabirds, or less standard mitigation measures with greater uncertainty as to their effectiveness.</li> </ul>
Climate change effects on habitats and species	<ul style="list-style-type: none"> <li>• Contribute to creating connected ecological networks to allow species to move through the landscape in response to changing conditions (note that this is a less standard measure as it depends on the existing habitats and land use in the wider area and may require purchasing additional land. This measure is likely to be more effective on a greater scale, where it can link into regional habitat networks);</li> <li>• Ensure efficient movement of vehicles to, from and around the site, such as using delivery vehicles to remove waste from the site;</li> <li>• Prioritise the use of more sustainable modes of transport for both haulage and travel to work;</li> <li>• Implement carbon capture and storage.</li> </ul>
Changes to electromagnetic fields	<ul style="list-style-type: none"> <li>• Ensure cabling is situated at sufficient depth and well-insulated (including use of armoured cables).</li> </ul>
Introduction of invasive non-native species	<ul style="list-style-type: none"> <li>• Implement a biosecurity plan;</li> <li>• Use locally/ nationally sourced materials, where possible.</li> </ul>
Displacement of bird species	<ul style="list-style-type: none"> <li>• Site wind turbines and electricity lines away from migration routes, flight lines, feeding areas and key roosts;</li> <li>• Sensitively timing potentially disturbing work to avoid or minimise bird displacement impacts.</li> </ul>
Disturbance to marine species	<ul style="list-style-type: none"> <li>• Site turbines located away from known migration routes/ key feeding grounds where possible;</li> <li>• Sensitively timing potentially disturbing work to avoid or minimise impacts.</li> </ul>



### 4.3. In-combination effects

Given the nature of any energy NPS and the absence of any direct development potential (as would be the case by having nominated sites), there is inevitably going to be a delay between the adoption of the NPSs and any subsequent energy infrastructure development. It is not possible to know when (or indeed if) any subsequent project proposal will come forward and it is not therefore possible to predict what other plans and projects will be relevant to future project assessments.

Given the uncertainties regarding the location of any particular energy infrastructure that may come forward under the NPSs, it is not possible to rule out in-combination effects. Relevant national-level plans and the types of plans and projects that will be relevant to future project-level HRA have been identified in Table 3-4. All new energy infrastructure development is likely to require a project-level HRA, within which in-combination effects will be assessed on a case-by-case basis. Given the framework of protection afforded International Sites within the NPSs, the scope for mitigating adverse effects and the integrated and strategic approach championed by the NPSs, it is considered likely that the NPSs causing a contribution to adverse effects on site integrity in-combination can be avoided.

### 4.4. Summary of Appropriate Assessment

There is confidence that the NPSs as a plan, will not result in adverse effects on site integrity of one or more International Sites alone or contribute to in-combination effects. This confidence is due to the protective policy provisions of the NPSs and the potential mitigation measures for impacts arising from energy infrastructure development and operation. All arising development projects will be subject to HRA and specific effects dealt with at the project stage when detailed information is available.

As the scope for potential adverse effects on International Sites for energy infrastructure has potential to be far-reaching, e.g. effects are seen on International Sites in other nations, particularly as a result of offshore wind and coastal development, a precautionary approach has been taken to all stages.

While adverse effects on site integrity are not predicted as a result of the NPSs, as a precaution information to support progress through the derogations has been provided within this HRA on a 'without prejudice' basis. Therefore, Chapter 5 explores potential for alternative solutions and Chapter 6 discusses imperative reasons of overriding public interest (IROPI) and the need for the Energy NPSs. These elements apply specifically to the NPSs, and not to any individual projects that may arise. Chapter 6 also includes strategic and project-level compensation, which gives guidance on measures that could be applied either strategically as more holistic approaches (for example, to groups of projects that are related in type, location and / or potentially affected International Sites) or specifically for individual projects.

## 5. Assessment of Alternative Solutions

### 5.1. Approach to Assessment of Alternative Solutions

Regulation 107(1) of the Habitats Regulations states that “If the plan-making authority are satisfied that, there being no alternative solutions, the land use plan must be given effect for imperative reasons of overriding public interest...they may give effect to the land use plan notwithstanding a negative assessment of the implications for the International Site or the European offshore marine site...”.

Defra’s guidance on protecting an International Site<sup>38</sup> indicates that in applying for a derogation, the first test is showing that there are no feasible alternatives that would be less damaging or avoid damage to the International Site. Therefore, the absence of feasible alternative solutions must be demonstrated before the assessment can move on to the next stage or next legal test.

The requirement is for ‘alternative solutions’, not merely ‘alternatives’ to be considered. For example, the ‘do nothing’ approach is not an alternative solution because it would not achieve the objective of the NPSs. Furthermore, the AoS does not consider ‘do nothing’ as a realistic alternative. According to The Habitat Regulations Assessment Handbook<sup>39</sup>, there are four principal steps in establishing the presence or absence of alternative solutions:

- Step 1 – define the objectives or purpose of the plan and the problem it is causing that needs to be solved, i.e. the harm that it would cause to the integrity of an International Site;
- Step 2 – understand the need for the plan;
- Step 3 – are there financially, legally and technically feasible alternative solutions;
- Step 4 – are there alternative solutions with a lesser effect on the integrity of the International Site?

In some cases, wide ranging alternatives may deliver the same overall objective, but generally the range of alternative options are curtailed by the boundary created by the policy objectives e.g. alternative solutions for a new motorway would not normally include the assessment of other modes of transport. These steps are considered in turn below.

### 5.2. Step 1: Define the objectives or purpose of the plan and the problem it is causing

The key objectives of the Energy NPSs are for the energy system to ensure the supply of energy always remains secure, reliable, affordable, and consistent with meeting our target to cut greenhouse gas emissions to net zero by 2050.

Table 3-2 and Table 3-3 set out the potential impacts and likely significant effects of the energy NPSs. However, at this strategic stage it is not possible to define a specific ‘effect’; as such risks to the integrity of the International Sites have been identified at a high level and are largely precautionary. Detailed alternatives to particular developments can only be considered during the project stage of any arising energy infrastructure development, once specific effects, pathways and receptors have been identified.

### 5.3. Step 2: Understand the need for the plan

As set out in Section 5.2, the NPSs are needed to ensure a secure, reliable, affordable and low carbon energy supply. Relying on the existing NPSs was not considered to be a reasonable alternative in light of the requirements to reflect the Energy White Paper and to remain on course for net zero by 2050.

---

<sup>38</sup> Habitats regulations assessments: protecting an International Site - <https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site>

<sup>39</sup> Tyldesley, D. and Chapman, C., (2013) The Habitats Regulations Assessment Handbook, March 2021 edition UK: DTA Publications Limited.

## 5.4. Step 3: Financially, legally and technically feasible alternative solutions

The Appraisal of Sustainability sets out four alternatives (A1 to A4) to the mix of energy technologies included in the revised EN-1, as shown in Table 5-1. The NPSs set a strategic framework within which it is for industry to propose new energy infrastructure projects. The reasonable alternatives that have been formulated to inform the development of EN-1 are based on the fundamental premise that a combination of technologies, not one single technology, will be required to deliver secure and affordable supplies of energy which are compatible with net zero and protection of the environment. It is important to note that all of the alternatives are variations of EN-1 but are differentiated by the removal or restriction of specific technologies. The HRA implications of these alternatives are considered in Section 5.5.

**Table 5-1: Plan and Alternatives considered for EN-1**

Plan	Overview of technologies
EN-1	EN-1 combines infrastructure set out in Chapter 3 of EN-1. In summary: Renewables (including Biomass and Energy from Waste with or without CCS), Natural Gas-fired electricity generation with or without CCS, Hydrogen-fired electricity generation, Pumped Hydro Storage, Nuclear, associated electricity network infrastructure, and natural gas, oil, hydrogen and CCS infrastructure.
Alternative	Overview of technologies
Alternative 1 (A1)	As for EN-1 without Nuclear and Unabated Natural Gas
Alternative 2 (A2)	As for EN-1 without Unabated Natural Gas
Alternative 3 (A3)	As for EN-1 without Nuclear

## 5.5. Step 4: Alternative solutions with a lesser effect on the integrity of the International Site

Given that each of the alternatives includes a selection of the technologies included in the revised EN-1, the relevant effects set out in Table 3-2 would apply. As the reasonable alternatives are all variations of EN-1, and given the strategic and non-site specific nature of the NPSs, effects are likely to be largely similar between options.

### 5.5.1. A1: As for EN-1 without Nuclear and Unabated Natural Gas

By focusing on a combination of Renewables, Abated Natural Gas, Hydrogen and Energy Storage technologies, Alternative A1 is likely to result in substantially lower carbon emissions than EN-1, which will benefit biodiversity and International Sites in the long-term, due to reduced contribution to climate change effects on habitats and species.

Renewable technologies tend to involve more extensive land use than thermal power plants of equivalent capacity, and abated natural gas requires greater land take for carbon capture facilities. Therefore, this option could result in greater effects associated with the physical presence of energy infrastructure, including increased habitat loss and fragmentation and/or noise, light and visual disturbance occurring over a greater area.

The remaining effects depend on the resultant energy use. For instance, greater reliance on renewable technologies could result in lower levels of water abstraction and discharge, as well as reduced emissions of air pollutants. However, this option could result in development of abated natural gas, hydrogen, biomass and energy from waste power plants, which have similar impacts to unabated natural gas power plants in terms of water quality and air pollution (excluding greenhouse gas emissions).

### 5.5.2. A2: As for EN-1 without Unabated Natural Gas

By focusing on a combination of Renewables, Abated Natural Gas, Nuclear, Hydrogen and Energy Storage technologies, Alternative A2 is likely to result in substantially lower carbon emissions than EN-1, which will benefit biodiversity and International Sites in the long term, due to reduced contribution to climate change effects on habitats and species.

The inclusion of Nuclear energy technology for this alternative may result in a more efficient use of land, as nuclear tends to generate more energy per square metre than renewables. However, abated natural gas requires greater land take for carbon capture facilities. As such this option is likely to generally result in less habitat loss and fragmentation and result in other impacts related to the physical presence of the site over a smaller area compared to A1, but may result in greater land take and associated impacts than EN-1.

### 5.5.3. A3: As for EN-1 without Nuclear

This alternative may result in more increased carbon emissions than EN-1 (as well as A1 and A2), as removing nuclear from the mix may result in greater reliance on energy from natural gas, particularly for reliability of energy supply. This would result in increased climate change effects on habitats and species, potentially resulting in adverse effects on International Sites.

Given the high efficiency of nuclear power in terms of energy per square metre, excluding it from the mix could result in greater land take, resulting in an increase in associated effects, including habitat loss and fragmentation and species disturbance over a larger area, compared to EN-1. However, land take for A3 is likely to be less than for A1.

### 5.5.4. Conclusions regarding alternative solutions to the NPSs

Each type of technology has potential to result in likely significant effects and adverse effects on integrity of International Sites. As with the revised EN-1, none of the alternatives set out specific locations (within the bounds of siting constraints) for development, therefore, the uncertainty identified in relation to EN-1 will also apply. As such, potential for any of the reasonable alternatives to result in adverse effects on integrity of one or more International Sites cannot be ruled out in relation to any of the alternatives identified. Each alternative considered is likely to perform better than EN-1 in some ways (a reduction in carbon emissions, potential for reduced habitat loss and fragmentation, or less impact on marine International Sites), but would perform worse in other ways (increased carbon emissions, increased potential for habitat loss and fragmentation and greater impact on terrestrial and freshwater International Sites).

### 5.5.5. Alternative solutions at the project level

When considering alternatives at project stage, there are likely to be a wide range of potential alternative solutions available when assessing a specific development proposal, including variations in layout, scale and timing of a development. Although alternative locations could be proposed as an alternative solution, there are two reasons why this may not be a suitable or straightforward alternative to consider. Firstly, there is likely to be a detailed and rigorous siting procedure that has been followed to identify suitable sites. Secondly, there is potential that multiple suitable sites would be brought forward, as there is no cap on the amount of new energy generation. Any feasible alternative solutions will need to be subject to HRA to confirm a less damaging effect on International Sites.

It is possible to collate evidence with regard to the absence of alternative solutions during early stages of the site and option selection process. This evidence-based approach provides some certainty that the project in its chosen form is already the least environmentally damaging option, as other feasible alternatives have already been explored, ruled out and this will have been documented. Any adverse effects persisting in the face of avoidance and mitigation measures, in the light of assessment work, may then only be in relation to more minor details and would not require the project to return to the drawing board.

Therefore, given the degree of environmental consideration and assessment required, not only by legislation but as also the NPS, and the evidence-based approach that can be taken, it is considered that, where alternative solutions need to be considered in order to meet the legal test under the derogations, it can be successfully approached in a systematic and rigorous way.

## 6. Imperative Reasons of Overriding Public Interest (IROPI)

### 6.1. Approach to considering IROPI

If it can be demonstrated that there are no feasible alternative solutions, and where adverse impacts remain upon an International Site, IROPI must be considered. The assessment of alternatives in Chapter 5 demonstrated that there are no alternative ways of meeting the objectives of EN-1 to EN-5 that would be less environmentally damaging.

This stage considers whether the plan or project is<sup>40</sup>:

- **Imperative:** it must be essential (whether urgent or otherwise), weighed in the context of the other elements below, that the plan or project proceeds;
- **Overriding:** the interest served by the plan or project outweighs the harm (or risk of harm) to the integrity of the site as identified in the appropriate assessment. In this context, the European Commission guidance states that it is reasonable to assume that the interest can only be overriding if it is a “long-term interest”;
- **In the public interest:** a public benefit must be delivered rather than a solely private interest.

The Government’s case for IROPI is set out below. Note that this IROPI case is a plan level assessment which applies to EN-1 to EN-5 only. The extent to which any project meets the IROPI case will be determined on a case-by-case basis and is dependent on scale, nature and location of the project and the interest features of the International Sites affected.

#### 6.1.1. Consideration of Annex 1 Priority Habitats and Annex 2 Priority Species

In accordance with the Habitats Regulations, if an Annex 1 priority habitat or Annex 2 priority species is going to be affected by a proposal, the reasons permitted as IROPI are limited (refer to Section 2.1). Any reason other than human health, public safety or beneficial consequences of primary importance to the environment, proposed by the plan-making authority, will require the opinion of the relevant SoS or Welsh Minister to be sought. Given this is a plan-level assessment, it is not possible to determine whether priority habitats or species could be affected and that this facet of the derogations (HRA Stage 4) will need to be considered. At project-stage, the presence of priority habitats or species can be identified and whether or not they could be affected by development proposals assessed. However, provided there is a strong IROPI case and the appropriate authority agrees that this satisfied one of the relevant criteria, this specific clause is unlikely to affect progress.

### 6.2. Case for IROPI

This IROPI case is a plan level assessment which applies to EN-1 to EN-5 only. The case for IROPI is predicated on the principal and essential need for the NPSs in providing a framework for delivering the UK’s international commitments on climate change in accordance with the objectives of the Paris Agreement. The consequences of not achieving those objectives would be severely deleterious to societies across the globe, including the UK, to human health, to social and economic interests and to the environment.

#### 6.2.1. The UK has a legal commitment to decarbonise

The Government, through the Climate Change Act (‘CCA’) 2008, set legally binding targets for the UK, aiming to cut emissions (versus 1990 baselines) by 34% by 2020 and at least 80% by 2050<sup>41</sup>. CCA2008 is underpinned by further legislation and policy measures. Many of these have been consolidated in the UK Low

---

<sup>40</sup> DEFRA (2012) Habitats Directive: guidance on the application of article 6(4) Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures

<sup>41</sup> The commitment to decarbonise extends across the United Kingdom of Great Britain and Northern Ireland. Northern Ireland is interconnected with the mainland power system through interconnectors, but is operated under a different electricity market framework. Therefore, hereinafter we refer to Great Britain (‘GB’) in relation to electricity generation and transmission, and the UK, to refer to the nation which has legally committed itself to Net-Zero carbon emissions by 2050



Carbon Transition Plan ('LCTP')<sup>42</sup>, and UK Clean Energy Growth Strategy<sup>43</sup>. The Government has set five-yearly carbon budgets which currently run until 2037. The UK has met its first and second carbon budgets and is on track to outperform the third (2018 to 2022).

CCA2008 obligations translate to a total emissions target of ~550 MtCO<sub>2</sub>e in 2020. The main driver of UK carbon reduction to date has been the power generation sector. CCA2008 committed the UK to sourcing 15% of its total energy (across the sectors of transport, electricity and heat) from renewable sources by 2020 and new projects were expected to need to continue to come forward urgently to ensure this target was met.

In October 2018, following the adoption by the UN Framework Convention on Climate Change ('CCC') of the Paris Agreement, the Intergovernmental Panel on Climate Change ('IPCC') published a 'Special Report on the impacts of global warming of 1.5°C above pre-industrial levels'. This report concludes that human-induced warming had already reached approximately 1°C above preindustrial levels, and that without a significant and rapid decline in emissions across all sectors, global warming would not be likely to be contained, and therefore more urgent international action is required. In response, in May 2019, the CCC published their report called 'Net-Zero: The UK's contribution to stopping global warming'<sup>44</sup>. This report recommended that the Government extend the ambition of CCA2008 past the delivery of net UK greenhouse gas savings of 80% from 1990 levels, by 2050. Importantly, the CCC recommendation identified a need for low-carbon infrastructure development which is consistent with the need case set out in NPS EN-1, but points to an increased urgency for action.

In June 2019, the Government announced the laying of a statutory instrument in Parliament, which amends CCA2008, in order to implement the CCC's recommendation into law (emissions to be cut by 100% compared to 1990 baseline by 2050). This came into force on 27 June 2019, making the UK the first major economy to pass laws to end its contribution to climate change by 2050. In December 2020, the UK set out its NDC to reduce GHG emissions by at least 68 per cent from 1990 levels by 2030. In April 2021, the Government announced the sixth carbon budget (CB6) and as a result will legislate to reduce GHG emissions by ~78% by 2035 compared to 1990 levels.

### 6.2.2. Why we need a mix of energy infrastructure and why we need each of the technologies covering by the reviewed Energy NPSs in that mix

We need a diversity of energy sources so that we are not overly reliant on any one source of technology (avoiding potential technology lock-in), fuel or supplier.

**Wind and solar** are not reliant on fuel for generation. They are the lowest cost ways of generating electricity, helping to reduce costs and providing a clean and secure source of electricity supply. A secure, reliable, affordable, net zero consistent system in 2050 is likely to be composed predominantly of wind and solar. Ensuring affordable system reliability, today and in the future, means that wind and solar need to be complemented with technologies which supply electricity, or reduce demand, when the wind is not blowing, or the sun does not shine<sup>45</sup>.

**Storage** has a key role to play in achieving net zero and providing flexibility to the energy system, so that high volumes of low carbon power, heat and transport can be integrated. Storage is needed to reduce the costs of the electricity system and increase reliability by storing surplus electricity in times of low demand to provide electricity when demand is higher. These include maximising the usable output from intermittent low carbon generation, reducing the total amount of generation capacity needed on the system, and reducing constraints on the network, helping to defer or avoid the need for costly network upgrades as demand increases<sup>46</sup>.

**Interconnectors** facilitate a secure, low carbon electricity system at the lowest cost. The UK recognises the benefits of increasing levels of interconnection and has an ambition to realise at least 18GW of capacity by 2030. However, there are limitations on the amount of capacity that can be deployed and although in theory interconnectors can provide an additional supply whenever there is a shortfall in the domestic market, this is dependent on there being sufficient supply from other markets<sup>47</sup>.

---

<sup>42</sup> HM Government. *The UK Low Carbon Transition Plan*. HMSO, 2009. Five Point Plan.

<sup>43</sup> BEIS. *The Clean Growth Strategy*. HMG, 2017 (Corrected 2018).

<sup>44</sup> Committee on Climate Change. *Net Zero - The UK's contribution to stopping global warming*. 2019.

<sup>45</sup> NPS EN-1 Para 3.3.21

<sup>46</sup> NPS EN-1 Paras 3.3.25, 3.3.26 & 3.3.27

<sup>47</sup> NPS EN-1 Paras 3.3.32 & 3.3.34

**Combustion power stations** use fuel for generation. This means that it is possible for them to provide dispatchable generation when the output from intermittent renewables is low, but they are dependent on the supply of fuel for generation. Most forms of combustion power also produce residual emissions, and where this is the case their use will need to be limited over time unless they can decarbonise. All commercial scale (at over 300MW) combustion power stations (including gas, coal, oil or biomass) have to be constructed Carbon Capture Ready (CCR)<sup>48</sup>.

**Nuclear** plants provide continuous, reliable, safe low-carbon power. They produce no direct emissions during operation and have indirect life-cycle emissions comparable to offshore wind. Nuclear, alongside other technologies could also offer broader system benefits, such as low carbon hydrogen production through electrolysis, or low carbon heat. In addition, nuclear generation provides security of supply benefits by utilising an alternative fuel source to other thermal plants, with a supply chain independent from gas supplies<sup>49</sup>.

**Hydropower** can provide relatively predictable and, in some cases, flexible low carbon generation but total capacity is limited by the topography of the UK. **Wave and tidal** can also provide relatively predictable low carbon power and could play a role in future if their costs can be reduced. However, total capacity is limited for tidal power and wave power is very closely correlated with wind. These technologies, as with most other renewables, help provide security of supply as they are not reliant on fuel for generation and can improve reliability where they are not correlated with wind and solar<sup>50</sup>.

New coal or large-scale oil-fired electricity generation are not consistent with the transition to net zero due to their high specific emissions and so are not included within the need case of EN-1. Active steps are being taken to phase them out of the energy system. The use of unabated natural gas for heat and electricity, and crude oil to provide fuels for transport, will still be needed during the transition to a net zero economy. Associated **oil and gas infrastructure**, including pipelines, will be needed. This will enable secure, reliable, and affordable supplies of energy as we develop and deploy the low carbon alternatives to replace them<sup>51</sup>.

New **electricity networks** will be needed to connect these sources of electricity with each other, and with centres of consumer demand. Development of new transmission lines of 132kV and above will be necessary to preserve and guarantee the robust and reliable operation of the whole electricity system<sup>52</sup>.

**Low carbon hydrogen** is likely to play an increasingly significant role in the energy system and has the potential to help decarbonise vital UK industry sectors and provide flexible deployment across heat, power and transport. It could be an alternative to natural gas if production is coupled with CCS, or through electrolysis powered by low carbon electricity. However, the costs and supply of low carbon hydrogen for electricity generation are uncertain, and the cost and operability of turbines fuelled solely by 100% hydrogen, needs to be developed and demonstrated at commercial scale<sup>53</sup>. As set out in EN-1, the Government is committed to developing low carbon hydrogen<sup>54</sup>.

**CCS infrastructure** will be needed to ensure the transition to a net zero economy, this could be new or repurposed infrastructure. CCS is needed to enable domestic production of low carbon hydrogen from natural gas, as well as unlocking the potential use of biomass for low carbon hydrogen production with negative emissions. CCS is also fundamental to the deep decarbonisation of energy intensive industries, either on its own or in combination with measures such as electrification and fuel switching. Where sectors are not completely decarbonised, we will need negative emissions to offset residual emissions in these sectors. Other sources of negative emissions are limited in some way and negative emissions using CCS infrastructure are viewed as essential for delivering our net zero target<sup>55</sup>.

All the technologies mentioned above, excluding new coal and large-scale oil, are urgently needed to meet the Government's energy objectives.

---

<sup>48</sup> NPS EN-1 Para 3.3.36

<sup>49</sup> NPS EN-1 Para 3.3.48

<sup>50</sup> NPS EN-1 Paras 3.3.51 & 3.3.52

<sup>51</sup> NPS EN-1 Paras 3.3.59& 3.3.17

<sup>52</sup> NPS EN-1 Para 3.3.63

<sup>53</sup> NPS EN-1 Para 3.3.47

<sup>54</sup> NPS EN-1 Para 3.4.13

<sup>55</sup> NPS EN-1 Section 3.5



### 6.2.3. Why the reviewed Energy NPSs are needed

The Energy NPSs enable the delivery of one of the key principles of the planning system for Nationally Significant Infrastructure Projects pursuant to the Planning Act 2008; namely that the SoS should consider urgently needed infrastructure in a timely fashion and decisions should be taken without delay. The national need for the infrastructure has been established by the Government (as set out in EN-1). When the SoS considers an individual application, it should therefore act on the basis that the need for such a development has been demonstrated and should be given substantial weight.

The Energy NPSs set out the policy that the SoS should act in accordance with when considering applications for energy infrastructure. Without having to consider the detail of the need for each case, the SoS will be able to focus on the local impacts of the development, taking into account the views of local people and local authorities and relevant environmental and regulatory assessments.

Setting out planning policy, (including a strong expression of the need for new energy infrastructure) in the Energy NPS will result in a more streamlined planning system with enhanced certainty for developers. Continuing delays in the planning process would add to uncertainty for energy companies and could result in them choosing to invest in other generation technologies or in other countries. This would make it more difficult for the UK Government to meet its energy policy objectives of providing security of supply, providing an affordable, reliable system, and ensuring the system is net zero consistent.

The Government has considered alternative approaches to the development of EN-1 to EN-5 and concluded that the potential for likely significant effects on International Sites would be best managed within EN-1 to EN-5. Nationally Significant Energy Infrastructure Projects will only be consented subject to compliance with the Conservation of Habitats and Species Regulations and the Conservation of Offshore Marine Habitats and Species Regulations, and in accordance with the NPSs<sup>56</sup>.

In light of the Government's objective of having NPSs setting out: Government energy policy; the need for new energy infrastructure and assessment principles and generic impacts and having considered that the alternative of not having EN-1 to EN-5 would be likely to cause delay and uncertainty in the planning system, there is IROPI for EN-1 to EN-5. The alternatives of not having an EN-1 to EN-5, or having them constructed in a different way, would delay development consent decisions which is not compatible with the Government objectives, which require rapid decarbonisation of the generation mix, security of supply and affordable energy.

### 6.2.4. Why new energy infrastructure is needed

The key objectives of the Energy NPS suite are for the energy system to ensure supply of energy always remains secure, reliable, affordable, and consistent with meeting our target to cut greenhouse gas emissions to net zero by 2050.

Achieving these objectives requires a significant amount of energy infrastructure including the infrastructure needed to increase supply of clean energy from renewables, nuclear, and hydrogen manufactured using low carbon processes and, where we still emit carbon, developing the industry and infrastructure to capture, transport and store it. As set out in EN-1, new energy infrastructure will have to be built to replace output from retiring plants and to ensure we can meet increased demand. The CCC describes one scenario: 'extensive electrification, particularly of transport and heating, supported by a major expansion of renewable and other low-carbon power generation.' The report goes on to describe that 'the scenarios involve around a doubling of electricity demand, with all power produced from low-carbon sources (compared to 50% today)'<sup>57</sup>.

The future characteristics of the UK's electricity demands are described through a set of possible scenarios developed (through industry consultation) on an annual basis by the UK's Electricity System Operator and statutory undertaker, National Grid Electricity System Operator ('ESO'). This annual publication is called Future Energy Scenarios ('FES')<sup>58</sup>. The speed of decarbonisation is a key feature in the 2018, 2019 and 2020 publications of FES, with two of the four scenarios meeting the 2050 carbon reduction target via distinct pathways: requiring heavy investment in either energy efficiency, or electricity decarbonisation. In reality, these pathways are not mutually exclusive.

---

<sup>56</sup> The Secretary of State must decide in accordance with the NPSs except to the extent that certain statutory exceptions apply under s.104 of the Planning Act 2008.

<sup>57</sup> Committee on Climate Change. *Net Zero - The UK's contribution to stopping global warming*. 2019.

<sup>58</sup> National Grid. *Future Energy Scenarios*. National Grid, 2020. <https://www.nationalgrideso.com/future-energy/future-energy-scenarios/fes-2020-documents>. Accessed 16/05/2021.

Both the CCC report and National Grid ESO's forecasts of the development of low-carbon generation in the UK, leads to the conclusion that, in order for the UK to achieve Net-Zero, all possible use needs to be made from the resources and infrastructure available for low-carbon developments.

However, this transition cannot be instantaneous. Oil and gas also have key roles in the UK energy landscape, with oil providing fuels for transport and use of gas for heat and electricity generation. Some limited residual use of unabated fossil fuels may even be needed beyond 2050 to meet the UK's energy objectives. However, some residual use can be consistent with the Net Zero target if the emissions from their use are balanced by negative emissions from Greenhouse Gas Removal technologies.

The AoS for EN-1 considers in detail the possible alternatives<sup>59</sup> to adding new generation capacity: placing emphasis on Renewables, Abated Natural Gas, Hydrogen and Energy Storage Technologies; and placing emphasis on Capped Offshore Renewables, Abated and Unabated Natural Gas, Hydrogen, Nuclear and Energy Storage Technologies. None of these alternatives are as good as, or better than, the proposals set out in EN-1 which would perform well in terms of achieving the four objectives of the plan:

- Maintain safe and secure supplies of energy;
- Maintain affordable supplies of energy;
- Support the achievement of the goal of Net Zero by 2050; and
- Provide for high levels of environmental protection.

For these reasons above the Government's preferred option is to take forward the Energy NPS EN-1 and the technology-specific NPSs EN-2 to EN-5.

The Government has also considered its objective of ensuring security of supply whilst combating climate change, in the face of increased demand and capacity needing to be replaced. It has considered the alternatives of emphasis on different energy mixes, the likely demand for electricity by 2050 and that electricity supply needs to be decarbonised.

Having considered the alternatives, there is IROPI in designating this policy which permits new energy infrastructure because security of supply is essential for the maintenance of human health and public safety, and because combating climate change (which is one of the factors creating the demand for new generating capacity) will have beneficial consequences of primary importance for the environment.

The Government is certain that we need new energy infrastructure; we need a system of development consents and a set of criteria against which they will be determined.

The Government is therefore satisfied that there are IROPI in adopting EN-1 to EN-5.

### 6.2.5. IROPI for projects

The case for IROPI set out above relates to EN-1 to EN-5. HRA of projects coming forward under the NPSs must follow the full HRA process and follow the mitigation hierarchy. IROPI does not automatically apply to individual projects coming forward under the NPSs, even though it applies to the NPSs themselves. Each proposal must be considered on a case-by-case basis. Any project proposals that may have adverse effects on the integrity of an International Site after mitigation, and upon identification of no less environmentally damaging alternatives, must be refused if IROPI does not apply.

## 6.3. Compensation

In accordance with guidance produced by Defra (2012), should a project or plan proceed through the derogations, it is at this stage that compensatory measures are identified.

The competent authority must have confidence that the compensation proposed will deliver the desired outcome and should consider the following:

- Is the proposed compensation technically feasible, based on sound scientific understanding?
- Is there a robust delivery and management plan in place for the duration?
- Where is the proposed compensation in relation to the affected site? Does this affect its efficacy?
- How much time is needed for the compensation to establish to the required quality?

---

<sup>59</sup> NPS EN-1 Para 1.7.6 – 1.7.12

- Is the methodology proposed reasonable or technically proven?
- Are the measures sustainable in the long-term? Will long-term management need to be secured?

Further to the above bullets, the need for adaptive management will need to be considered if there is a risk that proposed compensatory measures could prove to be insufficient and not deliver the desired outcome. The effectiveness of compensatory measures needs to be monitored with appropriate targets, that if not met, trigger the need for remedial or adaptive management. Therefore, proposals submitted by the applicant are likely to need to contain specific monitoring and reporting schedules with clearly identified progress indicators and potential adaptive management measures.

The competent authority should also consider how financially viable the proposed compensation is, and whether there are sufficient funds to cover the long-term costs of the proposed measures.

The appropriate authority must secure the necessary compensatory measures to ensure that the coherence of the national site network of International Sites is protected before consent is given for a project to proceed. The mechanisms for securing compensation will be through the consenting process for individual projects.

### 6.3.1. Strategic Compensation

The NPSs acknowledge the need for a holistic approach, as supported by the BESS, which has proposed introducing mechanisms to support strategic compensatory measures, including for projects already in the consenting process (where possible), to offset environmental impacts and reduce delays to individual projects. The application of such an approach requires pragmatism as it will only be possible to apply it to similar groups of projects that are related in type and/or location, and/or affected International Site.

This proposal will allow for the development of strategic compensation, which will not only help remove the consenting barriers for individual projects but may lead to wider benefits for habitats, species and the natural environment as a whole. Within EN-1 additional text has been added with regard to considering compensation early and seeking SNCB and Defra/ Welsh Government views with regard to the suitability, securability and effectiveness of the applicant's compensation plan. Furthermore, it is recommended (in EN-3) that current guidance, such as Defra's Best practice guidance for developing compensatory measures in relation to Marine Protected Areas<sup>60</sup> is followed where relevant. EN-3 acknowledges that for offshore wind future leasing rounds, in appropriate cases, may be the subject of a coordinated approach to the HRA, where there is overlap between the activities of more than one competent authority in relation to offshore development.

There are numerous advantages in a co-ordinated approach, including streamlining the consenting process with respect to environmental assessment and improved confidence in the robustness and deliverability of compensation, and it is acknowledged that this approach need not only be applied to the offshore wind development sector.

### 6.3.2. Compensation at the project level

Without defined impacts, it is not possible to determine what compensatory measures will be required and to what extent they need to be applied at the project level. Any compensation is therefore specific to each project and needs to be fully explored and designed at the project-level HRA. The list of potential compensation considerations below is generic and not exhaustive. Furthermore, these need to provide additionality and not comprise existing 'site management' activities in order to have a genuine compensatory effect.

Compensation could include:

- Substantial enhancement of degraded habitat outside an International Site boundary that will support qualifying features affected;
- Creation of comparable habitat elsewhere that will support qualifying features affected;
- Enhancing connectivity of habitat outside an International Site boundary that supports qualifying features affected;

---

<sup>60</sup> Defra (2021) Best practice guidance for developing compensatory measures in relation to Marine Protected Areas. 22 July 2021.



- Species recovery and reinforcement, including reinforcement of prey species (above and beyond requirements to meet conservation objectives);
- Incentives for certain economic activities that sustain key ecological functions (such as coppicing) on land;
- Reduction of (other) threats to the qualifying features affected.

Compensatory measures will need to demonstrate that they are sufficient to offset the harm caused by development. Where possible they should limit harm to the International Site, by ensuring the project is timed so that the compensatory habitat is able to become established before any habitat loss takes place, so as to maintain the conservation status of the qualifying species. However, it is noted that this can be a challenging requirement that can lead to delays. Using a strategic approach to compensation, as outlined above, can remove the time constraint and provide more certainty and, therefore, security.

Compensatory habitat will need to be treated in the same way, with the same importance as International Sites, in line with the NPPF<sup>61</sup>, and will be designated as part of the national site network or an extension to the International Site.

---

<sup>61</sup> Ministry of Housing, Communities and Local Government (2021) National Planning Policy Framework (NPPF). Paragraph 181.

## 7. Conclusion

Given the strategic nature of the NPSs and the lack of site-specific proposals, they allow for a wide range of potential energy development to take place in any part of England and Wales, territorial waters and within the Renewable Energy Zone offshore. As such, it is not possible to conclude that there will be no effects on International Sites as a result of development coming forward under the NPSs. However, given the framework of protection afforded International Sites by the NPSs and taking mitigation into account, it is considered likely that adverse effects on site integrity can be avoided.

It is acknowledged that an appropriate assessment of a plan does not have to provide a conclusive answer to all the questions legitimately raised about the potential for significant adverse effect on the integrity of the designated site<sup>62</sup>. In an Opinion of Advocate General Kokott<sup>63</sup> at paragraph 49 she noted that an assessment of plans cannot by definition take into account all effects because “*Many details are regularly not settled until the time of the final permission*” and “[i]t would also hardly be proper to require a greater level of detail in preceding plans or the abolition of multi-stage planning and approval procedures so that the assessment of implications can be concentrated on one point in the procedure. Rather, adverse effects on areas of conservation must be assessed at every relevant stage of the procedure to the extent possible on the basis of the precision of the plan. This assessment is to be updated with increasing specificity in subsequent stages of the procedure”.

For information alternatives to the NPSs were considered, the IROPI case set out and delivery of compensation discussed. Therefore, although there is confidence that the NPSs will not result in adverse effects on site integrity of any International Sites and can be designated, this is further supported by an IROPI case.

Where projects may result in adverse impacts on the integrity of one or more International Sites, sufficient measures must be implemented to avoid and mitigate impacts, and, where if this is avoidance and mitigation are not possible, the project must be demonstrated to meet the tests for absence of alternative solutions, imperative reasons of overriding public interest (IROPI) and secure and deliver adequate compensation for any remaining adverse impacts arising from the development. In embracing a holistic approach, as championed by the NPSs, where there are multiple projects in planning for which compensation for one or more International Sites would be required, a co-ordinated strategic approach is recommended.

---

<sup>62</sup> Feeney versus Oxford City Council and the Secretary of State CLG (24th October 2011) Case No CO/3797/2011 and the Cairngorms Campaign and others versus the Cairngorms National Park Authority and others 2012 SOH153

<sup>63</sup> European Commission v UK (2005) ECR I-9017 Case C-6/04

# Appendices



# Appendix A. Consultation Comments

A methodology statement for the HRA of the Energy NPS review was published in April 2021. This report is based on the methodology set out in that document. Comments received in relation to the methodology statement and how they have been addressed in this document (where applicable) are set out in Table A-1 below.

Consultation was also undertaken on the initial draft of this HRA. Respondent comments and responses are provided in Table A-2 below.



**Table A-1: Consultee Comments on Methodology Statement (May 2021)**

Consultee Comment	Response/ how this has been addressed
<b>Crown Estate</b>	
<p>The NPS revision and NPS plan-level HRA provides an opportunity for government to tackle some of the key issues, such as compensatory measures, at a strategic level to deliver better environmental outcomes while still maintaining the speed of deployment required to meet net zero targets. There are a number of significant challenges currently being faced around the identification, delivery and security of compensatory measures for offshore wind and it is becoming clear that a strategic solution will be required to enable further offshore wind deployment in line with government ambition.</p>	<p>The details of appropriate compensation depend on the nature, size and location of development. Given that the NPSs do not specify particular quanta or locations for development, there is substantial uncertainty regarding the type of development to come forward and where. As such, it is not possible at this stage to identify strategic compensation measures.</p>
<p>HRA is a decision influencing process, and it is unclear how the NPS review HRA will be used in the formulation and amendment of the plan – the NPSs. Furthermore, it is not clear how the plan-level HRA sits alongside the current Offshore Energy Strategic Environmental Assessment 4 (OESEA4).</p>	<p>The purpose of the HRA report is set out in Section 1.2 of this document. The HRA will be sent to DESNZ before the NPSs are finalised to allow for any changes once the information in the HRA has been considered. The function of a plan HRA is to ensure that the plan is deliverable, with reasonable safeguards included if necessary. Here the level of assessment is commensurate with the level of detail available. The OESEA4<sup>64</sup> is based on more detailed considerations but should take account of the potential issues highlighted in this HRA. In addition, any HRAs for forthcoming offshore energy schemes will need to consider this HRA for the NPSs.</p>
<p>Further details are needed on the methodology for considering in-combination effects of other known plans/projects. Particularly Offshore Wind Leasing Round 4. In relation to both EN-3 (renewable energy) and EN-5 (electricity network infrastructure) it feels like a missed opportunity not to incorporate the work already being undertaken.</p>	<p>Sections 0 and 4.3 of this document set out consideration of cumulative effects, highlighting the types of document and projects that should be considered when assessing specific project proposals. As referred to in Section 3, the HRA Handbook<sup>65</sup> contains further guidance on considering in-combination effects. Projects coming forward through Offshore Wind Leasing Round 4 would fall under ‘Other infrastructure projects which are either operating, consented or in planning’ as set out in Table 3-4.</p>

<sup>64</sup> [UK Offshore Energy Strategic Environmental Assessment Environmental Report \(publishing.service.gov.uk\)](https://publishing.service.gov.uk)

<sup>65</sup> Tyldesley, D. and Chapman, C., (2013) The Habitats Regulations Assessment Handbook, March 2021 edition UK: DTA Publications Limited.

Consultee Comment	Response/ how this has been addressed
<p>There is a lack of clarity over the utility of the HRA. As currently drafted, the methodology is quite confused and contradictory (see specific In-combination effects point below for an example). Generally, the document needs some direction – what is this HRA exercise adding to the overall consenting/management process? Securing and co-ordinating plan-level measures will lead to more effective mitigation and reduce challenges encountered in the consenting of individual projects.</p>	<p>The purpose of the HRA report is set out in Section 1.2 of this document. The HRA will be sent to DESNZ before the NPSs are finalised to allow for any changes once the information in the HRA has been considered.</p> <p>It is not the role of the HRA to add to the consenting/ management process, but to the plan-making process by ensuring protection of internationally important nature conservation sites.</p> <p>It is not possible at this stage to identify specific strategic mitigation and/ or compensation measures, due to the substantial uncertainty regarding the type of development to come forward and where. It cannot be known at this stage whether such measures will be required. Nevertheless, Section 4.2.1 identifies generic potential mitigation measures, which indicate the sort of measures that could be required depending on individual projects.</p>
<p>Lack of Spatial component. Without this it is very challenging to see what the HRA will add to the overall assessment process. As noted above, HRA is a decision influencing process and therefore surely the spatial component is the entirety of the English and Welsh territorial and marine area when considering offshore wind for example? If this approach was taken, then the HRA could be able to identify and target areas within this limit in which development would not be supported.</p>	<p>The spatial scope of the NPSs is England and Wales, as well as territorial waters and the Renewable Energy Zone. This is made clear in Sections 1.2 and 3.1 of this report.</p> <p>The HRA considers this area, as well as recognising that the NPSs could have effects beyond the plan area, including affecting International Sites in other countries. However, specific sites that could be affected depend on the nature and location of development. Furthermore, it is outside the scope of the HRA to identify such ‘target areas’.</p>
<p>The methodology report refers to ‘statutory consultation’ (preface and p1). Can you please provide more details about this process – when do consultees get an opportunity to comment? This process should be iterative and give the opportunity to feed into the evolving process.</p>	<p>It is a requirement of the HRA process to consult the appropriate nature conservation body (in this case Natural England and Natural Resources Wales). Natural England was consulted on the methodology for this HRA and will be consulted on this HRA Report. Any comments will be taken into consideration and the HRA Report will be updated, if necessary.</p>
<p>This is a strategic high-level plan but limiting the assessment to no spatial extent feels like a missed opportunity. Relevant, known, technologies should be included to help inform the ‘worst case’ (i.e., floating and fixed bottom offshore wind). On p12 (para 3.5.2) the methodology talks about identifying potential effects alone and in-combination and states “where possible, potential specific effects will be flagged, but it is prudent to assume that detailed consideration of effects will only be made at project-level HRA for individual proposed infrastructure projects”. The Crown</p>	<p>The assessment does have a spatial extent. This is focused on the spatial scope of the NPSs, which is England and Wales, as well as territorial waters and the Renewable Energy Zone. This HRA also considers the potential for effects to occur beyond this area, although given that the NPSs do not allocate specific development sites, such areas can only be identified at the project level.</p>

Consultee Comment	Response/ how this has been addressed
<p>Estate has done a significant amount of work on plan-level HRA for offshore wind, for example developing project design envelopes to inform our assessment and quantification of effects.</p>	<p>The HRA has identified the potential impacts of known technologies and the effects these may have on International Sites (see Table 3-2 and Table 3-3).</p> <p>Developing project design envelopes and constraints analysis is beyond the scope of the HRA.</p>
<p>In-combination Effects: Para 3.5.3 (p12) states that “The absence of policies or objectives that could promote development and the lack of nominated sites associated with any of the six NPSs, means there is no direct mechanism by which the NPS’s could have any impact on International Sites.” Para 3.6.7 (p15) states “where it can be demonstrated that the NPS will have no impact, i.e. no appreciable effect, then there is no requirement to undertake an in-combination assessment”. Taking these together appears to conclude that an in-combination assessment will not be needed. However, para 3.6.8 (p15) continues: “due to the strategic and high-level nature of the NPSs, it may not be possible to screen out International Sites from appropriate assessment”. This links to earlier points about the methodology not having a spatial component and the general purpose of this HRA exercise.</p>	<p>The NPSs would not have a direct impact but could have indirect impacts through allowing development of energy infrastructure. The wording regarding this and the spatial component have been updated in this HRA Report for clarity.</p>
<p>The NPS’s and their associated HRA, could be used to set out the strategic framework which links policy to planning to delivery, with the overarching goal of building a pathway to net zero. Consultation and joint working with other policy and delivery bodies would be key here but with the amount of work that has already been done within the sectors it feels like this is a real opportunity for DESNZ to provide something meaningful and workable for the energy transition and reaching net zero.</p>	<p>The role of the HRA is to consider whether the NPSs are likely to lead to adverse effects on the integrity of International Site. The HRA is a tool for policy makers but does not set out the approach to policy itself. As such, this comment is for consideration of the policy-makers, rather than the HRA itself.</p>
<p><b>Natural England</b></p>	
<p>The methodology seems quite comprehensive and has clearly been informed by relevant references and presented within the appropriate landscape of case law.</p>	<p>Noted.</p>
<p>Para 2.1.5 There are refs to regulation 63 but if this is being approached as a plan (as described in 1.1.2), the more relevant references will be regulation 105, etc.</p>	<p>References to the regulations have been updated as suggested in this HRA Report.</p>
<p>Para 3.6.2 If the scope is England and Wales and therefore the report needs to expand its references to Conservation Objectives. The COs will differ from country to country in style and forma, and say</p>	<p>References to conservation objectives have been updated accordingly in this HRA Report.</p>

Consultee Comment	Response/ how this has been addressed
<p>slightly different things (although they have a shared purpose). NRW has a slightly different approach to NE for example.</p>	
<p>Para 4.3.3            We would like to see the HRA of the NPS also undertake a high level analysis (of their reliability, effectiveness, etc) of the standard mitigation measures that could be applied at a project level. This could not only inform the project level assessments that subsequently follow but might speed them up.</p>	<p>The reliability and effectiveness of many measures depends on the nature, location and magnitude of effects to be mitigated. Nevertheless, further discussion of this is included in Section 4.2.1.</p>
<p>Para 6.2.1            Compensatory measures include, but are not necessarily limited to, habitat creation projects. There are potentially other things that could offset any unavoidable adverse effects, depending on the nature of the impacts and the circumstances. Again it would be useful if the HRA could examine these options in more detail at a high level to inform project level assessments.</p>	<p>Compensatory measures are discussed in Section 6.2.5 of this HRA Report. However, to reach Stage 4 a project will have considered all potential mitigation measures at Stage 2. These are not discarded upon entering the derogations. Whilst it is not considered that examining compensatory options is of value at this stage due to the extremely broad scope of the NPSs, Section 6.2.5 sets out examples of generic compensatory measures that may be appropriate. A more detailed study looking at one specific energy source, potential locations, effects, mitigation and compensation, perhaps with reference to case studies, would be a more appropriate place for this examination.</p>
<p><b>SEPA</b></p>	
<p>We are aware and discussed the scope of the HRA (following English regulations) and how Scotland was scoped out, however, as some of the policy has UK wide application, eg. addressing reserved energy issues, we would like to further enquire whether an HRA (Scottish regs) should also have been carried out.</p>	<p>Regulation 2(2)(k) of the Conservation of Habitats and Species Regulations 2017 makes clear that the 2017 Regs will apply to Scotland in relation to HRA of an NPS. As such, it is not necessary to carry out a separate assessment under the Scottish regulations.</p>
<p><b>Natural Resources Wales</b></p>	
<p>Legal framework:            Overall, the legal framework seems clear and comprehensive setting-out how the HRA will be undertaken. We recommend the term 'International Sites' is replaced with 'national site network sites (the post- Brexit term for these designations).            The final Stage 4 bullet point on pg. 9 which describes Assessment where no alternative solutions exist and where adverse impacts remain should refer to the need for the compensatory measures to be 'secure', as referred to at the bottom of pg. 7.</p>	<p>'International Sites' is a valid term for SACs and SPAs existing at 31 December 2020 and sites that had begun the process of designation through the EU Commission. It also encompasses SACs and SPAs outside of the UK, which are considered in this HRA. Also note that the 'national site network' does not include Ramsar sites, which are also subject to HRA.            Reference to securing compensatory measures has been added.            This document constitutes the HRA of the revised EN-1 to EN-5 and therefore the HRA has not been postponed to a lower level plan or</p>

## Consultee Comment

The consultation document does not currently set out the criteria for postponing to lower tier plan or project level, despite this being the overall approach to the assessment. We advise that a fuller discussion of postponing to lower tier plan or project level assessment is required, including clearly setting out the conditions under which this is an acceptable approach. There are frequent references to this being a high level plan assessment and to the fact that individual projects will require project-level assessment, but the requirements for postponement are not clarified. The following criteria must all be met for postponement:

- The higher level plan assessment cannot reasonably predict any effect on an International Site in a meaningful way AND
- The lower level plan or project, which will identify more precisely the nature, timing, duration, scale or location of development, and thus its potential effects, will have the necessary flexibility over the exact nature, timing, duration, scale and location of the proposal to enable an adverse effect on site integrity to be avoided AND
- The HRA of the lower tier plan or project is required as a matter of law or government policy.

Postponing assessment also requires the following:

- It can only be undertaken at appropriate assessment, not at the screening stage;
- that the assessment of a policy can only be postponed if the policy can be delivered in some shape or form at lower tier plan or project level with no adverse effects on site integrity;
- that the appropriate assessment at plan level should assess policies/proposals as far as is reasonable and meaningful based on the level of detail available;
- where the level of detail is available, the HRA should provide a list of at least the sites that have been taken through to appropriate assessment, and which therefore are also likely to require assessment in the HRA of lower tier plans and projects (this generally refers to policies with a clear spatial element);
- that the appropriate assessment should provide a list of the potential generic impacts from the policy;
- that the appropriate assessment should provide a list of the generic mitigation measures that ensure that the potential generic impacts (as per the point above) can be avoided, that subsequent lower tier plan and projects can rely on to avoid adverse effects on site integrity

## Response/ how this has been addressed

project. Whilst the HRA has been unable to reach a conclusions as to whether the NPSs may result in adverse effects on the integrity of any International Site, the HRA process has been followed and the HRA has concluded that the NPSs can proceed in line with the Habitats Regulations as IROPI apply.

### Consultee Comment

### Response/ how this has been addressed

(i.e. the mitigation has to be capable of avoiding the adverse effects) – this is necessary in order to provide the confidence that adverse effects can be avoided at lower tier levels;

- that it is clearly set out that the conclusion of no adverse effects on site integrity at plan level is based on lower tier plans and projects, having drawn on the generic list of mitigation, undertaking HRA, concluding no adverse effects on site integrity;
- that it is clearly set out what the implications are if lower tier plan or
- project level HRAs cannot rule out adverse effects on site integrity i.e. that the lower tier plan or project will either have to be withdrawn, or amended and re-assessed, or pass the derogations set out under Article 6(4) of the Habitats Directive, namely no alternative solutions, Imperative Reasons of Overriding Public Interest (IROPI) and compensatory measures secured, which the proposal may or may not be able to pass.

#### Approach to Screening:

The approach to screening appears generally sound, but we do have a number of specific queries.

- Mobile species: The species that may require consideration goes considerably further than those groups listed in 3.1.3. Whilst we do not list them all here, but additional examples include bats, otters, wintering birds, etc.
- Paragraph 3.1.3 states (with regard to mobile species) ‘it is presumed that impacts on International Sites outside the national sites network do not need to be considered’ because it is assumed that the assessment for mobile species from UK sites will adequately cover the issues. It is possible that overseas sites have other species which stray to the UK at the edge of their ranges but are not included in any UK sites. Any assessment is difficult at this current high-level, but we would be concerned if ruling out impacts at this initial high-level assessment meant that they were not even considered at subsequent project-level assessments. It is further stated in paragraph 3.5.4 that ‘Energy infrastructure development, as facilitated by the NPSs, could occur anywhere within England and Wales, thereby potentially affecting any of the International Sites across the UK and more widely across Europe.’ This statement seems reasonable, and highlights it is inappropriate to assume that impacts on mobile species from outside the UK do not need to be considered. Higher level HRAs set the framework for lower tier plan and project level HRAs, and it is therefore important not to superficially rule out consideration of sites when the detail is not available to justify it.

Migratory birds have been added to the equivalent paragraph in this report. Bats and otters are not included as they are considered highly unlikely to move between nations in substantial numbers or on a regular basis. Whilst these species may freely move between Northern Ireland and the Republic of Ireland, Northern Ireland is not covered by the NPSs.

Reference to only considering the UK’s national site network has been removed and the HRA has considered potential for cross-boundary impacts.

EN-6 (Nuclear NPS) is not being revised at this time and is therefore outside the scope of the HRA, although nuclear is considered under EN-1. Decommissioning impacts are considered to be broadly the same; further detail is included in [Appendix B](#).



Consultee Comment	Response/ how this has been addressed
<ul style="list-style-type: none"> <li>Paragraph 3.5.1 states that 'It is presumed that, on a worst-case scenario basis, the effects of decommissioning will be similar to those of construction and, therefore, also covered by the effects considered.' We seek clarity as to whether this assumption is valid for NPS 6 – Nuclear.</li> </ul>	
<p>Methodology:</p> <p>We support the precautionary approach set out in 4.1.5 following: 'A precautionary approach will be taken to scoping International Sites in or out of appropriate assessment during screening due to the absence of a spatial component to the plans. As we set above, higher level HRAs set the framework for lower tier plan and project level HRAs, and it is therefore important not to superficially rule out consideration of sites.'</p>	Noted.
<p>Approach to Reasonable Alternatives:</p> <p>We have no further comments on this section.</p>	Noted.
<p>Stage 4 – IROPI Approach:</p> <p>6.2.1 states that any creation or recreation of comparable habitat will 'eventually' be designated as an International Site. In order to be considered as adequate compensation, any compensatory habitat should be designated as an International Site, and must be subject to equivalent protection before that designation comes into force.</p> <p>6.2.2 - the competent authority should also consider how financially viable proposed compensation is and whether the proposer has enough funds to cover the long term costs of the proposed compensatory measures.</p> <p>It should be clearly stated that compensatory measures must be secured before consent is given for a project to proceed.</p>	Noted. The equivalent text has been reworded in this document for clarity.
<p>Other comments:</p> <p>Section 7 – Preparation of NPS HRA reports</p> <ul style="list-style-type: none"> <li>7.1.2 states that 'The NPS for Nuclear, EN-6, was assessed separately due to the inclusion of nominated sites. For the purpose of the NPS update, the nominated sites are not being considered only the policy document.' We seek clarity as to whether it is intended to include the nominated sites in the reviewed EN-6, or whether they will be referenced? If referencing them, is it intended to rely on the previous HRA, and if so is the previous HRA still relevant and up to date</li> </ul>	<p>EN-6 (Nuclear NPS) is not being revised at this time and is therefore outside the scope of the HRA (the 2011 EN-6 and accompanying HRA will remain the relevant versions).</p> <p>Compensation is included under 'IROPI' as it is an integral part of that process.</p>



Consultee Comment

Response/ how this has been addressed

Section 7.1.2 HRA report structure does not refer to compensatory measures, i.e. discussing them and how they will be secured, which should come at the end of the list

**Table A-2: Consultee Comments on Draft HRA (December 2021)**

Consultee Comments	Response / how this has been addressed
<b>Natural England (received: date unknown)</b>	
<p>There might be opportunities through strategic approaches to provide alternative options for mitigation/compensation at a sector level. For example reference to TIN181 Edition 1 Natural England Approach to Offshore Wind (3).pdf which sets out our approach to establish aims and objectives around which strategic solutions for the offshore wind sector can be designed to benefit and enhance nature.</p>	<p>NPSs revised to incorporate</p>
<p>Reference (p44 footnote 33) is made to Defra (December 2012) Habitats and Wild Birds Directives: guidance on the application of article 6(4) Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures. It has been withdrawn and replaced by Habitats Regulations Assessments: protecting an International Site - GOV.UK (www.gov.uk) which we note is referenced later p50, footnote 53.</p>	<p>Reference updated.</p>
<p>We note the recent Defra consultation (Best practice guidance for developing compensatory measures in relation to Marine Protected Areas, July 2021) which might provide additional guidance to assist relevant authorities when considering the specific issue of when and how compensatory measures should be considered for development that may impact on a Marine Protected Area (MPA).</p>	<p>Reference noted in EN-3 and included in the HRA in Section 6.3.</p>
<p>Section 4.4 on Mitigation includes a section on habitat loss/fragmentation which includes some confused statements and inaccuracies that relate to more recent caselaw. Habitat loss for example, unless it was part of supporting habitat would require consideration of derogations.</p> <p>Bullet 2: This is currently confusing and requires clarification to ensure it reflects mitigation of off-site impacts (on supporting habitat or functionally linked land or sea) related to the protected site. If habitat is lost within a site then compensation would be required.</p> <p>Bullet 3: This bullet needs deleting since you cannot mitigate habitat loss within a site through enhancing management. Recent caselaw (Briels 2014, Hilde Orleans, 2016) determined that new or improved habitat within a site cannot be considered as mitigation; it would be considered compensation.</p>	<p>Section has been edited. Text (in Table 4-1) has been edited to clarify that the mitigation discussed under habitat loss/ fragmentation is outside International Site boundaries.</p> <p>Bullet 3 has been deleted.</p>
<b>Crown Estate (received: date unknown)</b>	
<p>The Crown Estate retains concerns in relation to the approach taken to the plan-level HRA, in terms of both the methodology and its application. The HRA appears to have missed an opportunity to provide a strategic pathway to the delivery of the major infrastructure that will be required to deliver net zero.</p> <p>The NPS review and HRA could be used to provide pathways to overcome some significant barriers to further development, whilst at the same time protecting the UK's habitats and species. The NPS review</p>	<p>It is not possible to fully address this issue within the HRA. However, it has been partially addressed within the NPSs and HRA following consultation through the inclusion of text that promotes a strategic approach, within EN-1 and specifically EN-3.</p>

Consultee Comments	Response / how this has been addressed
<p>and its HRA process could be used to set out the strategic framework which links policy to planning to delivery, with the overarching goal of building a pathway to net zero.</p> <p>This will require consultation and joint working with other policy and delivery bodies, and a significant amount of work has already been undertaken in this regard across a range of government departments, deliveries bodies and other organisations such as The Wildlife Trusts and RSPB.</p> <p>The Crown Estate continues to work closely with Defra and DESNZ on these issues, including through the Offshore Wind Evidence and Change Programme and the Cross Government Working Group on Compensation led by Defra. We believe this group could provide a useful forum to explore these issues further.</p> <p>The Crown Estate would welcome further bilateral engagement with DESNZ in relation to the HRA and the opportunity to work collaboratively to deliver significant benefits to the development process for major infrastructure projects and to the environment.</p>	
<p><b>Royal Society for the Protection of Birds (RSPB) (received: 29.11.2021)</b></p>	
<p>The following comments relate to the HRA as a whole, unless otherwise stated.</p> <p>We note that, due to the lack of any spatial detail in the NPSs, a precautionary approach has been necessary in respect of the HRA. The conclusion of the HRA is therefore that adverse effects on the integrity of one or more International Sites (including those in other countries due to possible transboundary effects) cannot be ruled out, but that a case for no alternative solutions and imperative reasons of overriding public interest (IROPI) can be made at the strategic level. However, we welcome the clear acknowledgement that the conclusions of the HRA “are only applicable at the NPS level and are without prejudice to any project level HRA, which may result in the refusal of consent for a particular application.” We support this approach and welcome the clarity provided in the HRA that projects coming forward under the NPSs will still be required to undergo individual assessment under the Habitats Regulations, including where necessary presentation of individual derogation cases.</p> <p>Nonetheless, the strategic HRA could still be seen as providing a guide for those project-level assessments. It is therefore essential that the key impacts and generic mitigation/compensation measures outlined in the strategic HRA are correctly identified and described. We highlight below a number of important points that should be added to or amended in the HRA to ensure that robust assessments are undertaken at application level.</p>	<p>Noted. It is acknowledged in the non-technical summary and Section 6.2.5 that the case for IROPI relates to EN-1 to EN-5 and does not automatically apply to individual projects coming forward under the NPSs.</p>
<p>3.5. Step 3: Identify the potential effects on the International Site both alone and in combination with other plans and projects</p>	<p>Edits made to relevant tables (now Tables 3-2 and Table 3-3) to improve clarity and add detail. Appendix A now Appendix B.</p>

## Consultee Comments

## Response / how this has been addressed

Table 3-1 in Section 3.5 identifies potential effects on the International Site, alone and in combination with other plans and projects. However, the effects are presented as a summarised mix of impact pathways and likely significant effects, and as a consequence there is some confusion as to whether some key issues have been identified, including:

- physical/visual disturbance impacts (construction/decommissioning and operation)
- changes to coastal hydrogeomorphology (operation)
- smothering of habitats from dust or hydrological sedimentation (construction/decommissioning)
- displacement of species (construction/decommissioning and operation)

Appendix A expands on the various impacts, suggesting that at least some of the above issues may be included, but it is not always possible to track the broader descriptions of effects back to the summarised impacts/effects identified against each type of development in Table 3-1. Impact pathways and their likely effects should be separated out more clearly (in Table 3-1) and a more expansive/descriptive list given against each development type to improve clarity.

As a minimum, the following development-specific effects should be added to Table 3-1 and then taken forward into Table 3-2 (note that these and our further comments below on Table 3-2 should not be considered exhaustive):

For all - For both construction and operation, “Noise pollution and vibration” should be expanded to noise, light, vibrations and visual disturbance and displacement.

EN-1/2/3 – Hydrogen/Nuclear/CCS/Natural Gas/Biomass/EfW:

- Where vehicle and personnel movement is identified as a potential impact pathway this should be shown to translate into possible disturbance effects (including physical and visual impacts as well as noise)

EN-1 - Nuclear

- Specific reference should be made to both fresh water and the marine environment since, as table 3.1 confirms, most nuclear applications will be coastal due to the water required.

EN-3 – Solar PV

- Add ‘vehicle and personnel movement’ and therefore disturbance effects

EN-3 – Offshore Wind:

- Displacement of bird species (construction/decommissioning and operation)
- Habitat loss and fragmentation (operation): cable protection

Consultee Comments	Response / how this has been addressed
<p>EN-3 Tidal Stream</p> <ul style="list-style-type: none"> <li>Displacement of bird species (construction/decommissioning and operation)</li> <li>Habitat loss and fragmentation (operation): cable protection</li> </ul>	
<p>3.6. Step 4: Assess the likely significance of any effects on International Sites</p> <p>In addition, we have the following comments on Table 3-2 (section 3.6), in relation to the likely significance of any effects on International Sites.</p> <ul style="list-style-type: none"> <li>In line with our comments on Table 3-1 above, 'Displacement of bird species' should be added as a type of likely significant effect.</li> <li>The following amendments should be made to the type of qualifying feature that could be significantly affected by likely significant effects:             <ul style="list-style-type: none"> <li>Light pollution: should include impacts to migratory birds.</li> <li>Coastal change: should reference bird species in general given mix of vulnerable habitats.</li> <li>Collision of marine species with turbines: needs to explicitly reference bird species, as it is apparent that the definition of marine species used in this table does not include birds.</li> <li>Disturbance of marine species: should explicitly include bird species.</li> </ul> </li> </ul> <p>Finally, in section 3.6.1: the list of effects that could occur in combination should now include 'displacement' e.g. auks or red-throated divers from offshore wind farms.</p>	<p>Edits made. Following other editing, 'species displacement' has now been added as a potential in-combination effect in Table 3-4.</p>
<p>4.4 Mitigation measures</p> <p>Habitat loss fragmentation</p> <p>This section makes some suggestions of scenarios where habitat creation/enhancement could be considered as mitigation. For example:</p> <p>“• Create alternative wildlife corridors as close as possible to those lost as a result of development, where these maintain links between certain sites and supporting habitat (note that habitat enhancement / creation is only mitigation where it addresses a particular issue and maintains the integrity of an International Site) (note that this is a less standard measure as it depends on the existing habitats and land use in the wider area, and may require purchasing additional land. This measure is likely to be more effective on a greater scale, where it can feed into regional habitat networks).</p> <ul style="list-style-type: none"> <li>Enhance existing habitat to better support qualifying features (this is a less standard measure, as it depends on the quality of existing habitat and management responsibilities).”</li> </ul>	<p>Edits made to Table 4-1. Habitat loss/ fragmentation: bullets have been edited or removed to provide clarity. Bat/ bird strike: edits made.</p>

Consultee Comments

Response / how this has been addressed

It is unclear whether these descriptions refer to habitat inside or outside an International Site. However, opportunities for habitat creation/enhancement (either inside or outside a protected area) that could be considered as mitigation are rare and would normally be considered as compensation (i.e. as part of a derogation case) given the inherent uncertainty over their ecological effectiveness and being fully effective before damage occurs. These examples should be amended to clarify that such examples are rare and would need to demonstrate additionality in relation to existing site management requirements. To avoid any confusion at the project level, it would however be better to remove these examples entirely.

Bird/bat strike

We welcome the reference to siting wind turbines away from “known migration routes/key feeding grounds where possible”. This should be extended to include “known flight routes between breeding colonies and foraging grounds”.

With reference to turbine “design modifications” potentially including “less standard [mitigation] measures with greater uncertainty as to their effectiveness”, in many cases raising the rotor height of offshore wind turbines significantly reduces bird collision risk, yet this measure is rarely considered at the design stage. We strongly recommend the inclusion of ‘raising of wind turbine rotor height’ as a design modification with high certainty of effectiveness as a mitigation measure for seabirds in particular.

The need to reform the spatial planning system for offshore wind

Offshore wind will play a central part in the UK’s efforts to achieve net zero by 2050 and is likely to be the primary source of low carbon energy during this critical period. Yet it is widely recognised that the current and historic approach to planning this technology has resulted in cumulative impacts on SAC and SPA features and will, in the absence of reform, continue to drive nature losses and an ongoing need for compensation. As we note in comments on section 6.3 below, these impacts and the need for compensation are now locked in for the remaining Round 3 and Project Extension schemes. The current HRA and NPS Review provides the opportunity for the UK Government to address the need for fundamental change in how we plan for offshore wind in order to reach 2050 net zero targets and achieve Good Environmental Status.

Underlying this is the current model of fixing spatial locations for seabed licences before undertaking HRA. This is fundamentally flawed and the system in England and Wales requires a complete and urgent transformation. In the short-term measure, we strongly recommend a move towards a sectoral or development marine plan, such as that adopted in Scotland (Sectoral Marine Plan for Offshore Wind Energy), which is led by government and adopts a more frontloaded approach to identifying impacts and potential mitigation. This will greatly increase the likelihood of being able to avoid locating offshore wind projects in areas where they will cause damage to SACs and SPAs and break the deadlock resulting

The suggested need to reform the spatial planning system for offshore wind is not a mitigation measure presently included within the NPS or HRA. The consideration of a holistic / strategic approach in accordance with the BESS, and commitments to align with Round 4 leasing work, are a step in the right direction in addressing this. Furthermore, a cross-government Marine Spatial Prioritisation Programme has been established, led by Defra. It aims to consider a holistic 2050 vision for the future use of our seas. The programme will identify opportunities for optimising carrying capacity, improving co-location and coexistence of activities, including CCUS and cabling, as well as the prioritisation of activities in English waters.



## Consultee Comments

## Response / how this has been addressed

from developers being locked into sites with unresolved ecological issues – particularly challenging in the absence of alternatives. Hence, there is an urgent need to reform the spatial planning process for expansion post-Round 4. This should be a mitigation measure arising out of the NPS HRA.

We agree with The Crown Estate that the HRA is a decision-influencing, arguably, decision-making process. In this context, it should be the role of the NPS HRA to acknowledge this structural issue which will lead to further adverse impacts on SACs/SPAs and identify the changes required to avoid those impacts. The NPSs should set out the framework for these reforms. This should be designed to ensure the problems now encountered in the southern North Sea are avoided in areas identified for future expansion e.g. in the Irish and Celtic Seas.

We understand The Crown Estate is considering trialling new approaches to its own spatial planning processes commencing with newly announced floating wind. Whether this is sufficient to avoid the potential conflicts of interest (given The Crown Estate's own commercial interests) remains to be seen but we welcome the change in approach. The RSPB will engage positively with any new process to help ensure it avoids the mistakes now evident in the North Sea. However, we consider such spatial planning is more properly the responsibility of government and its agencies. Indeed, only government has the power to deliver holistic marine planning which integrates necessarily ambition offshore wind targets and nature commitments while maximising opportunities for the co-location of marine activities more broadly – vital if we are to find the necessary space to expand low carbon renewables.

### 5.5 Alternative Solutions

See our comments under Q23 on the alternatives used for the Appraisal of Sustainability [copied below].

'...the assessment of reasonable alternatives is crude. We acknowledge that it is a significant improvement on the consideration of alternatives in the AoS of the original NPS. However, simply subtracting different technology types is unlikely to give very informative results. EN-1 is based on the fundamental premise that a combination of technologies is required, but rather than asking which technologies are 'in' or 'out', a scenario-based approach would have been much more informative. The key question is really what is an appropriate balance between technologies, and their spatial distribution, and what is the environmental impact of different balances and distributions.

Alternative 4 assumes that offshore renewables cannot deploy to their fullest extent due to even stricter protection of the marine environment, which will mean increased reliance on fewer low carbon electricity generating technologies. This is assessed as a large negative effect for net zero, compared to EN-1. This conclusion depends on a number of questionable assumptions; offshore wind deployment is not necessarily incompatible with stricter protection of the marine environment, nor does stricter protection necessarily imply lower energy output overall. An alternative which could have been explored is one

It is to be noted that the NPS does not have a spatial dimension and this resulted in the AoS and HRA being unable to undertake assessment of alternative based on spatial distribution of technologies and corresponding environmental impacts.

Section 2.5 of EN-1 sets out Government's view on the importance of security of supply and notes, for example, that as global energy costs rise due to demand soaring as the economy reopened after COVID-19 and the Russian invasion of Ukraine, security of supply requires a greater focus on domestic energy production. The AoS reflects the Policy content and approach of the EN's as set out by Government.

Consultee Comments	Response / how this has been addressed
<p>where plan-level Habitats Regulations Assessments for offshore renewables identify the least ecologically-sensitive locations and direct development there.</p> <p>All the alternatives are deemed to be negative for security of energy supply, but this has the effect of weighting the conclusions away from alternatives with lower environmental impacts. Ultimately the choices between alternatives are political choices and should not be left buried in a technical report. In our view, the climate and nature emergency is of such urgency that the purpose of the AoS should be to expose and thoroughly explore all alternatives with lower environmental impacts, without giving pre-eminence to security of supply’.</p>	
<p>6.2 Case for IROPI</p> <p>Paragraph 6.2.3 states the following:</p> <p>“Setting out planning policy, (including a strong expression of the need for new energy infrastructure) in the Energy NPS will result in a more streamlined planning system with enhanced certainty for developers. Continuing delays in the planning process would add to uncertainty for energy companies and could result in them choosing to invest in other generation technologies or in other countries.”</p> <p>In respect of offshore wind, this is insufficient to reduce delay. The currently encountered delays in the planning system are the result of historic and ongoing poor spatial planning by the Government and The Crown Estate. This has resulted in the southern North Sea becoming congested and giving rise to (widely predicted) in-combination impacts on SACs and SPAs and for which the Government, The Crown Estate and industry has done insufficient research to compile the evidence for the available compensation measures that would provide a reasonable guarantee of success. As a result, we are now encountering significant post-examination delays. This supports the need for fundamental reform of the offshore wind spatial planning system in order to ensure such impacts are avoided as far as possible in selecting areas for future offshore wind expansion. This in turn should result in the more streamlined planning system and enhanced certainty sought by Government.</p>	<p>This comment is also in relation to marine spatial planning reform. See response above against ‘The need to reform the spatial planning system for offshore wind’.</p>
<p>6.3: Compensation</p> <p>The RSPB acknowledges that without defined impacts at the NPS level “it is not possible to determine what compensatory measures will be required and to what extent they need to be applied.” However, in line with our comments on the need for the HRA outputs to guide reform of spatial planning systems below the level of the NPSs (with particular reference to offshore wind and other marine renewables), the HRA could do more to steer the approach to compensation measures in those sectors which are, in general, dealing with cumulative, in-combination impacts from multiple projects which will require compensation.</p>	<p>Despite the addition of text with regard to strategic compensation, it is appreciated that the HRA and NPSs do not fully address the need for a clear strategic approach to the planning and delivery of compensation measures in respect of offshore wind and potentially other marine renewables. The approach has been outlined but requires the accompanying spatial element to enable a framework to be created.</p>

## Consultee Comments

It is increasingly recognised by The Crown Estate, industry and central Government (DESNZ, Defra) that there is a need to develop more strategic approaches to the planning and delivery of compensation measures in respect of offshore wind. The same logic is likely to apply to other marine renewables. We note that in its consultation comments The Crown Estate suggests that the NPS revision and NPS plan-level HRA offer an opportunity for government to tackle this and other strategic challenges to deliver better environmental outcomes while maintaining the speed of deployment required to meet net zero targets. The RSPB agrees.

As we have noted above, reform of the spatial planning system for offshore wind is a key first step in order to avoid or minimise impacts on International Sites. However, even assuming any such reforms manage to avoid damage from future strategic planning rounds, over the next 10 years or so we will have to deal with the legacy of locked-in, in-combination impacts arising from:

- The remaining Round 3 schemes still to be determined;
- Project Extensions; and potentially
- Round 4.

Therefore, it is appropriate for the NPS review to provide a clearer steer on how it expects such work to be taken forward, rather than (again) deferring it down to the project level where ongoing post-examination delays point to the need for different approaches and greater leadership from the Government.

### Other comments on Section 6.3

In addition to this overarching comment on how the HRA should be used to guide the NPS in establishing a clearer framework for the approach to compensation measures, we have the following specific comments on the text contained in section 6.3.

The HRA sets out a list of possible compensation measures that might be relevant to project-level HRAs. We make the following comments:

- 'Substantial enhancement of degraded habitat that will support qualifying features affected': If this is located inside an SPA, SAC or Ramsar site then it properly described as a site management measure to restore a degraded feature and cannot be considered as compensation.
- 'Enhancing connectivity of habitat that supports qualifying features affected': This could also fall under the "site management" category and therefore care is needed. Site conservation objectives for several SPAs including restoring connectivity between nesting and foraging areas.

## Response / how this has been addressed

NPSs now contain reference to a more holistic approach and strategic compensation championed by the BESS. This clearly sets out the works that are being taken forward by Government. Policies relating to compensation is set out in the OWEIP clauses currently going through the Energy Bill. Strategic compensation is discussed in Section 6.3.

Note also that collaboration on ofw strategic compensation (COWSC) is ongoing. At present (January 2023) this has Ministerial and Director/Deputy Director oversight, is joint chaired by Industry and Government and has the inclusion of multiple stakeholders, including eNGOs such as RSPB and TWT.

Edits made to bullets and text added stating that compensation measures 'need to provide additionality and not comprise 'site management' activities in order to have a compensatory effect'.

Consultee Comments	Response / how this has been addressed
<ul style="list-style-type: none"> <li>'Species recovery and reinforcement, including reinforcement of prey species': As with the above two measures, care would be needed in distinguishing between what is necessary to restore a qualifying feature (site management) and what is additional and therefore could be considered as a possible compensation measure.</li> <li>'Incentives for certain economic activities that sustain key ecological functions (such as coppicing)': Greater clarity is needed on what is intended by this measure. It is unclear. Again, if the example of coppicing is required to sustain key ecological functions then it is likely to be properly considered a site management measure.</li> <li>'Reduction of (other) threats': As per our comments above – care will be needed to distinguish between what is a site management measure and what is genuinely additional and so could be considered as a possible compensation measure.</li> </ul>	
<p>Finally, we note reference is made to Defra's draft Marine Protection Area Compensation Guidance note which has recently undergone consultation and is subject to revision. We note here that in its response to that consultation the RSPB was highly critical of certain key aspects of the draft guidance, including its approach to the compensation hierarchy. However, we also note that we supported the need for greater Government-led effort on strategic compensation as described above.</p>	<p>Noted.</p>
<p><b>Joint Nature Conservancy Council (JNCC) (received: 29.11.21)</b></p>	
<p>JNCC agree that it is not possible to rule out effects on International Sites as a result of development coming forward under the NPSs due to the lack of site-specific detail in the NPSs. Information has been given on activities potentially affecting features but again this is somewhat generic considering the absence of site-specific details. As stated previously there are already sites where impacts have increased beyond an acceptable level and project level compensation is not sufficient and that more needs to be done at a strategic level.</p>	<p>NPSs now contain reference to a more holistic approach and strategic compensation championed by the BESS. Strategic compensation is discussed in Section 6.3.</p>
<p><b>Scottish Power Renewables (received: 29.11.21)</b></p>	
<p>We are slightly surprised at the approach adopted to undertake this HRA, which appears to disregard parallel work being undertaken for leasing and marine plan development despite these generating relevant assessment information and mitigation proposals which should be taken account of by applicants and the Secretary of State. We also question the focus primarily on potential generic impacts from the deployment of different technologies (albeit without spatial definition), rather than testing the implications of policy provisions and seeking to demonstrate that these provisions are likely to be adequate to avoid adverse effects on the integrity and conservation objectives of International Sites. By adopting a generic technology based approach and proceeding to HRA Stage 4 – IROPI on a</p>	<p>The HRA now considers the policy provision of the NPSs (Section 3.4.1) and has adjusted the tone of the HRA accordingly.</p>

Consultee Comments	Response / how this has been addressed
<p>precautionary basis without testing the extent to which NPS provisions themselves provide adequate policy level mitigation, this has the potential to unnecessarily complicate the application of HRA Appropriate Assessment, HRA Consideration of Alternatives and HRA IROPI stages in project level consenting.</p> <p>To address this gap, we suggest that updated HRA reporting to accompany the finalised suite of energy NPS should recognise parallel HRA work being undertaken for leasing and should identify where NPS provisions are likely to be adequate to address likely significant effects and pre-mitigation adverse effects, such that further HRA stages (e.g. IROPI) at the project level can focus on a smaller range of remaining potential effects and uncertainties where required.</p>	
<p><b>Parents Concerned About Hinkley (PCAH) (received: date unknown)</b></p>	
<p>Habitats are at risk within 30 km of any nuclear site. Renewable energy infrastructure protects habitats and should be supported across the UK.</p>	<p>Statement/ opinion that does not need to be addressed in the HRA.</p>
<p><b>Stop Portland Waste Incinerator (SPWI) (received: date unknown)</b></p>	
<p>Air Quality assessment are the key. Mitigation obligations which are simply PR like a new foot path, a notice or information board or a bit of strimming should be seen as irrelevant - sweeteners. Protection of habitat is protection of our lives too.</p>	<p>Statement/ opinion that does not need to be addressed in the HRA.</p>
<p><b>Natural Resources Wales (received: 10.12.21)</b></p>	
<p>Section 5 – Consideration of Alternatives</p> <p>We consider that the conclusion reached in paragraph 6.1 in the HRA document i.e. ‘that there are no alternative ways of meeting the objectives of EN-1 to EN-5 without having the potential for adverse effects on the integrity of any International Site’ when assessing the no alternative solutions test is incorrect. We consider that there may be a wide range of alternative solutions available when assessing the HRA of specific projects, including the option to choose a different location with lesser impacts on International Sites. In some, perhaps many instances there will be less damaging alternative solutions which may mean that a proposal can be modified to avoid impacts on International Sites in which case the assessment will stop at this stage, and the proposal will be amended and re-assessed. We recommend that the wording in paragraph 6.1 is reworded to acknowledge this point as one role of plan-level HRA is to set the framework for subsequent project-level HRAs, and it is important therefore to be clear that less damaging alternative solutions may exist at project level.</p>	<p>NPSs now contain reference to a more holistic approach and strategic compensation championed by the BESS. Strategic compensation is discussed in Section 6.3.</p> <p>Chapter 5 Assessment of Alternative Solutions has now been edited to include Section 5.5.5, which discusses alternative solutions at the project level to address the comment. Minor text edits have also been made in Section 6.1.</p> <p>Text in Section 6.2.5 has been edited to say, ‘must be refused’.</p>

Consultee Comments	Response / how this has been addressed
<p>Paragraph 6.2.5 states ‘Any project proposals that may have adverse effects on the integrity of an International Site even after alternatives and mitigation have been considered, may be refused if IROPI does not apply’. This is incorrect – if adverse effects cannot be ruled out, and there are no less damaging alternative solutions, applications must be refused if IROPI does not apply. This is set out in Regulations 63(5) and 64(1) of the Habitats Regulations 2017 (as amended).</p> <p>We reiterate our previous comments on the Methodology (see Appendix A) dated 28th May 2021 i.e. that higher level HRAs set the framework for lower tier plan and project level HRAs, and it is therefore important not to superficially rule out consideration of sites.</p>	<p>Section 2.3 has been added to address the comment with regard to the role of plan HRAs.</p>
<p>Section 6.3 - Compensation</p> <p>In the case of Humber Sea Terminal Ltd v SoS for Transport and ABP [2005] EWHC 1289 (Admin), 9th May 2005, it was established that in order for an appropriate authority to have satisfied the legal requirement under Regulation 68 and 109 of Habitats Regulations 2017(as amended) they must secure that any necessary compensatory measures are taken to ensure that the overall coherence of Natura 2000 is protected, then: the question to be asked is whether the appropriate authority can rationally believe that they can fulfil their continuing duty [under Regulation 68 and 109].</p> <p>A strategic approach to delivering compensatory measures has not been considered as part of this Habitats Regulations Assessment. This would have provided greater confidence that the appropriate authority could rationally believe that they can fulfil their continuing duty, as well as providing developers with more confidence that the requirement to deliver compensatory measures was achievable and manageable. It could also potentially significantly reduce lead-in times to future projects by identifying, securing and perhaps even delivering compensatory measures in advance of project level proposals gaining consent. We are aware that the strategic delivery of compensatory measures is being explored in support of the delivery of future plans for offshore wind development. It would be sensible for the NPS to explore the potential for such an approach to be applied to other sectors where appropriate.</p> <p>Section 6.3 of the HRA document sets out the need for ‘ensuring the project is timed so that the compensatory habitat is able to become established before any habitat loss takes place, so as to maintain the conservation status of the qualifying species’. We consider this can be a challenging requirement that leads to delays on occasions, and could be mitigated by taking a strategic approach to the securing and delivery of compensatory measures where appropriate.</p> <p>Please note that the above comments are also applicable to the HRA findings of EN- 2 to EN-5.</p>	<p>NPSs now contain reference to a more holistic approach and strategic compensation championed by the BESS. Strategic compensation is discussed in Section 6.3 and additional text has been added with respect to the timing of compensation under the sub-heading of Compensation at the project level.</p>
<p><b>Centre for Ecology and Hydrology (CEH) (received: date unknown)</b></p>	
<p>Table 3-1</p>	<p>Table 3-1 (now 3-2) has been edited to include ‘Species loss/ fragmentation’ under operation. It is</p>



Consultee Comments	Response / how this has been addressed
<p>Potential impacts that could arise as a result of the types of development set out in the NPSs: EN-3: Offshore wind – possible impacts/likely significant effects: Habitat/Species loss/fragmentation should be included in both the ‘construction/decommissioning’ and ‘operation’ phases.</p>	<p>considered that habitat loss/ fragmentation will have occurred during construction.</p>
<p>6.3 Compensation</p> <p>In the list in section 6.3 for the consideration of competent authorities around compensation proposals, we think it is important that ‘adaptive management’, should the proposed compensatory measure prove to be insufficient, be added. It is crucial that where compensatory measures are deployed, their effectiveness in the long-term is monitored empirically, and that, where relevant, the outcomes of this monitoring are used to trigger and inform adaptive management. Plans submitted by applicants should contain specific monitoring and reporting schedules with clearly identified progress indicators, and should detail any necessary adaptive management approaches that may be used.</p>	<p>Text has been added to Section 6.3 with respect to adaptive management and associated monitoring which will ensure compensatory measures are progressing towards the desired outcome.</p>
<p><b>Renewable UK (received: 29.11.21)</b></p>	
<p>It is widely acknowledged, that as the offshore wind industry matures, derogations under the Habitats Regulations may be needed for offshore wind projects. We therefore welcome clarifications within the revised NPS on the process within the context of the DCO examination, particularly with regard to ‘without prejudice’ derogation cases and compensation proposals. This will provide applicants and stakeholders with a clear steer on the steps to be followed in such cases.</p> <p>2.24.12 to 2.25.19 in our view, does not sufficiently recognise the challenges developers face in delivering compensation on a project specific basis. Whilst it recognises collaboration between developers and other marine industry sectors may be required, there is no recognition of the role of Government and SNCBs to help identify and delivery strategic compensation, which is meaningful at scale, to allow the Government’s offshore wind ambitions realised. We would suggest that the NPS be amended to include recognition of the key role Government and SNCBs need to play to deliver scale of compensation required for 40GW by 2030 (and beyond).</p> <p>The recognition within sections 2.24.12 and 2.24.19 of a collaborative approach to delivering compensation is welcomed. However, it would be more helpful if the NPS could go further than this and acknowledge that a) how this collaboration should consider a more comprehensive, strategic approach to managing environmental impacts that is more efficient and effective in delivering positive outcomes; and b) where compensation is delivered as part of a collaborative strategic approach then appropriate flexibility should be afforded in securing compensation.</p>	<p>The NPSs do not presently offer the clarity sought with regard to the derogations process within the context of DCO examination specifically, as this is considered to be beyond the present scope, but the required approach is set out. Within EN-1, text in Section 5.4 states that if the SNCB indicate that the proposed development may have adverse effects on International Site integrity, the applicant must include information to assess a potential derogation under the Habitats Regulations and that provision of such information will not be taken as an acceptance of adverse impacts.</p> <p>NPSs now contain reference to a more holistic approach and strategic compensation championed by the BESS. This clearly sets out the works that are being taken forward by Government. Policies relating to compensation is set out in the OWEIP clauses currently going through the Energy Bill. Strategic compensation is discussed in Section 6.3.</p>
<p><b>The East Beach Residents Association (EBRA) and The Littlehampton Society (TLS) (received: date unknown)</b></p>	

Consultee Comments	Response / how this has been addressed
No HRA comments.	N/A
<b>Protect Coastal England (received: date unknown)</b>	
No specific HRA comments but calls for National Planning for Renewables / A National Plan for truly green wind farms.	Statement/ opinion that does not need to be addressed in the HRA.
<b>Together Against Sizewell C (TASC) (received: date unknown)</b>	
TASC challenge the justification of IROPI for individual projects as there are a wide range of potential technologies and a wide range of sites where these technologies can be sited so a presumption for approval of development when there are so many alternatives is unnecessary. This is especially so if, as already mentioned above, a proposal is going to adversely impact a designated landscape or wildlife site.	Chapter 6 sets out the case for IROPI for the energy NPSs themselves. Section 6.2.5 of the HRA states that ‘HRA of projects coming forward under the NPSs must follow the full HRA process and follow the mitigation hierarchy. IROPI does not automatically apply to individual projects coming forward under the NPSs, even though it applies to the NPSs themselves’.
<b>Northern Ireland Department for Agriculture, Environment and Rural Affairs (DAERA) (received: date unknown)</b>	
<p>Need to consider the Northern Ireland Energy Strategy 2050.</p> <p>Request that the same principle of considering transboundary effects will apply also for other jurisdictions within the UK, considering for transboundary effects other UK jurisdictions that are not a part of the review of energy NPS.</p> <p>It is recommended that the UK Marine Policy Statement (UKMPS) and the draft Marine Plan for Northern Ireland should be considered in relation to the review of energy NPS and its associated AoS and HRA, in particular with regard to possible transboundary effects relating to Northern Ireland’s inshore and offshore marine plan regions.</p>	Text within the HRA notes the consideration of transboundary effects and additional text has been added with regard to in-combination effects and the need to consider plans and projects beyond England and Wales.
<b>The Wildlife Trusts (received: date unknown)</b>	
<p>TWT highlight that the Energy NPS is in conflict with UK nature legislation and policy and is not aligned with current language/policy on ensuring nature’s recovery. This includes a lack of alignment with the Environment Act, Habitats Regulations, Marine and Coastal Access Act 2009, Marine Strategy regulations, 25 Year Environment Plan, marine plans and 30x30 commitments.</p> <p>The plan level Habitats Regulations Assessment concludes the potential for adverse effect on protected sites and that compensation will be delivered at a project level. Based on the scale of development, especially at sea, project level compensation will not work and therefore the UK National Sites Network</p>	The amendment partly address comments as the NPSs now contain reference to a more holistic approach and strategic compensation championed by the BESS. However, it still does not identify strategic environmental measures or provide a mechanism for their delivery.

### Consultee Comments

### Response / how this has been addressed

will further decline, contravening the requirements of the Habitats Regulations. Finally, a plan level MCZ assessment has not been undertaken. This further places the network of Marine Protected Areas at risk.

No recognition of strategic solutions to address negative ecological impacts. The Energy NPS, as part of the Appraisal of Sustainability and Plan Level HRA provides the opportunity for strategic environmental measures to be identified and delivered. The NPS must seize these opportunities, otherwise consenting delays and risks will continue to be seen, jeopardising the achievement of net zero by 2050.

Policy still does not go far enough in identifying strategic solutions required to address serious negative effects on the environment from offshore wind farm development policy.

We are concerned compensation is being deferred to the project level, despite the recognition of adverse effect. This does not do anything to address the current challenges energy projects are facing through the planning system or the risks they are posing to the natural environment. It is also not reflective of current discussions within government and industry, and therefore will not have the longevity needed. Again, a strategic approach to compensation is urgently required.

DESNZ must also undertake a plan level Marine Conservation Zone assessment to ensure the coherence of the MPA network in line with the Marine and Coastal Access Act 2009 and the UK Government's international obligations under OSPAR.

Although there is commitment to treat all marine protected areas as a network with a view to maintaining its integrity, a plan-level Marine Conservation Zone assessment has not yet been undertaken in association with the NPSs.

### Wildlife and Countryside Link (received: date unknown)

Lack of an overarching spatial plan. SEA needed at a scale greater than project level, which must assess cumulative and transboundary effects.

Noted that there is no specific HRA comment. It is not considered feasible for the NPSs or the HRA to include spatial planning at this time. The HRA does consider cumulative (or in-combination) and transboundary effects, albeit at a very high level.

### Maldon District Council (received: date unknown)

MDC acknowledges the conclusion of the Government that whilst NSIPs for energy infrastructure should seek to avoid significant adverse effects on International Sites, there is a need for imperative reasons of overriding public interest (IROPI) if an NSIP for energy infrastructure could result in adverse effects on the integrity of International Sites. MDC welcomes clarification that all NSIPs for energy will be subject to the full habitats regulation assessment process but defers to other statutory bodies on the lack of precedence for IROPI in similar projects.

Noted. No amendments required to the HRA.

Consultee Comments

Response / how this has been addressed

**German Government (received: date known)**

We would appreciate potential transboundary effects on marine areas of neighbouring states being given more concrete consideration in the National Policy documents, beyond the potential transboundary effects of offshore wind farms in relation to marine mammals and birds.

It might be considered to involve German authorities early in the licensing procedure of an infrastructure project such as wind farms or grid connections, should it potentially cause significant adverse effects on a protected site in the German Exclusive Economic Zone (EEZ), in particular if compensation measures are being considered instead of prevention or mitigation measures.

In this regard we would like to draw your attention to the revised Maritime Spatial Plan for the German EEZ in the North Sea and the Baltic Sea, which has come into force on 1 September 2021. Spatial designations include areas for cables and pipelines and offshore wind energy close to the UK-EEZ border, with the German share of the Dogger Bank designated as priority area for nature protection.

Text has been added to Section 3.1 with regard to extending consideration to all potential transboundary effects, not just those associated with mobile marine species. Furthermore, text has been added with regard to in-combination effects and the need to consider plans and projects in the marine areas of adjacent countries.

**Defra (received: date unknown)**

No HRA comments.

N/A

# Appendix B. Activities potentially affecting qualifying features in the absence of details on location, scale, design, avoidance or mitigation

## B.1. Construction activities

- All energy development will include a construction phase and relevant activities and impacts will be similar for all. The effects of marine projects, particularly offshore wind (EN-3), will differ somewhat from other types of infrastructure, as construction traffic will be marine vessels and excavations will be required to the sea floor;
- Earthworks and excavations may result in direct habitat loss, fragmentation, severance or disturbance:
  - Habitat loss and fragmentation could result in the displacement of European interest features from suitable breeding, roosting and foraging grounds to alternate areas. This may have synergistic effects by increasing competition for food resources or protected sites further afield. Where geomorphological processes (e.g. transfer and movement of sediment) that uphold levels of nutrient and sediment input and output are modified, qualifying habitat features such as estuaries, sandbanks or mudflats could be affected;
  - Disturbance may occur to individual species (including rare and sensitive species and those which are specifically protected from disturbance under European Law);
  - Fragmentation may occur where projects either temporarily or permanently isolate/ separate some or part of an International Sites or break interlinkages between them;
  - Some excavations may extend to or below the water table and dewatering may be required as a result. This will change the level of the water table in the locality, which could lead to lower water levels in groundwater fed water bodies and loss of wetland habitats (including groundwater dependent terrestrial ecosystems (GWDTE)). Lower water levels may affect not only the volume of water, and therefore 'space' available for aquatic species, but could alter flow of the waterbody and lead to a decline in water quality, as pollutants and suspended sediment could be more concentrated;
  - Clearance of vegetation, earthworks associated with site preparation works for oil and gas pipelines (EN-4) and pipelines associated with transportation of carbon for storage (EN-1), drilling activities and loss of landscape features, such as hedgerows, will mostly be temporary effects and with adequate mitigation only minor residual long-term landscape impacts should remain.
- Disturbance to the seabed will occur during construction of marine technologies and offshore wind (EN-3), which will have similar impacts to terrestrial earthworks and excavations, as well as:
  - Potential to interact with seabed sediments and therefore have the potential to impact fish communities, migration routes, spawning activities and nursery areas of particular species. This could have knock-on effects on other marine species, including larger fish, mammals and seabirds, due to a change in the availability of prey species;
  - Disturbance of the seabed sediments or release of contaminants can result in indirect effects on habitats and biodiversity.
- Construction can lead to emissions of air pollutants, including nitrous oxides (NO<sub>x</sub>), sulphur oxides (SO<sub>x</sub>) and particulates. Gaseous emissions, and some particulates may arise from emissions of construction plant and vehicles, and the movement of material in construction can release dust. These can lead to nutrient enrichment and eutrophication at International Sites, which could, if they exceed critical loads, lead to adverse impacts on protected species and habitats. Particulates can also adversely affect respiratory systems of animals;

- Construction works, including offshore piling, may reach noise levels which are high enough to cause injury, e.g. hearing impairment, and there remains the possibility of causing death in marine mammals that are in very close proximity. At lower levels, construction noise and vibration impacts can affect the behaviour, reproductive success and distribution of qualifying features;
- Effects of construction traffic within and to and from the sites are considered under 'vehicle and personnel movements'.

## B.2. Water abstraction and discharge

- This applies particularly to developments that utilise water for cooling purposes, namely natural gas (EN-2), biomass and energy from waste plants (EN-3), as well as nuclear power stations and carbon capture plants (EN-1). After cooling, the water will then be discharged into a suitable water body. Discharge may be to the sea, rivers or lakes;
- Water is needed for cooling purposes and may be abstracted from groundwater, the sea, rivers or lakes. Water intake from surface water bodies can lead to:
  - The incidental mortality of fish and other aquatic species, particularly on the intake screens. Fish may be impinged on the intake screens;
  - Zooplankton and phytoplankton can be entrained in the condenser unit and subject to heat and biocide dosing before being returned to the sea;
  - Biocides in the effluent discharge may affect aquatic biodiversity by increasing the build-up of heavy metals, salts and the uptake of toxic compounds may increase species vulnerability to disease and genetic mutation, potentially altering reproduction and dispersal rates;
  - Groundwater abstractions may, where International Sites are hydrologically connected, affect groundwater supply to other areas of valuable habitat including rivers and streams, resulting in habitat degradation potentially affecting migratory fish species (e.g. Lamprey, Shad);
  - Abstraction and/ or addition of water to or in the vicinity of International Sites (particularly the volume, timing and duration of freshwater flows in rivers and estuaries) could affect fish migration and spawning. It could also alter the structure of physical habitats and compromise aquatic plant and invertebrate communities;
  - Changes to groundwater levels as a result of abstraction and / or discharge of water could result in altered base flows in rivers, or impact water levels in important habitats (e.g. marshes).
- The temperature of the discharge will often be above that of the receiving water body and may result in changes to the aquatic ecology by reduce the amount of dissolved oxygen in the water column, creating habitat that favours non-native species and/ or create thermal and chemical barriers to fish migration;
- Discharged cooling water may also affect water quality due to chemical additives added to the cooling system;
- In relation to salt caverns (EN-4), a newly developed salt gas storage facility will require leaching new salt cavities, whether built on the site of an existing salt mine or not. This involves injecting water into the underground strata to dissolve the salt until cavities of sufficient dimension have been formed and then the brine is withdrawn through the same well bore. The issue is the disposal of the brine and the protection of water quality and resources;
- For pumped hydro power, water is released from a higher altitude reservoir to a lower altitude reservoir to generate electricity at times of high demand, then water is pumped back to the higher reservoir at times of low demand. The discharge of water may be of an altered quality or temperature than the received water. In particular, pumping of water to the upper reservoir is likely to result in increased temperatures.

## B.3. Changes to drainage

- The drainage of the site may result in altered run-off rates to watercourses which could in turn affect stream hydrology (especially flow rates) and morphology. This has the potential to impact upon water quality and resources. The use of machinery, vehicles and new drainage systems may mobilise soil particles in surface run-off which can result in adverse impacts on aquatic flora and fauna due to increased sediment loading of streams causing a reduction in water quality;



- There may also be an increased risk of spills and leaks of pollutants to the water environment, from vehicles themselves or the materials they are carrying.

## B.4. Combustion of materials

- This applies to combustion of natural gas (EN-2) as well as combustion of biomass and waste (EN-3). Flaring/ venting of gas (EN-4) has additional effects covered in the final bullet;
- Emissions from combustion plants are generally released through exhaust stacks. Design of exhaust stacks, particularly height, is the primary driver for the delivery of optimal dispersion of emissions and is often determined by statutory requirements. Different fuels may result in different types of emissions:
  - Combustion technologies can result in release of air pollutants, such as NO<sub>x</sub>, SO<sub>x</sub>, heavy metals (depending on source material) and particulates. These can lead to nutrient enrichment and eutrophication at International Sites, which could, if they exceed critical loads, lead to adverse impacts on protected species and habitats;
  - Burning natural gas will result in substantial increases in greenhouse gas emissions. Whilst the effect of emissions is not necessarily felt locally, they contribute to global climate change, which can have adverse impacts on habitats and species, by altering the conditions in within their range (or altering their range).
- Flaring of gas (EN-4) is used to deal with a continuous stream of low volume waste gas from the processing. The venting of gas may be undertaken occasionally at facilities when there are relatively low volumes of hydrocarbon gas that need to be disposed of safely, usually associated with commissioning, decommissioning and maintenance operations. The flaring or venting of gas during the operation of a facility is regulated by the Environmental Permitting Regulations (EPR) which are administered by the Environment Agency.

## B.5. Vehicle and personnel movements

- The transport of materials, goods and personnel to and from a development, nuclear waste storage facility or carbon storage location can have a variety of impacts on the surrounding transport infrastructure and potentially on connecting transport networks, e.g. disturbance from noise and vehicle movements from road or water transport which could disturb qualifying features;
- The use of vehicles, machinery and movement of personnel on-site also gives rise to the risk of noise and visual disturbance from the site to have an adverse impact on species, in particular sensitive bird species associated with neighbouring SPAs and Ramsar sites;
- Vehicle movements involve emissions to air (such as NO<sub>x</sub>, SO<sub>x</sub> and particulates). These can lead to nutrient enrichment and eutrophication at International Sites, which could, if they exceed critical loads, lead to adverse impacts on protected species and habitats;
- Movement of vehicles, personnel and materials onto and off of the site brings a risk of spreading invasive, non-native species.

## B.6. Physical presence of site: offshore

- This applies specifically to coastal and marine technologies, tidal stream and offshore wind (EN-3), but may also apply to oil and gas pipelines (EN-4) and pipelines associated with transportation of carbon for storage (EN-1) – see final bullets;
- The construction of an onshore energy project on the coast may involve, for example, dredging, dredge spoil deposition, cooling water, culvert construction, marine landing facility construction and flood protection measures which could result in direct effects on the coastline, seabed and marine ecology and biodiversity. Coastal squeeze impacts are closely related to habitat (and species) loss and fragmentation and relate to situations where the coastal margin is squeezed by a fixed landward boundary – mainly through flood and sea defences, and reinforcement of coastal margins through hard engineering;
- The presence of wind turbines can cause alterations to the wave regime or tide heights, which could have a knock-on impact on marine ecology and biodiversity;
- The resultant movement of sediments, such as sand across the seabed or in the water column, can affect habitat features such as sandbanks;

- Coastal squeeze could prevent and/ or alter the natural transport and movement of coastal material, and impact on species, communities and habitats.
- In terms of offshore wind, mortality rates from collisions with wind turbines may be significant for some species in certain locations and create a direct population decline. Impacts on flight lines (i.e. barrier effect) and associated energetic expenditure for commuting flights may result in a loss of fitness and eventual population decline. Tidal stream can also result in collisions with underwater turbines;
- Loss of intertidal and subtidal habitat, either directly or due to a change in coastal processes. The subtidal zone is the area below the low tide mark which remains submerged at low tide. The loss of subtidal habitat and benthic ecology either through the footprint of an offshore windfarm or tidal stream infrastructure (EN-3), or cable route is an additional issue for consideration. Subtidal ecology may include Annex I features such as *Sabellaria spinulosa* reefs. The intertidal zone is the area between high tide and low tide marks. Intertidal habitat and ecology are often recognised through statutory nature conservation designations. Export cable routes will cross the intertidal zone resulting in temporary habitat loss and disturbance of intertidal ecology, which may support ornithological and other species interest features;
- Oil and gas pipelines (EN-4) and pipelines associated with transportation of carbon for storage (EN-1) may cross estuaries and the marine environment. Impacts of pipelines laid in the offshore environment can include disturbance of marine species or smothering of marine habitats or geological features, from the pipeline or associated dredged materials or rock dump. There may also be impacts on natural coastal and maritime processes such as sediment drift, shoreline erosion and accretion;
- Liquefied natural gas (LNG) import facilities (EN-4) may require additional dredging to accommodate LNG vessels. The potential environmental effects of maintenance dredging are generally two-fold, firstly as a result of the dredging process itself, which may release contaminants, and secondly as a result of the disposal of the dredged material. Dredging will be regulated by the Marine Management Organisation.

## B.7. Physical presence of site: onshore

- Direct land take (development of the site itself, construction of laydown areas, cooling water infrastructure etc.), induced and ancillary developments (e.g. transport infrastructure) and the construction and maintenance of flood defences could result in the direct loss and degradation of qualifying habitat;
- For pumped hydro storage (EN-3), flooding to form a reservoir is considered under this heading, as it leads to loss of existing habitat;
- The physical presence of buildings and structures on site may cause direct disturbance by affecting flight lines/ lines of sight, light pollution and other forms of visual disturbance or direct mortality of individuals. This may also include the severance of migration corridors and commuting routes for protected species. Creation of a dam for pumped hydro storage is a form of fragmentation, as it could create a barrier along migratory routes;
- Operation of the physical infrastructure on-site can result in noise and vibration impacts. This applies to all NPSs, although some technologies will have greater noise impacts than others. The most disturbing activities are irregular, unpredictable and loud noise events, and vibrations of long duration. There are other activities and outputs, such as tonal noise. Noise and vibration can affect the behaviour, reproductive success and distribution of European interest features;
- Pumped hydro storage (EN-3) changes patterns of hydrology, by creating a dam, resulting in a reservoir. This not only changes an area from terrestrial to aquatic habitat, but it also slows the downstream flow of the river, with this suddenly increased when power is generated.

## B.8. Decommissioning and restoration

- During decommissioning there may be risks of continued soil, water and air contamination if hazardous materials are released during decommissioning activities. The risk of this is considered very low given the strict regulatory requirements that would need to be adhered to during decommissioning. A stringent decommissioning strategy would be required together with full EIA prior to decommissioning;
- Decommissioning activities could also include demolition or dismantling of any built infrastructure, which could result in noise and vibration disturbance, as well as visual disturbance. This could also involve excavation and disturbance to the seabed, with similar effects to those recognised under 'construction impacts';



- There is also likely to be an increase in vehicle movements during decommissioning. Decommissioning nuclear energy infrastructure will likely result in an increase in long-distance vehicle movements as well as increased vehicles in and around the site, due to the need to transport fuel elements to a nuclear waste management facility. See 'vehicle and personnel movements' for likely effects;
- Decommissioning nuclear energy infrastructure may take longer than other types of energy infrastructure, due to the need to defuel the site and treat and remove other radioactive waste. This may include construction of a Safestore facility for the reactor building (see 'construction activities');
- Following decommissioning, the site may be restored, presenting an opportunity for habitat creation and thus the enhancement of nature conservation value. The early stages of restoration may have similar effects to construction activities, due to the need for excavations, presence of plant on site and vehicle movements to and from the site;
- Restoration could include:
  - Remediation of contaminated land;
  - Planting and seeding;
  - Fencing (this could be temporary or permanent, depending on the end use);
  - Increased human presence on site.



**Atkins Limited**

Nova North  
11 Bressenden Place  
Westminster  
London  
SW1E 5BY

[ecology@atkinsglobal.com](mailto:ecology@atkinsglobal.com)

© Atkins Limited except where stated otherwise