Habitats Regulations Assessment of the Energy National Policy Statements Review

Main Report

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Purpose of this report

BEIS 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)[1] (collectively referred to throughout this document as the 'Habitats Regulations') an 'Appropriate Assessment' is required to be undertaken on proposed plans or projects which are not necessary for the management of the European Site but which are likely to have a significant effect on one or more European Sites either individually, or in combination with other plans or projects. These sites include:

- Special Areas of Conservation (SACs)[2], 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.

[1] 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 still referred to as European Sites.

[2] Includes candidate SACs (cSAC) and Sites of Community Importance (SCI).

The National Planning Policy Framework (NPPF)[3] states the following should also be given the same protection:

- Listed or proposed Ramsar sites (wetland sites of international importance, as designated under the Ramsar Convention 1971);
- Potential SPAs (pSPA);
- Possible SACs (pSAC); and,
- Any site identified, or required, as compensatory measures for adverse effects on European Sites, pSPAs, pSACs and listed or proposed Ramsar sites.

All the above sites are hereafter referred to as European Sites. The Guidelines on the Assessment of Transboundary Impacts of Energy Developments on Natura 2000 Sites Outside the UK (2015)[4], as referenced in The Planning Inspectorate Advice Notes Ten[5] and Twelve[6], 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 European 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. The types of energy technology and infrastructure that could come forward under the NPSs may lead to adverse effects on the integrity of one or more European Sites. However, as the exact location of infrastructure cannot be known until specific proposals come forward, it is not possible to identify specific effects on specific European Sites. As such, in line with the precautionary principle, adverse effects on the integrity of European Sites as a result of the NPSs cannot be ruled out. Section 6 of this document explains why the Government considers that EN-1 to EN-5 are, nevertheless, justified by imperative reasons of overriding public interest ('IROPI'), while noting that its conclusions 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. Where projects may result in adverse impacts on the integrity of one or more European Sites, and meet the tests for IROPI, sufficient measures must be implemented to avoid, mitigate and, where avoidance and mitigation are not possible, compensate for the adverse impacts arising from the development.

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[3] Ministry of Housing, Communities and Local Government (2019) National Planning Policy Framework (NPPF). Paragraph 176.

[4] 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

[5] 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

[6] 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[7], 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[8] 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.

1.2. 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

[7] https://questions-statements.parliament.uk/written-statements/detail/2017-12-07/HCWS321
[8] Subject to the transitional arrangements set out at section 1.6 below.

the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended)[9] (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 European 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.

This approach takes into account recent European and UK case law that applies to European 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[10]. 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.

1.2.1. 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:

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[9] 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 European Sites.

[10] 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].

“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 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 European Sites, with any such measures being considered at the Appropriate Assessment stage as relevant.

1.2.2. 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 European 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 European Sites, but which may be important in supporting the ecological processes of the qualifying features, will also be taken into account.

1.2.3. 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 European Sites.

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.

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 a European 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 European 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), known together as the Habitats Regulations. In addition, it is a matter of UK Government policy[11] 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 European Sites. Furthermore, sites identified, or required, as compensatory measures for adverse effects on European Sites are also included. The Guidelines on the Assessment of Transboundary Impacts of Energy Developments on Natura 2000 Sites Outside the UK (2015)[12], as referenced in The Planning Inspectorate Advice Notes Ten[13] and Twelve[14], 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 European 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 a European Site may be important ecologically in supporting the populations for which the European Site has been designated

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[11] Ministry of Housing, Communities and Local Government (2019) National Planning Policy Framework (NPPF). Paragraph 176.

[12] 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

[13] 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

[14] 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/

or classified, such that they are ‘functionally linked’ and should be taken into account in a HRA[15].

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 a European 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,

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 European 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 European 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 a European 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 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.

[15] Tyldesley, D. and Chapman, C., (2013) The Habitats Regulations Assessment Handbook, March 2021 edition UK: DTA Publications Limited.

2.2. Habitats Regulations Assessment Process Overview

It has become generally accepted that the requirements of Habitats Regulations Assessment process comprise four stages[16] [17] [18]:

- **Stage One: Screening -** the process that identifies the potential for likely effects upon a European 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 European Site of the project or plan, either alone or in combination with other projects or plans, in respect of the European 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 effect on 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 impacts on the integrity of the European 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.

[16] 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.
[17] Guidance on the use of Habitats Regulations Assessment - https://www.gov.uk/guidance/appropriate-assessment.
[18] Tyldesley, D. and Chapman, C., (2013) The Habitats Regulations Assessment Handbook, March 2021 edition UK: DTA Publications Limited.

3. HRA Screening

3.1. Scoping European Sites for Screening

Prior to screening it is necessary to identify all European 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 Secretary of State 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 European 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 over 656 SACs, over 284 SPAs and approximately 149 Ramsar sites designated across terrestrial and marine environments[19].

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 European Sites in Northern Ireland and other countries may be affected (transboundary effects). This is particularly 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, either within their natural range or during migration. Therefore, such species can potentially be affected outside the boundary of the European Site of which they are a qualifying feature. Transboundary effects may also affect qualifying species within European Sites, where these lie close to new development or where the development is expected to have long-ranging impacts. This includes sites close to the boundary of the Renewable Energy Zone, cross-boundary pipelines or sites in proximity to new energy development, particularly coastal sites. This could include European 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[20] 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 European 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 European Site;
- Step 3: Identify the potential effects on the European Site both alone and in combination with other plans and projects; and,
- Step 4: Assess the significance of any effects on European Sites.

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[19] https://jncc.gov.uk/

[20] European Commission (2001) Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.

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 a European 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[21], irrespective of the normal English meaning of 'likely', in this statutory context a 'likely significant effect' is a 'possible significant effect', 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'[22].

The Waddenzee judgement[23] 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 European Sites are not taken account of during screening. This is consistent with European case law[24].

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

The NPSs EN-1 to EN-5 are not directly connected with or necessary to the management of any European Sites. As such, it is necessary to undertake screening to determine whether the proposals are likely to have a LSE on any European 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 European 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 Secretary of State. 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 50MW capacity in England and 350MW capacity in Wales, although this varies by technology.

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

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[21] Waddenzee judgement (7th September 2004) Case C127/02
[22] Tyldesley, D. and Chapman, C., (2013) The Habitats Regulations Assessment Handbook, March 2021 edition UK: DTA Publications Limited.
[23] Waddenzee judgement (7th September 2004) Case C127/02
[24] People over Wind v Coillte Teoranta (12th April 2018) Case C-323/17

impacts that could occur and mitigation measures relevant to all types of energy infrastructure. EN-1 states that there is a need for a wide range of energy generating technologies in order to meet demand and provide flexibility. This includes the following:

- Offshore Wind (including floating wind);
- Solar photovoltaics (PV);
- Tidal Stream;
- 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;
- Clean hydrogen; and
- Nuclear.

EN-1 is clear that new coal or large-scale oil-fired electricity generation are no longer needed and the government is seeking 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 clarity, 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;
- Liquified 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.

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 3.6.1 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. National-level plans that have potential to lead to in-combination effects with the NPSs have been identified and listed in Table 3-3. Table 3-3 also lists the other types of plan and project that have potential for in-combination effects with development of energy infrastructure, although the relevant plans depend on the location of any infrastructure coming forward. For example, not every local plan will be relevant to every energy project – it is likely that only the local plan for the area the project is located in, and possibly the local plans of the surrounding authorities, will be relevant.

3.5. Step 3: Identify the potential effects on the European Site both alone and in combination with other plans and 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 European Sites.

In line with current best 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 European Sites across the UK and more widely across Europe (transboundary effects), 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 European Sites are set out in Table 3-1. 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 3-1 notes which NPS sets out detail for each technology (note that all are also included in EN-1, as it is an overarching document). 7.Appendix A 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 European Sites, species and habitats that will be affected) can then be identified at the project level. These receptors could include European sites within the UK or beyond, if transboundary effects are considered likely. The technologies or effects identified in Table 3-1 may only affect certain European 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 European 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 European Sites, as well as onshore European Sites. Coastal and marine energy infrastructure may also be more likely to affect European Sites in other countries (transboundary effects), 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 transboundary 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 European Sites due to proximity or if they are linked, for example by a watercourse. Furthermore, many European Sites with highly mobile species such as birds or bats, can have functionally linked land or habitat connectivity outside the European Site that is important to the population and necessary for its survival. Similarly, transboundary effects are not limited to coastal and marine sites and are particularly likely to occur if the European 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. In addition, it is noted that oil and gas pipelines may cross from one country to another and therefore transboundary effects will need to be considered.

Table 3-1: 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 Impacts / 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 Combustion of materials Water abstraction and discharge Changes to drainage Decommissioning and restoration activities	**Construction / decommissioning:** Habitat / species loss and / or fragmentation Noise pollution and vibration Changes in hydrology / drainage **Operation:** Air pollution Noise pollution and vibration Light pollution Changes in water quality / temperature Changes in hydrology / drainage Introduction of invasive non-native species
EN-1: Nuclear	Radioactive waste would be transported and stored off-site. 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	Construction activities Vehicle and personnel movements Physical presence of site Water abstraction and discharge Changes to drainage Decommissioning and restoration activities	**Construction / decommissioning:** Habitat / species loss and / or fragmentation Noise pollution and vibration Introduction of invasive non-native species Changes in hydrology / drainage **Operation:**

Type of energy infrastructure development	Assumptions	Possible Activities (construction, operation and decommissioning)	Possible Impacts / Likely Significant Effects
	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. It is assumed that disposal and storage of radioactive waste will be undertaken off-site. Such facilities would be an NSIP in their own right and be subject to a separate HRA process.		Air pollution Noise pollution and vibration Light pollution Land contamination Change in water quality / temperature Changes in water quantity / flow / drainage Impingement & entrainment of fish Introduction of invasive non-native species Coastal change
EN-1: Carbon Capture and Storage (CCS)	Carbon capture would be part of a power station, although retrofitting carbon capture technologies may	Construction activities Vehicle and personnel movements Physical presence of site (including storage sites) Water abstraction and discharge Changes to drainage	**Construction / decommissioning:** Habitat / species loss and / or fragmentation Noise pollution and vibration Introduction of invasive non-native species Changes in water quantity / flow / drainage **Operation:** Noise pollution and vibration

Type of energy infrastructure development	Assumptions	Possible Activities (construction, operation and decommissioning)	Possible Impacts / Likely Significant Effects
	require additional land take[25]. Transport of carbon would be by pipeline or ship. Captured carbon will be stored offshore.		Change in water quality / temperature Land contamination Impingement & entrainment of fish
EN-2: Natural Gas	>50 MW capacity in England and >350 MW capacity in Wales >300 MW – requires Carbon Capture Readiness (CCR) (note that a separate consultation on proposals for Decarbonisation Readiness may alter this in future) Access to water for cooling and possibly combined cycle gas turbines	Construction activities Vehicle and personnel movements Physical presence of site Combustion of materials Water abstraction and discharge Changes to drainage Decommissioning and restoration activities	**Construction / decommissioning:** Habitat / species loss and /or fragmentation Noise pollution and vibration Introduction of invasive non-native species Changes in hydrology / drainage **Operation:** Air pollution Noise pollution and vibration Light pollution Land contamination

[25] 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 Impacts / Likely Significant Effects
			Change in water quality / temperature Changes in water quantity / flow / drainage Impingement & entrainment of fish Climate change effects on habitats and species Introduction of invasive non-native species
EN-3: Offshore Wind (including floating wind)	>100MW in England and >350MW in Wales Requires Crown Estate lease within 12 nm from coast 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.	Construction activities Physical presence of site Decommissioning activities	**Construction / decommissioning:** Habitat / species loss / fragmentation Noise pollution and vibration Disturbance to marine species **Operation:** Changes to electromagnetic fields Bird strike Disturbance to marine species Change in water quality Introduction of invasive non-native species Changes to marine processes
EN-3: Solar PV	>50 MW in England >350 MW in Wales	Construction activities Physical presence of site Decommissioning and restoration activities	**Construction / decommissioning:** Noise pollution and vibration Habitat / species loss and / or fragmentation Changes in water quantity / flow / drainage

Type of energy infrastructure development	Assumptions	Possible Activities (construction, operation and decommissioning)	Possible Impacts / Likely Significant Effects
			Introduction of invasive non-native species **Operation:** Habitat / species loss and / or fragmentation Changes in hydrology / drainage established in construction phase. Light pollution, depending on site security measures.
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	**Construction / decommissioning:** Habitat / species loss and / or fragmentation Changes in water quantity / flow / drainage Introduction of invasive non-native species Noise pollution and vibration Changes in water quality **Operation:** Noise pollution and vibration Impingement & entrainment of fish Changes in water quality / temperature
EN-3: Tidal stream	>100 MW in England> 350 MW in Wales	Construction activities Physical presence of site	**Construction / decommissioning:** Habitat / species loss and / or fragmentation

Type of energy infrastructure development	Assumptions	Possible Activities (construction, operation and decommissioning)	Possible Impacts / Likely Significant Effects
		Decommissioning and restoration activities	Introduction of invasive non-native species Noise pollution and vibration Disturbance to marine species **Operation:** Coastal change Collision of marine species with turbines Noise pollution and vibration Changes to electromagnetic fields Disturbance to marine species (including seabirds) Introduction of invasive non-native species
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	**Construction / decommissioning:** Habitat / species loss and / or fragmentation Introduction of invasive non-native species Noise pollution and vibration Changes in water quantity / flow / drainage **Operation:** Air pollution Noise pollution and vibration

Type of energy infrastructure development	Assumptions	Possible Activities (construction, operation and decommissioning)	Possible Impacts / Likely Significant Effects
			Light pollution Changes in water quality / temperature
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 Water abstraction and discharge Changes to drainage Decommissioning and restoration activities	**Construction / decommissioning:** Habitat / species loss and / or fragmentation Changes in water quantity / flow / drainage Climate change effects on habitats and species Noise pollution and vibration **Operation:** Air pollution Noise pollution and vibration Light pollution Change in water quality / temperature Introduction of invasive non-native species
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	**Construction / decommissioning:** Habitat / species loss and / or fragmentation Noise pollution and vibration Introduction of invasive non-native species Changes in water quantity / flow / drainage Land contamination

Type of energy infrastructure development	Assumptions	Possible Activities (construction, operation and decommissioning)	Possible Impacts / Likely Significant Effects
			Operation: Change in water quality Coastal change Air pollution Climate change effects on habitats and species
EN-5: Electricity networks	Connecting existing and new power stations to areas of negative charge	Construction activities Physical presence of site	**Construction / decommissioning:** Habitat / species loss and / or fragmentation Introduction of invasive non-native species Noise pollution and vibration Changes in water quantity / flow / drainage **Operation:** Bird / bat strike

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

LSEs will occur if development undermines the conservation objectives of a European Site. Conservation objectives for European 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 European 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 European sites in Wales often include factors affecting qualifying features to be under control.

The conservation objectives should be read in conjunction with the Supplementary Advice on Conservation Objectives or Regulation 37 Document[26], where this is available for a European 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 European Sites, as set out in Table 3-1. As such, it is possible that the NPSs could lead to likely significant effects on European Sites.

Table 3-2 draws on the potential effects identified in the final column of Table 3-1 and sets out the types of qualifying feature that are likely to be sensitive to these effects and the typical conservation objectives of European Sites that could be undermined by such effects. The wording of the typical conservation objectives for European Sites in England has been

[26] Regulation 37 Documents are produced in Wales under Regulation 37 (3) of The Conservation of Habitats and Species Regulations 2017, 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. In England, equivalent information in the 'Conservation Objectives and Advice on Operations' document.

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.

Table 3-2: Likely significant effects that could arise as a result of development coming forward under the NPSs

Type of likely significant effect	Type of qualifying feature that could be significantly affected	Conservation objectives that could be undermined
Air pollution	Nutrient-sensitive habitats (including soils and water) and plants	• 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.
Noise pollution and vibration	Bird species Mammal species Fish species	• Maintain or restore the populations of qualifying species. • Maintain or restore the distribution of qualifying species within the site.
Light pollution	Bat species Nocturnal bird and insect species	• Maintain or restore the populations of qualifying species. • Maintain or restore the distribution of qualifying species within the site.
Change in water quality / temperature	Freshwater habitats (such as rivers and lakes) Marine habitats Wetland habitats (including groundwater dependent terrestrial ecosystems) Coastal habitats (saltmarsh, sand dunes) Aquatic species (freshwater, brackish and marine)	• 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.
Changes in water quantity / flow / drainage	Freshwater habitats Marine habitats Wetland habitats	• Maintain or restore the extent and distribution of qualifying habitats and habitats of qualifying species.

Type of likely significant effect	Type of qualifying feature that could be significantly affected	Conservation objectives that could be undermined
	Aquatic species (freshwater, brackish and marine)	• 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.
Land contamination	Terrestrial habitats and species Wetland habitats and 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.
Habitat loss / fragmentation	All habitats and species	• Maintain or restore the extent and distribution of qualifying habitats and habitats of qualifying species.
Impingement and entrainment of fish	Fish species	• Maintain or restore the distribution of qualifying species within the site.
Coastal change	Coastal habitats Fish species Seabird species Marine mammals	• 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 distribution of qualifying species within the site.
Collision of marine species with turbines	Fish species Marine mammals Other marine species	• Maintain or restore the populations of qualifying species.

Type of likely significant effect	Type of qualifying feature that could be significantly affected	Conservation objectives that could be undermined
Bird / bat strike	Bird species Bat species	• Maintain or restore the populations of qualifying species.
Disturbance to marine species	Marine species	• Maintain or restore the populations of qualifying species. • Maintain or restore the distribution of qualifying species within the site.
Climate change effects on habitats and species	All habitats and species	• 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.
Changes to electromagnetic fields	Marine species	• Maintain or restore the populations of qualifying species. • Maintain or restore the distribution of qualifying species within the site.
Introduction of invasive non-native species	All habitats and 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 distribution of qualifying species within the site. • Maintain or restore the populations of qualifying species.

3.6.1. In-combination assessment

The potential for LSE on European 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 and projects can be taken forward to appropriate assessment. If, however, there is an effect, but it is not considered to have an LSE on a

European 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 arising from the NPS, may, in-combination with effects from another plan or project, have an LSE on the European 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.

Effects on different qualifying features are not likely to be cumulative effects.

Where it can be demonstrated that projects will have no impact, i.e. 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 a European Site.

Due to the strategic and high-level nature of the NPSs, it is not possible to screen out European 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 3-3. The HRA Handbook[27] 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.

The types of effects that could occur in-combination include:

- Noise, vibration and light disturbance;
- Air, land and water pollution;
- Changes to water quantity / flow and coastal change;
- Species injury and mortality; and
- Changes in habitat extent, composition and structure.

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 and becoming significant effects. Any project or plan being screened for potential effects on the same European 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.

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

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.

Table 3-3: Plans and projects with potential for in-combination effects with the NPSs

Typical Plans and Projects
Energy • Nuclear Power Generation NPS (EN-6) and the Written Ministerial Statement of 7 December 2017 • UK National Energy and Climate Plan • The Ten Point Plan for a Green Industrial Revolution
Marine • Marine Policy Statement • Marine Plans • Marine Strategy
Development • National Planning Policy Framework • National Planning Framework (Scotland) • Wales Spatial Plan • Local Development Plans • Local Development Plans (Wales)
Minerals and waste • NPS for Hazardous Waste • NPS for Geological Disposal Infrastructure • National Planning Policy for Waste • Local Waste and Mineral Plans
Water • NPS for Waste Water • NPS for Water Resources • River Basin Management Plans • Water Resource Management Plans • Catchment Abstraction Management Strategies • Shoreline Management Plans
Transport • NPS for Ports • NPS for National Networks • Airports NPS • Welsh Transport Strategy • Transport Investment Strategy

Typical Plans and Projects
• Local Transport Plans
Infrastructure • National Infrastructure Plan • Nationally Significant Infrastructure Projects and associated development(s) which are either operating, consented or in planning • Other infrastructure projects which are either operating, consented or in planning
Environment and climate • 25 Year Environment Plan • Prosperity for all – a climate conscious Wales

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 European Sites. As the NPSs are high level and do not identify specific sites for energy development, it is not possible to determine whether the resulting energy projects will have any effects on European Sites at this stage, or which European Sites will be affected. However, the NPSs could lead to development of a nature and scale that could have likely significant effects on European Sites either alone or in-combination with other plans and projects. As such, in line with the precautionary principle, the NPSs have been screened in for appropriate assessment.

4. Appropriate Assessment

4.1. Approach to Appropriate Assessment

The screening stage was unable to conclude that there would be no likely significant effects arising from the NPSs either alone or in-combination. Potential effects relating to the following were identified (see Table 3.1):

- Air pollution;
- Noise pollution and vibration;
- Light pollution;
- Change in water quality / temperature (fresh and marine);
- Changes in hydrology / drainage;
- Land contamination;
- Habitat / species loss and / or fragmentation;
- Impingement and entrainment of fish;
- Coastal change;
- Collision of marine species with turbines;
- Bird / bat strike;
- Climate change effects on habitats and species;
- Changes to electromagnetic fields;
- Introduction of invasive non-native species;
- Changes to marine processes; and
- Disturbance to marine species.

These effects could occur on any European Sites within England and Wales, or further afield. Effects further afield are most likely for offshore wind, development likely to occur at the coast (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 European 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[28] for a European 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

[28] Such as the relevant Supplementary Advice on Conservation Objectives or Regulation 37 document.

objectives; however, as they usually 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 European Sites

The purpose of the appropriate assessment stage is to identify whether the plan would have adverse impacts on the integrity of the affected European 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"[29]. European Commission guidance on the provisions of Article 6 (and therefore relevant to Regulation 105 of the Habitat 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[30].

The effects set out in Table 3-2 could result in adverse effects on the integrity of European 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 European 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. As a consequence, it has not been possible to determine the effects that EN-1 to EN-5 might have on the integrity of one or more European Site(s), with respect to a specific European Site's conservation objectives.

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 3-3. 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.

4.4. 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.

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[29] Natural England (2019) MPA Conservation Advice Glossary of Terms. Available here: https://designatedsites.naturalengland.org.uk/pdfs/MPA_CAGlossary_March2019.pdf

[30] European Commission (2018) Managing Natura 2000 Sites. The Provision of Article 6 of the 'Habitats' Directive 92/43/EEC.

The NPSs go some way to minimising the impacts that could lead to negative effects on European Sites. For example, EN-1 states that 'development should at the very least aim to avoid significant harm to biodiversity and geological conservation interests' and 'In taking decisions, the Secretary of State should ensure that appropriate weight is attached to designated sites of international, national, and local importance'. The NPSs also set out measures to mitigate the potential impacts of development identified. 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 whether 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.

Possible mitigation measures could be applied at the project HRA level and may be sufficient to avoid or mitigate any adverse effect on European 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. Generic mitigation measures that could be implemented to avoid or reduce adverse effects on the integrity of European Sites as a result of development that could be permitted through the NPSs are listed below. Note that it may be possible to avoid effects on European 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. Any more novel measures, which are likely to have a higher level of uncertainty with regards to their effectiveness, are highlighted 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.

General avoidance and mitigation measures include:

- Alternative spatial locations, routes or scales;
- Alternative construction or operation methods;
- Alternative 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.

Examples of more specific potential mitigation measures are set out below for each type of effect that may arise:

<u>Air pollution</u>

- Ensure efficient movement of vehicles to, from and around the site, such as using delivery vehicles to remove waste from the site.
- Prioritise the use of more sustainable modes of transport for both haulage and travel to work.
- Implement construction and operational protocols to minimise dust.
- Consider use of catalytic reduction (minimises emissions of nitrous oxides).

<u>Noise pollution and vibration</u>

- Consideration of site uses with noise / vibration impacts away from sensitive receptors.
- Use of noise barriers, or bunds.
- 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.

Light pollution

- Restrict use of artificial lighting in proximity to sensitive receptors.
- Limit operating times to reduce need for artificial lighting.
- Sensitive lighting design, including low heights and cut-offs for external lights.

Change in water quality / temperature (fresh and marine)

- 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).
- Minimise water use through water efficiency, and use / re-use water where possible.
- 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).
- 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.
- Use of alternatives to water cooling in power plants (gas, biomass and energy from waste), such as dry / air cooling or closed-cycle cooling.
- For offshore construction and maintenance, marine vessels should only carry small quantities of fuel and other potential pollutants and should be well maintained and frequently inspected to minimise the risk of any spills.

Changes in hydrology / drainage

- Minimise water use through water efficiency, and re-use water where possible.
- Implement suitable drainage, such as sustainable drainage systems (SuDS), on site to manage flooding.

Land contamination

- Implementing pollution control procedures, such as designated areas for storage and unloading, with measures to contain any spills to these areas.
- Emergency response procedures should be in place in the event that an incident does occur, and relevant equipment should be kept on-site.

Habitat loss / fragmentation

- Configure site so valuable habitats can be retained, if possible.
- 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 a European 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).
- 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).

Impingement and entrainment of fish

- Design development so that it does not obstruct any watercourses (note that this will not be possible for some technologies).
- Install fish guards on any water abstraction equipment (this will help to prevent fish entrainment but fish could still become impinged on the guard).
- 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).

Coastal change

- Minimise physical changes to the coast, where possible.
- See mitigation above for habitat loss / fragmentation.

Collision of marine species with turbines

- Site turbines located away from known migration routes / key feeding grounds where possible.
- 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).

Bird / bat strike

- Site wind turbines and electricity lines away from migration routes, flight lines and key roosts.
- 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).
- Reduce risk of turbine collision through design modifications (this could include less standard measures with greater uncertainty as to their effectiveness).

Climate change effects on habitats and species

- 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).

- Ensure efficient movement of vehicles to, from and around the site, such as using delivery vehicles to remove waste from the site.
- Prioritise the use of more sustainable modes of transport for both haulage and travel to work.
- Implement carbon capture and storage.

Changes to electromagnetic fields

- Ensure cabling is situated at sufficient depth and well-insulated (including use of armoured cables).

Introduction of invasive non-native species

- Implement a biosecurity plan.
- Use locally / nationally sourced materials, where possible.

4.5. Summary of Appropriate Assessment

Given the potential for the NPSs to result in adverse effects on European Sites, and the fact that the NPSs do not specify particular projects or locations for development, it is not possible to rule out adverse effects on the integrity of European Sites. There is potential for adverse effects on European Sites within the UK and on European Sites in other countries (transboundary effects), particularly as a result of offshore wind and coastal development. Where this is the case, the Habitats Regulations requires alternative solutions to be considered, as discussed in Chapter 5. If there are no alternative solutions and adverse effects on integrity may still occur, development may be able to proceed if imperative reasons of overriding public interest (IROPI) apply (as discussed in Chapter 6).

Due to the potential for adverse effects on European Sites in other nations (transboundary), it is considered that Ireland, France, Belgium, Germany, Denmark, Sweden and the Netherlands, as set out in the AoS, these countries should be informed of the potential for significant environmental effect from implementation of the NPS under the SEA Regulations.

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 European site or the European offshore marine site…".

Defra's guidance on the application of article 6(4)[31] states that the purpose of the alternative solutions test is to determine whether there are any other feasible ways to deliver the overall objective of the plan [or project], which will be less damaging to the integrity of the European Site(s) affected. Therefore, the absence of feasible alternative solutions must be demonstrated before the assessment can move on to the next stage.

The requirement is for 'alternative solutions', not merely 'alternatives' to be considered. According to The Habitat Regulations Assessment Handbook[32], 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 a European 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 European 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 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 3-1 and Table 3-2 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 'problem'(a specific adverse impact or effect on a European site), as such risks to the integrity of the European Sites have been identified at a high level and are largely precautionary. Detailed alternatives to particular developments can only be considered

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[31] 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.

[32] Tyldesley, D. and Chapman, C., (2013) The Habitats Regulations Assessment Handbook, March 2021 edition UK: DTA Publications Limited.

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. Also the existing NPS would at some point become out of date and have to be withdrawn.

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 protect 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 (EN-1) and Alternatives considered

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.
Alternative 4 (A4)	As for EN-1 but with even stricter protection of the marine environment.

5.5. Step 4: Alternative solutions with a lesser effect on the integrity of the European 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 3-1 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 European 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.

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). While the types of effects from nuclear power plants are similar to those of other power plants, the magnitude of certain effects is likely to be greater. For example, nuclear power plants generally have a substantially greater water use than gas, biomass or waste-fired power plants, and for this reason tend to be located on the coast. As such, the absence of nuclear in A1 may result in lesser impacts related to water abstraction and discharge, and coastal change, than EN-1.

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 European 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 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 European 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.

While the types of effects from nuclear power plants are similar to those of other power plants, the magnitude of certain effects is likely to be greater. For example, nuclear power plants generally have a substantially greater water use than gas, biomass or waste-fired power plants, and for this reason tend to be located on the coast. As such, the absence of nuclear in A3 may result in lesser impacts related to water abstraction and discharge, and coastal change, than EN-1.

5.5.4. A4: As for EN-1 but with even stricter protection of the marine environment

As with EN-1, Alternative A4 combines use of all technologies, but it assumes that offshore renewables cannot deploy to their fullest extent due to even stricter protection of the marine environment. As such, A4 could result in increased carbon emissions than other alternatives, with increased associated effects on habitats and species. However, this is not necessarily the case, as the remaining energy demands may still be met by zero and low carbon technologies.

In limiting development offshore, this alternative would likely result in less disturbance to marine species. Stricter protection of the marine environment could also reduce coastal development and therefore further avoid adverse effects on the integrity of European Sites with coastal and marine features, both within the UK and in other countries (transboundary effects). This could include reduced coastal and marine change, changes to electromagnetic fields, marine water quality and disturbance compared to EN-1. However, offshore renewables would still be permitted, therefore, some effects could still occur.

Whilst the marine environment would have greater protection, this option would likely lead to increased onshore development. As such, terrestrial and freshwater European Sites may be more likely to be affected by a range of impacts, when compared to EN-1.

5.5.5. Conclusions regarding alternative solutions

Each type of technology has potential to result in likely significant effects and adverse effects on integrity of European Sites. As with the revised EN-1, none of the alternatives set out specific locations 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 European 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 European 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 European Sites).

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6. Imperative Reasons of Overriding Public Interest (IROPI)

6.1. Approach to considering IROPI

The Appropriate Assessment (Chapter 4) concluded that the potential for adverse effects on the integrity of European Sites, either from EN-1 to EN-5 alone, or in combination with other plans, could not be ruled out. The assessment noted avoidance and mitigation measures but, in the absence of project level detail, it has not been able to conclude beyond reasonable scientific doubt that the identified potential adverse effects on the integrity of the European Sites will be effectively avoided or mitigated.

If it can be demonstrated that there are no feasible alternative solutions, and where adverse impacts remain upon a European 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, without having the potential for adverse effects on the integrity of any European Site.

This stage considers whether the plan or project is[33]:

- **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.

Whilst EN-1 states that ‘development should at the very least aim to avoid significant harm to biodiversity and geological conservation interests’, although also acknowledges that it may not be possible to avoid significant harm, in which case appropriate compensation measures should be sought.

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 European Site(s) affected.

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 by the principle 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.

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[33] DEFRA (2012) Habitats Directive: guidance on the application of article 6(4) Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures

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[34]. CCA2008 is underpinned by further legislation and policy measures. Many of these have been consolidated in the UK Low Carbon Transition Plan ('LCTP')[35], and UK Clean Energy Growth Strategy[36]. 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 MtCO2e 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'[37]. 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.

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[34] 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

[35] HM Government. *The UK Low Carbon Transition Plan*. HMSO, 2009. Five Point Plan.

[36] BEIS. *The Clean Growth Strategy*. HMG, 2017 (Corrected 2018).

[37] Committee on Climate Change. *Net Zero - The UK's contribution to stopping global warming*. 2019.

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[38].

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[39].

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[40].

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)[41].

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[42].

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

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[38] NPS EN-1 Para 3.3.21
[39] NPS EN-1 Para 3.3.24
[40] NPS EN-1 Para 3.3.30
[41] NPS EN-1 Para 3.3.32
[42] NPS EN-1 Para 3.3.39

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[43].

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[44].

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[45].

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[46]. Innovation funding will be provided by Government to support the development and deployment of low carbon hydrogen storage[47].

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[48].

All the technologies mentioned above are urgently needed to meet the Government's energy objectives.

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 Secretary of State should consider urgently needed infrastructure in a timely fashion and

[43] NPS EN-1 Para 3.3.41
[44] NPS EN-1 Para 2.3.8
[45] NPS EN-1 Para 3.3.46
[46] NPS EN-1 Para 3.3.38
[47] NPS EN-1 Para 3.3.27
[48] NPS EN-1 Section 3.5

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 Secretary of State 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 Secretary of State should act in accordance with when considering applications for energy infrastructure. Without having to consider the detail of the need for each case, the Secretary of State 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 European 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[49].

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

[49] 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.

scenarios involve around a doubling of electricity demand, with all power produced from low-carbon sources (compared to 50% today)'[50].

The future characteristics of the UK's electricity demands are described through of 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')[51]. 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.

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[52] to adding new generation capacity: placing emphasis on Renewables, Abated Natural Gas, Hydrogen and Energy Storage Technologies; placing emphasis on Renewables, Abated Natural Gas, Hydrogen, Energy Storage and Nuclear Technologies; placing emphasis on Renewables, Abated and Unabated 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

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[50] Committee on Climate Change. *Net Zero - The UK's contribution to stopping global warming*. 2019.
[51] National Grid. *Future Energy Scenarios*. National Grid, 2020. https://www.nationalgrideso.com/future-energy/future-energy-scenarios/fes-2020-documents. Accessed 16/05/2021.
[52] NPS EN-1 Para 1.7.6 – 1.7.12

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.

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 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 a European site even after alternatives and mitigation have been considered, may be refused if IROPI does not apply.

6.3. Compensation

In accordance with guidance produced by Defra (2021[53]), 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:

- How technically feasible and effective the measures will be - based on scientific evidence and previous examples?
- How financially viable the measures are - the proposer must have enough funds to cover costs?
- How the compensation would be carried out, including how it'll be managed and monitored over the time that's needed, and how it's been secured?
- Distance from the affected site - compensation closer to the site is generally preferred, unless measures further away will benefit the network of European sites as a whole?

How long the compensatory measures will take to reach the required quality and amount of habitat?The appropriate authority must secure the necessary compensatory measures to ensure that the coherence of the national site network of European Sites is protected before consent is given for a project to proceed. The mechanisms for guaranteeing compensation will be through the consenting process for individual projects.

Without defined impacts, it is not possible to determine what compensatory measures will be required and to what extent they need to be applied. Any compensation is therefore specific to each project and needs to be fully explored and designed at the project-level HRA.

Compensation could include:

[53] Habitats regulations assessments: protecting a European site - GOV.UK (www.gov.uk)

- Substantial enhancement of degraded habitat that will support qualifying features affected.
- Creation of comparable habitat elsewhere that will support qualifying features affected.
- Enhancing connectivity of habitat that supports qualifying features affected.
- Species recovery and reinforcement, including reinforcement of prey species.
- Incentives for certain economic activities that sustain key ecological functions (such as coppicing).
- Reduction of (other) threats.

Compensatory measures will need to demonstrate that they are sufficient to offset the harm caused by development. They should limit harm to the European Site, for example, 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.

Compensatory habitat will need to be treated in the same way, with the same importance as European Sites, in line with the NPPF[54], and will be designated as part of the national site network or an extension to the European Site.

In addition, considerations should be made to the Marine Protection Area Compensation Guidance note, currently out for consultation, which seeks views on the Best practice guidance for developing compensatory measures in relation to Marine Protected Areas, a future approach to strategic compensation, and how net gain and compensation can work together to deliver the best outcomes for the marine environment[55].

[54] Ministry of Housing, Communities and Local Government (2019) National Planning Policy Framework (NPPF). Paragraph 176.
[55] MPA compensation guidance consultation - Defra - Citizen Space

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 European Sites as a result of development coming forward under the NPSs. It was not possible to screen out likely significant effects at the screening stage, nor adverse effects on integrity at the appropriate assessment stage.

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[56]. In the Opinion of Advocate General Kokott[57] 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".

A number of alternatives to the NPSs were considered, but none of the reasonable alternatives would be able to avoid the potential for adverse effects on integrity on European Sites.

The Government has concluded that, whilst energy development should seek to avoid significant adverse effects on European Sites, there is a case for IROPI. This means that the NPSs can be designated, even if they could result in adverse effects on the integrity of European Sites. Each project proposal coming forward under the NPSs must be subject to the full HRA process. Having established IROPI at the plan stage does not mean that IROPI automatically applies to all possible projects that could come forward as a result of the NPSs. Where a project is found to have adverse effects on the integrity of a European Site after avoidance, mitigation and consideration of alternatives, and IROPI applies, sufficient, project-specific compensatory measures must be provided.

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[56] 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

[57] European Commission v UK (2005) ECR I-9017 Case C-6/04

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

A.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 a European 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_x), sulphur oxides (SO_x) 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 European 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’.

A.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 European 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 European 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.

A.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.

A.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_x, SO_x, heavy metals (depending on source material) and particulates. These can lead to

nutrient enrichment and eutrophication at European 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.

A.5. Vehicle and personnel movements

- The transport of materials, goods and personnel to and from a development, nuclear waste disposal and 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 NOx, SOx and particulates). These can lead to nutrient enrichment and eutrophication at European 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.

A.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 between 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.
- Liquified 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.

A.7. Physical presence of site: onshore

- Direct land take (development of the site itself, construction 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.

A.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 increase 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.

Appendix B. Consultation comments

A methodology statement for the HRA of the Energy NPS review was published in April 2021. This report is based on the method 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 below.

Consultee	Comment	Response / how this has been addressed
Crown Estate	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.	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.
Crown Estate	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.	The purpose of the HRA report is set out in Section 1.2 of this document. The HRA will be sent to BEIS 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 Offshore Energy SEA 4 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

Consultee	Comment	Response / how this has been addressed
		schemes will need to consider this HRA for the NPSs.
Crown Estate	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.	Sections 3.6.1 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[58] 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 3-3.
Crown Estate	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.	The purpose of the HRA report is set out in Section 1.2 of this document. The HRA will be sent to BEIS before the NPSs are finalised to allow for any changes once the information in the HRA has been considered. It is not the role of the HRA to add to the consenting / management process, but to the plan-making process by ensuring

[58] 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
		protection of internationally important nature conservation sites. 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 4.4 identifies generic potential mitigation measures, which indicate the sort of measures that could be required depending on individual projects
Crown Estate	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.	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. The HRA considers this area, as well as recognising that the NPSs could have effects beyond the plan area, including affecting European 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'.
Crown Estate	The methodology report refers to 'statutory consultation' (preface and p1). Can you please provide more details about	It is a requirement of the HRA process to consult the appropriate nature

Consultee	Comment	Response / how this has been addressed
	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.	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.
Crown Estate	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 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.	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. The HRA has identified the potential impacts of known technologies and the effects these may have on European sites (see Table 3-1 and Table 3-2). Developing project design envelopes and constraints analysis is beyond the scope of the HRA.
Crown Estate	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	The NPSs would not have a direct impact, but could have indirect impacts through allowing development of energy infrastructure. The wording regarding this

Consultee	Comment	Response / how this has been addressed
	which the NPS's could have any impact on European 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 European 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.	and the spatial component have been updated in this HRA Report for clarity.
Crown Estate	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 BEIS to provide something meaningful and workable for the energy transition and reaching net zero.	The role of the HRA is to consider whether the NPSs are likely to lead to adverse effects on the integrity of European 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.
Natural England	The methodology seems quite comprehensive and has clearly been informed by relevant references and presented within the appropriate landscape of case law.	Noted.
Natural England	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.	References to the regulations have been updated as suggested in this HRA Report.

Consultee	Comment	Response / how this has been addressed
Natural England	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 slightly different things (although they have a shared purpose). NRW has a slightly different approach to NE for example.	References to conservation objectives have been updated accordingly in this HRA Report.
Natural England	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.	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 4.4.
Natural England	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.	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

Consultee	Comment	Response / how this has been addressed
		case studies, would be a more appropriate place for this examination.
SEPA	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.	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.
Natural Resources Wales	**Legal framework** Overall, the legal framework seems clear and comprehensive setting-out how the HRA will be undertaken. We recommend the term 'European 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. 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	'European 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 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 European site, the HRA process has been followed and the HRA has concluded that the NPSs

Consultee	Comment	Response / how this has been addressed
	postponement are not clarifies. The following criteria must all be met for postponement: The higher level plan assessment cannot reasonably predict any effect on a European 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: a. It can only be undertaken at appropriate assessment, not at the screening stage; b. 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; c. 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; d. 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);	can proceed in line with the Habitats Regulations as IROPI apply.

Consultee	Comment	Response / how this has been addressed
	e. that the appropriate assessment should provide a list of the potential generic impacts from the policy; f. 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 (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; g. 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; h. 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.	
Natural Resources Wales	**Approach to Screening** The approach to screening appears generally sound, but we do have a number of specific queries.	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

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	• 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 European 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 European sites across the UK and more widely across Europe.' This statement seems reasonable, and highlights it is innapropriate 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	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 transboundary 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 A.

Consultee	Comment	Response / how this has been addressed
	superficially rule out consideration of sites when the detail is not available to justify it. 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.	
Natural Resources Wales	**Methodology** We support the precautionary approach set out in 4.1.5 following: 'A precautionary approach will be taken to scoping European 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.	Noted.
Natural Resources Wales	**Approach to Reasonable Alternatives** We have no further comments on this section.	Noted.
Natural Resources Wales	**Stage 4 – IROPI Approach** 6.2.1 states that any creation or recreation of comparable habitat will 'eventually' be designated as a European Site. In order to be considered as adequate compensation, any compensatory habitat should be designated as a European site, and must be subject to equivalent protection before that designation comes into force. 6.2.2 - the competent authority should also consider how financially viable proposed compensation is and whether the	Noted. The equivalent text has been reworded in this document for clarity.

Consultee	Comment	Response / how this has been addressed
	proposer has enough funds to cover the long term costs of the proposed compensatory measures. It should be clearly stated that compensatory measures must be secured before consent is given for a project to proceed.	
Natural Resources Wales	**Other comments** Section 7 – Preparation of NPS HRA reports • 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 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	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). Compensation is included under 'IROPI' as it is an integral part of that process.

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