UK Government

National Policy Statement for Fusion Energy Infrastructure

Habitats Regulations Assessment

Department for Energy Security and Net Zero (2026)

Contents

Introduction

National Policy Statements (NPSs) set out the government's objectives and policy for the development of nationally significant infrastructure in a particular sector and provide the framework within which the Planning Inspectorate makes recommendations to the relevant Secretary of State as to whether major infrastructure development should proceed or not. NPSs are designated under the Planning Act 2008 and apply to infrastructure that is defined as a "Nationally Significant Infrastructure Project" (NSIP) under the Planning Act or is treated as development for which Development Consent is required according to Section 35 and 35Z of the Planning Act. Their function is to state clearly how government policy applies to development consent, removing discussion of the merits of such policy from the examination process so that permitting decisions can be made on the basis of planning considerations alone.

There are currently seven NPSs relevant to energy (EN-1 to EN-7) applying in England and Wales. EN-1 acts as the overarching NPS to six technology NPSs (EN-2 Natural Gas Generating Infrastructure, EN-3 Renewable Electricity Generation, EN-4 Gas Supply Infrastructure and Gas and Oil Pipelines, EN-5 Electricity Networks Infrastructure, EN-6 new Nuclear generation over 1GW deployable by 2025 and EN-7 new Nuclear generation).

The new NPS, specifically for fusion energy infrastructure (EN-8), will give bespoke, effective, and clear guidance to the Planning Inspectorate (PINS), developers and regulators to support the examination of relevant Development Consent Order (DCO) applications.

As with the approach to energy infrastructure development set out in the other current NPSs, the fusion energy NPS (EN-8) will not have any sites proposed for development. While all fusion energy infrastructure will have some common characteristics, different technologies and designs may have different requirements such as access to water for cooling. Due to these different requirements, specifying suitable sites in draft EN-8 could lead to some sites that are suitable for some fusion technologies or designs being ruled out because they are not suitable for all. As such, and in order to provide developers with maximum flexibility when identifying potential sites, specific sites are not proposed in draft EN-8.

This NPS will remain in force in its entirety unless withdrawn or suspended in whole or in part by the Secretary of State (SoS). It will be subject to review (as a minimum every 5 years) by the SoS to ensure that it remains appropriate and may be reviewed regularly according to a statutory requirement.

What is fusion technology set out in EN-8?

Fusion has the potential to provide an abundant source of low carbon energy by replicating the process which occurs at the centre of stars and powers the sun. Light atomic nuclei, of isotopes of elements such as hydrogen, fuse together to form heavier ones, such as helium, and a large amount of energy is released.

The generation of usable energy using fusion would have several distinct advantages:

- Fuel abundance: the fuels used in fusion reactions are abundant. Deuterium is readily extracted from seawater, and tritium is produced using lithium;
- Baseload power: fusion energy does not depend on external factors such as wind or sun, making it continuously deployable at point of need;
- High fuel efficiency: fusion produces more energy per gram of fuel than any other process that could be achieved on Earth;
- Carbon-free: helium is the product of the fusion process – no carbon or other greenhouse gases are produced in the fusion reaction;
- No chain reaction: fusion is not based on a chain reaction; specific conditions of heat and pressure need to be maintained for fusion to occur. Therefore, in the event of any technical problems, a fusion facility could be immediately switched off and the process would stop itself within seconds or less;
- Shorter lived waste: fusion energy infrastructure is will not lead to the disposal of the very long lived, high level radioactive waste associated with nuclear spent fuel from a fission power plant.

What will a generating facility utilising fusion technology look like?

While experimental fusion energy technology is now well developed, the fusion energy infrastructure currently being developed are all prototypes. There is therefore no precedent on the layout and characteristics for fusion energy infrastructure. However, the general characteristics and operational requirements are known and have been used to inform this HRA.

At the heart of every fusion energy facility is the device where the fusion reactions occur. Different fusion technologies use different methods to initiate and confine these fusion reactions, and some use a combination of approaches.

The two primary methods:

- Magnetic confinement relies on powerful external magnetic fields to confine and control a superheated plasma containing the fusion reactions.
- Inertial confinement uses an energy source, for example lasers, to rapidly heat and compress a small fuel pellet to extremely high pressures and temperatures to reach fusion conditions thereby releasing a burst of fusion energy[1].

Irrespective of the method used, the fusion reactions take place in a vacuum and so all fusion energy infrastructure will include a vacuum vessel and systems to create and maintain this vacuum.

Depending on the fusion technology being used, systems are also needed to support the magnets to confine the plasma for magnetic confinement or to create the high pressures for inertial confinement (e.g. lasers).

All fusion energy infrastructure currently planned for deployment in the UK is expected to use deuterium and tritium as fusion fuels, although other options are being explored internationally.

Fusion energy infrastructure using deuterium and tritium as fusion fuels are likely to need to breed tritium fuel from the fusion reactions. This is typically done through use of a lithium breeder blanket.

Most fusion energy infrastructure will produce thermal energy and will convert this to electricity. It is expected that this will be done using standard power conversion systems such as steam generators and turbines. These power conversion systems need to be cooled, in a very similar way to other heat-generators.

There are a range of cooling system types available:

- Direct, or once-through, wet cooling systems
- Indirect, or recirculating, wet cooling systems such as natural draught towers (e.g. hyperboloid cooling towers) or low profile mechanical draught towers
- Dry cooling systems, such as dry coolers or condensers
- Hybrid cooling systems that combine recirculating wet and dry cooling elements

In addition, fusion energy infrastructure is likely to require fuel handing and maintenance systems alongside radioactive material storage and/or processing.

[1] See more detailed explanation in Department for Energy Security and Net Zero (2024) 'Consultation on a new National Policy Statement for Fusion Energy'

Figure 1 Components of fusion energy infrastructure for one type of fusion technology (magnetic confinement)

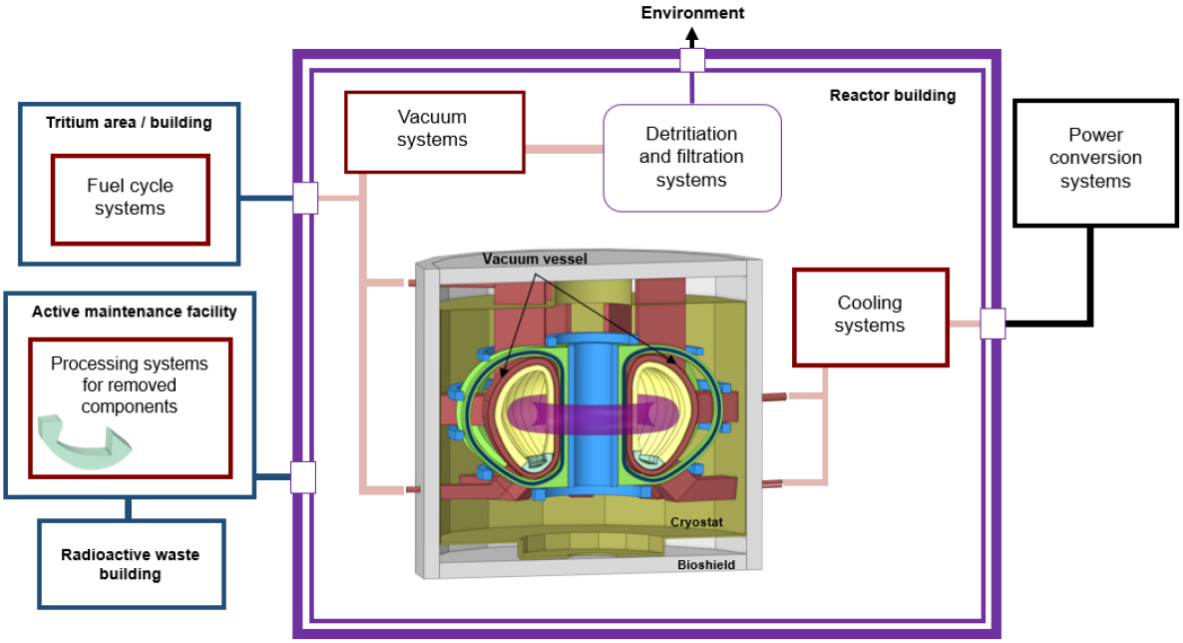

Figure 1 is provided courtesy of UKAEA, adapted with permission.

The size of the different components of fusion energy infrastructure will depend on the expected thermal/electrical capacity of the infrastructure, and the type of fusion technology that is used.

The size of the site needed for fusion energy infrastructure is not expected to be larger than the site of nuclear fission generating infrastructure of a similar expected capacity.

Figure 2 Possible layout of a fusion infrastructure site for one type of fusion technology (magnetic confinement)

Figure 2 is provided courtesy of UKAEA and EUROfusion

As can be seen in the above representation in Figure 2, a fusion energy facility would likely represent a significant development in scale. Although the size of the different components of fusion energy infrastructure will depend on the expected thermal / electrical capacity of the infrastructure, and the type of fusion technology that is used.

While it is not possible to be certain at this point, it is anticipated that the buildings and site footprint for a fusion energy infrastructure site are expected to be no larger than nuclear fission generating infrastructure of a similar expected capacity. Using this assumption of size also allows the HRA to take a precautionary approach and focus on the assessment of larger scale effects anticipated at any given site.

Purpose and background to the report

This report presents the HRA methodology and findings for the HRA of the Fusion energy NPS under the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended)[2] (collectively referred to as the 'Habitats Regulations' throughout this document).

The duty to undertake the HRA relates to the NPS as a strategic plan. Draft EN-8 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.

This draft NPS applies to England and Wales, including territorial waters (up to 12 nautical miles (NM) off the coast). This draft NPS does 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 fusion energy infrastructure development that may come forward under the designated NPS EN-8.

The function of the HRA report will be to highlight any potential risks to Habitats Sites through the text / policy approaches of the fusion generation NPS document itself. It summarises the findings for the draft NPS EN-8 and considers the applicability of in-combination effects.

This approach takes into account current guidance and relevant case law that applies to the application of the Habitats Regulations. The following pieces of case law are considered to be relevant and their implications for plan-level HRA are discussed below.

[2] 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, no fundamental change has been made to the function and implementation of the Habitats Regulations, other than amendments to keep all stages of the HRA process within UK auspices and 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, but form part of a UK national site network. In this document they are referred to as Habitats Sites.

People over Wind

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

> *"Article 6(3)… in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening 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 draft NPS could result in 'likely significant effects' on Habitats Sites, with any such measures being considered at the Appropriate Assessment stage as relevant.

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 Habitats 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 Habitats Sites, but which may be important in supporting the ecological processes of the qualifying features, will also be considered.

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 Habitats Sites.

Report structure

This section has set out a brief introduction to fusion technology and the assumptions made about it to inform the assessment, as well as the purpose of HRA. The remainder of the report is structured as follows:

- 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 Derogations (assessment of alternative solutions, discusses IROPI and compensation)
- Chapter 6 provides a conclusion to the report

The Habitats Regulations Assessment Process and Application

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 Habitats Site. These sites include Special Areas of Conservation (SACs), originally designated under the Habitats Directive (92/43/EEC), and Special Protection Areas (SPAs), originally designated under the Conservation of Wild Birds 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 within the UK.

The legislation relevant to the UK's national network of Habitats 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)[3], known together as the Habitats Regulations. The Planning and Infrastructure Act 2025 within schedule 5, modifies the Habitats Regulations to include sites designated under the 1971 Ramsar Convention for their internationally important wetlands, otherwise known as 'Ramsar sites'. Prior to this enactment, Ramsar sites were also considered as a matter of UK government policy within the National Planning Policy Framework (NPPF)[4]. The current NPPF requires Ramsar sites, both listed and proposed, and potential SPAs (pSPAs) and possible SACs (pSACs) to also be considered and afforded the same protection as sites within the national site network.

Hereafter, all the above sites are referred to as Habitats Sites. Furthermore, sites identified, or required, as compensatory measures for adverse effects on Habitats Sites are also included.

The Guidelines on the Assessment of Transboundary Impacts of Energy Developments on Natura 2000 Sites Outside the UK (2015)[5] indicates that the principles of the Habitats Regulations should be applied to any energy development where significant effects could occur for Habitats Sites outside of the UK. This is still considered to be a valid approach and, as such, the potential for transboundary effects have been considered in this HRA.

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

[3] Amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (see earlier explanation).
[4] Ministry of Housing, Communities and Local Government (2024) 'National Planning Policy Framework (NPPF)', Paragraph 194
[5] Department of Energy and Climate Change (2015) 'Guidelines on the assessment of transboundary impacts of energy developments on Natura 2000 sites outside the UK'

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 draft NPS EN-8 is not directly connected with or necessary to the management of any Habitats 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 text above, although the process is broadly the same, it will be the coherence of the UK national site network that is protected.

Should the later stages of HRA be reached (outlined in Section 2 below) and an Annex 1 priority habitat or Annex 2 priority species 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 the relevant SoS or Welsh Minister, respectively.

Habitats Regulations Assessment process overview

It is generally accepted that the Habitats Regulations Assessment process comprises three stages[6]:

- Stage One - Screening: the process that identifies the potential for likely effects upon a Habitats 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 Habitats Site of the project or plan, either alone or in combination with other projects or plans, in respect of the Habitats Site's structure and function and its conservation objectives. If adverse impacts are anticipated, potential mitigation measures to alleviate impacts should be proposed and assessed.
- Stage Three - Derogations (allow exceptions): – where a project or plan is assessed as having an adverse residual impact (or risk of this) on the integrity of a Habitats Site, it may qualify for a derogation. Three legal tests must be applied in the following order: 1) there are no feasible alternative solutions that would be less damaging or avoid damage to the Habitats Site, 2) The proposal needs to be carried out for imperative reasons of overriding public interest (IROPI), and 3) The necessary compensation measures can be secured.

[6] Department for Environment, Food and Rural Affairs, Habitats Regulations Assessment: protecting a European site (updated December 2023)

HRA screening

Scoping Habitats Sites for screening

Prior to screening it is necessary to identify all Habitats 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.

EN-8 applies to England and Wales, including territorial waters (up to 12 nautical miles off the coast). Therefore, as EN-8 has a national coverage, it must be assumed that any of the English and Welsh Habitats Sites, could be affected as development could be anywhere in those locations. In the UK, including Scotland and Northern Ireland, there are presently 658 SACs[7] and 286 SPAs[8], and 150 Ramsar sites designated across terrestrial and marine environments[9]. These are the numbers of fully designated sites. Additional proposed sites (i.e. pSPA, pSAC or pRamsar) or sites required for compensation added as a matter of UK policy, may also require assessment under HRA.

Furthermore, using the 'source-pathway-receptor' approach and considering the potential far-reaching effects from energy infrastructure developments, such as offshore windfarms or other energy generating infrastructure, it is conceivable that mobile species from Habitats Sites in Northern Ireland and other countries may be affected. This is considered to potentially be the case for marine mammals, migratory fish, seabirds and migratory birds, many of which travel long distances to utilise other habitats, move within their natural range or during migration.

Therefore, they can potentially be affected outside the boundary of the Habitats Site of which they are a qualifying feature. It is also possible for qualifying species to be affected within Habitats Sites, where these lie close to new development, or the development is expected to have long-ranging impacts. Although impacts to mobile species are the most likely transboundary effect, the assessment should not be limited to this, and all potential sources of transboundary effect considered for scoping in / out of an assessment. This could include Habitats Sites outside of the UK. As stated in Section 2, potential for transboundary effects has been considered.

[7] JNCC, Special Areas of Conservation - excludes sites within the UK Overseas Territory of Gibraltar.
[8] JNCC, Special Protection Areas - excludes sites within the UK Overseas Territory of Gibraltar.
[9] JNCC, Ramsar Sites - excludes UK Overseas Territory and Crown Dependencies.

Approach to screening

Screening for appropriate assessment requires gathering sufficient information to objectively conclude whether effects on a Habitats Site will be significant or not. On this basis, screening to ascertain whether appropriate assessment is required covers four steps:

- Step 1: Determine whether the plan is directly connected with or necessary to the management of the Habitats Sites.
- 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 Habitats Sites.
- Step 3: Identify the potential effects on the Habitats Sites both alone and in combination with other plans and projects.
- Step 4: Assess the significance of any effects on Habitats Sites. Each of these steps is considered in turn below.

In line with the precautionary principle, it is important to note that the burden of evidence is to show, on the basis of objective information, that the project or plan will have no likely significant effect (LSE) on a Habitats 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[10], 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'[11].

The Waddenzee judgement[12] 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 Habitats Sites are not taken account of during screening. This is consistent with European case law[13].

[10] Waddenzee judgement (7 September 2004) Case C-127/02
[11] Waddenzee judgement (7 September 2004) Case C127/02
[12] Waddenzee judgement (7 September 2004) Case C127/02
[13] People over Wind v Coillte Teoranta (12 April 2018) Case C-323/17

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

The NPS EN-8 is not directly connected with or necessary to the management of any Habitats Sites. As such, it is necessary to undertake screening to determine whether the proposals are likely to have an LSE on any Habitats Sites (Steps 2 to 4 below).

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 Habitats Sites

Purpose and contents of the Fusion generation NPS EN-8

NPSs set out the government's objectives and policy for the development of nationally significant infrastructure in a particular sector and provide the framework within which the Planning Inspectorate makes recommendations to the relevant SoS as to whether major infrastructure development should proceed or not. NPSs are designated under the Planning Act 2008 and apply to infrastructure that is defined as an NSIP under the Planning Act or is treated as development for which Development Consent is required according to Section 35 and 35Z of the Planning Act. Their function is to state clearly how government policy applies to development consent, removing discussion of the merits of such policy from the examination process so that permitting decisions can be made on the basis of planning considerations alone.

Draft EN-8, the fusion energy NPS, provides planning policy for the deployment of new fusion energy infrastructure and associated development. It does not include any specific sites but sets out a criteria-based approach similar to NPS EN-2 to EN-5, as well as EN-7.

It is a requirement of draft EN-8 that applicants must take into account the whole lifecycle of the fusion infrastructure, i.e. its construction, operation and decommissioning., including any storage of radioactive materials onsite.

Draft EN-8 needs to be read in conjunction with EN-1, the Overarching National Policy Statement for Energy. The Assessment Principles within draft EN-8 set out factors influencing site selection and design, the regulatory and planning frameworks and processes, and technical and other considerations that applicants will need to address during their assessments. Applicants are required to identify and evaluate the impacts of the proposed fusion energy infrastructure on the site and its surrounding areas and address these impacts by applying the mitigation hierarchy and other relevant requirements.

Guidance on biodiversity and geological conservation considerations are set out in Section 5 of EN-1. With respect to HRA, this states that the applicant should seek the advice of the appropriate Statutory Nature Conservation Body (SNCB) and provide such information as may be reasonably required, to determine whether a HRA Appropriate Assessment (AA) is necessary. If an AA is required, the applicant must provide sufficient information to allow the AA to be completed. This should include information on any mitigation measures that are proposed to minimise or avoid likely significant effects.

If, during the pre-application stage, the SNCB indicate that the proposed development is likely to adversely impact the integrity of Habitat Sites, the applicant must include with their application such information as may reasonably be required to assess a potential derogation under the Habitats Regulations. Provision of such information will not be taken as an acceptance of adverse impacts if an applicant disputes the likelihood of adverse impacts, it can provide this information as part of its application 'without prejudice' to aid the final decision on the impacts of the potential development.

The Secretary of State must consider whether the project is likely to have a significant effect on any Habitats Sites that are part of the National Site Network (terrestrial or marine), or on any site to which the same protection is applied as a matter of policy, either alone or in combination with other plans or projects.

Section 4 of EN-1 sets out the case for new low-carbon energy infrastructure being of Critical National Priority (CNP) and this will be an important consideration and of relevance should a proposal reach HRA Stage 3 Derogations. The second legal test is whether there is an imperative reason of overriding public interest (IROPI) and qualification as CNP is considered as meeting that test.

EN-1 within Section 4.2, also sets out commitments that protect biodiversity and the natural environment, recognising it is important to ensure impact from large-scale construction are avoided or mitigated as far as reasonably practicable in accordance with the mitigation hierarchy. Proposals should seek opportunities to contribute and enhance the natural environment (EN-1 Section 4.6) and guidance for protection of designated sites of ecological importance is set out in Section 5.4. This includes directing applicants to the National Planning Policy Framework and Natural Environment Planning Practice Guidance for information on good practice for biodiversity consideration in relation to planning.

Plans and projects with potential for in-combination effects

Draft EN-8 could interact with other plans and projects to result in in-combination effects, as explained further in Section 5.6 below. Given the high-level nature of the draft NPS, the consideration of in-combination effects has assumed development of any type supported in draft EN-8 could come forward. National-level plans that have potential to lead to in-combination effects with the draft NPS have been identified and listed in Table 3-3. The table also lists the other types of plans and projects that have potential for in-combination effects with development of fusion 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 fusion energy project – only the local plan for the area the project is located in, and possibly the local plans of the surrounding authorities, will be relevant.

Step 3: Identify the potential effects on the Habitats 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 project-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 fusion energy infrastructure developments.

Draft EN-8 does not contain specific policies, site proposals or objectives that could strictly be assessed in their own right. However, the draft NPS allows for and facilitates development of a nature and scale that has potential to impact Habitats 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 considered. The development of fusion energy infrastructure, as facilitated by the NPS, could occur anywhere within England and Wales, thereby potentially affecting any of the Habitats Sites across the UK and more widely across Europe (transboundary effects), depending on the location of development and the type of technology utilised (with those coastal sites utilising wet cooling considered most likely to have effects). As such, detailed assessment of sources, pathways and receptors is not possible. However, this screening identifies key potential effect pathways associated with the types of fusion energy infrastructure development set out in the NPS, which can be used to inform the scope of project-level HRAs.

Possible development activities associated with draft EN-8 and the potential resulting effects on Habitats Sites are set out in Table 1 below. 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. Appendix A sets out more detail on how the likely activities arising from fusion energy infrastructure may give rise to the effects identified.

The relevant receptors (the Habitats Sites, species and habitats that will be affected) can then be identified at the project level. These receptors could include Habitats Sites within the UK or beyond, if transboundary effects are considered likely. The effects identified in Table 1 may only affect certain Habitats Sites. Of note, it is anticipated that fusion energy infrastructure may utilise large amounts of water (if wet cooling technology is adopted), and therefore, may be situated on the coast or next to another large body of water, potentially affecting coastal and marine Habitats Sites, as well as onshore Habitats Sites. Coastal fusion energy infrastructure

may also be more likely to affect Habitats Sites in other countries (transboundary effects), given that some marine species are highly mobile and move between territorial waters of different countries. However, effects depend on species and populations, including factors such as degree of mobility, their ecology and migration routes, which cannot be known until sites are under consideration at the project stage.

Nevertheless, potential for effects on the marine and coastal environment are not limited to projects on the coast. Inland projects could affect coastal and marine Habitats Sites due to proximity or if they are linked, for example by a watercourse. Furthermore, many Habitats Sites with highly mobile species such as birds or bats, can have functionally linked land or habitat connectivity outside the Habitats 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 Habitats Site affected is designated for migratory species, such as Atlantic salmon or Bewick's swan. Inland waterbodies and upland habitats play important roles in supporting waders and waterfowl found on the coast for some of the year on passage, over winter and during the breeding season.

Table 1 Potential impacts that could arise as a result of development set out in EN-8

Development requirements	Possible activities (construction, operation and decommissioning)	Possible impacts / likely significant effects
Construction / decommissioning of infrastructure	• Construction activities • Vehicle and personnel movements • Physical presence on site • Combustion of materials • Water abstraction and discharge • Changes to drainage Decommissioning and restoration activities	• Habitat loss/ fragmentation/ degradation Species loss/ population fragmentation Smothering/ enrichment of habitats • Species disturbance impacts Out-competition or disease among native species/ change in vegetation composition
Operation of infrastructure including potential (depending upon if wet cooling technology utilised) for large volumes of water for operational cooling	• Land contamination • Reduction in air quality • Change in water quality/ temperature • Changes in water quantity/ flow/ drainage • Noise, light, vibrations and visual disturbance • Introduction of invasive non-native species • Impingement &entrainment of fish and / or other biota • Climate change effects on habitats and species	• Habitat degradation • Species loss/ population fragmentation • Smothering/ enrichment of habitats • Species disturbance impacts • Out-competition or disease among native species/ change in vegetation composition • Loss/ displacement of prey species

Step 4: Assess the likely significance of any effects on Habitats Sites

LSEs will occur if development undermines the conservation objectives of a Habitats Site. Conservation objectives for Habitats 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 Habitats Sites in Wales, 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 Habitats Sites in Wales require factors affecting qualifying features to be under control.

It should be noted that Ramsar sites do not have conservation objectives and so the conservation objectives of relevant/ similar SPAs and/or SACs (depending on the Ramsar criteria) can be used by proxy when determining LSEs on Ramsar sites. The relevant conservation objectives for Habitats Sites in other countries, where there are potential transboundary effects, will also need to be considered.

The conservation objectives should be read in conjunction with the Supplementary Advice on Conservation Objectives[14] or Regulation 37 Document[15], where this is available for a Habitats 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 NPS, they are not considered further.

[14] Natural England (2015) 'Conservation objectives for land-based protected sites in England: how to use the site Advice'

[15] 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.

Given the strategic nature of the draft EN-8, and that it does not include any site-specific allocations for fusion energy infrastructure, it cannot be known at this stage exactly what type of infrastructure will come forward in which locations. The draft NPS (EN-8) does not restrict the location of development and will allow development of the nature and scale that could potentially affect Habitats Sites, as set out in Table 2. As such, it is possible that the NPS could lead to likely significant effects on Habitats Sites.

Table 2 draws on the potential effects identified in the final column of Table 1 and sets out the types of qualifying feature that are likely to be sensitive to these effects and the typical conservation objectives of Habitats Sites that could be undermined by such effects. The wording of the typical conservation objectives for Habitats Sites in England has been used but applies equally to sites in 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 2 Likely Significant Effects that could arise because of development coming forward under EN-8

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 and / or habitats sensitive to impacts such as acidification and / or direct toxic effects (including soils, 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; and • 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; and • Maintain or restore the distribution of qualifying species within the site.
Light pollution	• Bat species • Other nocturnal mammals • Nocturnal bird and insect species	• Maintain or restore the populations of qualifying species; and • Maintain or restore the distribution of qualifying species within the site.

Type of likely significant effect	Type of qualifying feature that could be significantly affected	Conservation objectives that could be undermined
Introduction of invasive nonnative 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; and • Maintain or restore the populations of qualifying species.
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; and • 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
Changes in water quantity / flow / drainage	• Freshwater habitats • Marine habitats • Wetland habitats • Aquatic species (freshwater, brackish and marine)	• 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; and • Maintain or restore the populations of qualifying species.
Land contamination / degradation of habitats	• 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; and • 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 and / or other biota	• Fish and other biota species	• Maintain or restore the distribution of qualifying species within the site.

Type of likely significant effect	Type of qualifying feature that could be significantly affected	Conservation objectives that could be undermined
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; and • Maintain or restore the distribution of qualifying species within the site.

It will be necessary for applicants to consider the impacts of climate change when designing and assessing fusion energy infrastructure and, likewise, in assessing the implications for Habitats Sites, the effect of climate change and the need for habitat resilience should be factored in. For example, hydrological modelling should include the predicted effects of climate change alongside the effects induced by the scheme.

In-combination assessment

The potential for LSE on Habitats 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 Habitats Site, 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 Habitats 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;
- 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 Habitats Site.

Due to the strategic and high-level nature of the draft NPS EN-8, it is not possible to screen out Habitats 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 below. The following 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;
- 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 quality / water chemistry;
- Changes to water quantity / flow and coastal change;
- Species injury and mortality;
- 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. Any project or plan being screened for potential effects on the same Habitats Sites should be included in the in-combination assessment. This includes non-energy infrastructure development and smaller scale development that is not an NSIP. In-combination effects can be by virtue of proximity, connectivity and / or timing. The most common combined effects include additive air quality, water quality / quantity and habitat / species disturbance impacts. In combination effects can be thought of as having either a layering effect, adding to the intensity of an effect in a given area, a spreading effect, affecting the same qualifying feature over a greater area, or a scattering effect by affecting new areas of the same qualifying feature.

Table 3 sets out examples of plans and projects that could have potential in-combination effects with draft EN-8 and the fusion energy infrastructure coming forward. This list is not exhaustive and any project or plan with potential for effects on the same Habitats Site(s) being considered should be screened into the in-combination assessment to determine if there could be LSE in combination. It will be important to consider the spatial and temporal scope of the plans/ projects and the zone of influence of effects or extent of impact pathways.

Table 3 Examples of typical plans and projects that may have potential for in-combination effects with EN-8

Typical plans and projects
Infrastructure • Projects set out or delivered via 'UK Infrastructure – A 10 year strategy'[16] • Projects set out or delivered via 'Wales Infrastructure Investment Strategy (WIIS)'[17] • Projects set out or delivered via 'Scottish Government's Infrastructure Investment Plan (IIP)'[18] • Projects set out or delivered via 'Industrial Strategy Sector Plans'[19] • 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
Energy Infrastructure Onshore and offshore development set out under the wider suite of Energy NPSs (EN-1 to EN-7). Examples include: • Nuclear development / decommissioning • Onshore and offshore wind developments • Large-scale solar (photovoltaic) developments • Electricity storage developments • Hydroelectric power projects • Bioenergy projects • Natural gas fired development/decommissioning

[16] HM Treasury (2025) 'UK Infrastructure: A 10 Year Strategy'
[17] Welsh Government (2021) 'Wales infrastructure investment strategy 2021'
[18] Scottish Government (2021) 'A National Mission with Local Impact: Infrastructure Investment Plan for Scotland 2021-22 to 2025-26'
[19] Department for Business and Trade (2025) 'UK Industrial Strategy Sector Plans'

Typical plans and projects
Non-Energy infrastructure development • Future Wales: the national plan 2040 • Local Development Plans • Local Development Plans (Wales) • Hydrogen production, storage and transportation • Data centres • Science and research centres • Carbon capture usage and storage • Large residential developments • Other social infrastructure development, e.g. schools, hospitals, prisons etc. • Environmental Delivery Plans and schemes funded via the Nature Restoration Fund
Marine and Coastal • UK Marine Policy Statement[20] • Marine Plans in England[21] • UK Marine Strategy[22] • Scotland Marine Plan[23] • Welsh National Marine Plan[24] • Coastal / beach management schemes • Coastal erosion / defence schemes
Minerals and waste • NPS for Hazardous Waste[25] Geological Disposal[26] • National Planning Policy for Waste[27] • Local Waste and Mineral Plans • New landfill sites • Anaerobic digestion plants

[20] Department for Environment, Food and Rural Affairs (2011) 'UK Marine Policy Statement'
[21] Department for Environment, Food and Rural Affairs & Marine Management Organisation, Explore Marine Plans
[22] Department for Environment, Food and Rural Affairs (2019) 'Marine strategy, Part 1: UK updated assessment and Good Environmental Status' (2022); 'Marine strategy, Part 2: UK updated monitoring programmes'; (2025) 'Marine strategy, Part 3: 2025 UK programme of measures'
[23] Scottish Government (2015) 'Scotland's National Marine Plan'
[24] Welsh Government (2019) 'Welsh National Marine Plan'
[25] Department for Environment, Food and Rural Affairs (2013) 'Hazardous Waste National Policy Statement'
[26] Nuclear Waste Services, Geological Disposal Facility
[27] Ministry of Housing, Communities and Local Government (2014) 'National Planning Policy for Waste'

Typical plans and projects
Water resources and flooding • NPS for waste water[28] • NPS for Water Resources Infrastructure • River Basin Management Plans • Water Resource Management Plans (including regional and company level) • Drainage and Wastewater Management Plans • Catchment Abstraction Management Strategies • Shoreline Management Plans • Flood risk management and flood alleviation schemes • Mine water treatment schemes • Water treatment plants and sewerage / main connections
Transport • NPS for Ports • NPS for National Networks • Airports NPS • Llwybr Newydd: the Wales transport strategy 2021 supported by the National Transport Delivery Plan 2022 to 2027 • Transport Investment Strategy • Local Transport Plans • Large road schemes • Transport and Works Act Order rail schemes
Environment and climate • 25 Year Environment Plan • Environmental Improvement Plan • Prosperity for all – a climate conscious Wales • Scotland Environmental Strategy

Summary of Screening Assessment

The screening assessment has confirmed that the draft NPS EN-8 is not directly connected with or necessary to the management of Habitats Sites. As the draft NPS is high level and does not identify specific sites for fusion energy infrastructure, it is not possible to determine whether the resulting energy infrastructure projects will have any effects on Habitats Sites at this stage, or which Habitats Sites will be affected.

[28] Department for Environment, Food and Rural Affairs (2013) '[Hazardous Waste National Policy Statement]'

The construction activities and operational effects that could be sources of potential impacts and the possible impact pathways that may result in LSEs on Habitats Sites have been discussed. It is concluded that the draft NPS EN-8 could lead to development of a nature and scale that could have LSEs on Habitats Sites either alone or in-combination with other plans and projects. As such, in line with the precautionary principle, the draft NPS has been screened in for appropriate assessment.

Stage 2 – Appropriate Assessment

Approach to Appropriate Assessment

The screening stage was unable to conclude that there would be no likely significant effects arising from the draft NPS EN-8 either alone or in-combination. Potential effects relating to the following were identified (see Table 1 and Table 2):

- Air pollution
- Noise pollution and vibration
- Light pollution
- Introduction of invasive non-native species
- Change in water quality / chemistry / temperature (fresh and marine)
- Changes in water quantity / flow / drainage
- Land contamination / degradation of habitats
- Habitat / species loss and/or fragmentation
- Impingement and entrainment of fish
- Coastal change

These effects could occur on any Habitats Sites within England and Wales, or further afield. Effects further afield are likely to occur at the coast or where there is 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 the Habitats 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[29] for a Habitats Site, the conservation objectives provide a framework for assessment and information on how qualifying features may be adversely affected. Ramsar sites do not have conservation objectives; however, as they usually overlay SACs and SPAs, the conservation objectives for these sites can be applied to the Ramsar site. The same applies to potential or proposed Habitats Sites.

Assessment of adverse effects on integrity of Habitats Sites

The purpose of the AA stage is to identify whether the plan would have adverse impacts on the integrity of the affected Habitats 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"[30]. The integrity of a site involves its ecological functions, and that the assessment of adverse effect should focus on and be limited to the site's conservation objectives with reference to any supplementary advice.

The effects set out in Table 2 could result in adverse effects on the integrity of Habitats Sites, although this depends on the nature and location of any development coming forward under the draft NPS EN-8. Due to the strategic nature of the document and the fact it does not identify specific locations for development, it is not possible to undertake a detailed assessment of potential for adverse effects on integrity of Habitats Sites. Consequently, it has not been possible to determine the effects that draft EN-8 might have on the integrity of one or more Habitat Site(s), with respect to a specific Habitat Site's conservation objectives.

In-combination effects

Given the nature of the draft 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 designation of the draft NPS EN-8 and any subsequent fusion 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 fusion energy infrastructure that may come forward under the draft NPS, 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. All new fusion energy infrastructure development is

[29] Supplementary Advice on Conservation Objectives or Regulation 37 document, if available for the Habitats Site
[30] Natural England (2019) MPA Conservation Advice, Glossary of Terms.

likely to require a project-level HRA, within which in-combination effects will be assessed on a case-by-case basis. Note that the HRA for each project could make use of the Evidence Plan process to help inform the project-level HRA.

Mitigation measures

In accordance with the People over Wind case, mitigation measures were not considered at the screening stage but are to be considered in this AA.

The draft NPS goes some way to minimising the impacts that could lead to negative effects on Habitats Sites. For example, the overarching EN-1 document (to which draft EN-8 extensively refers) 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 draft NPS also sets out the need to apply the mitigation hierarchy and mitigate the potential impacts of development identified. However, the generic provisions in the NPS EN-1 or draft EN-8 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 Habitats 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 Habitats Sites as a result of development that could be permitted through the NPSs are listed below. It may be possible to avoid effects on Habitats Sites through siting development in a different location and this should be explored for each project in turn, although it is noted that locations may be somewhat constrained by the nature of the project. For example, fusion energy infrastructure may need to be near a suitable water source and all projects need sufficient land for construction and operation. In all cases, HRA should be undertaken at the earliest possible stage to input into siting decision making and design.

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. 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). 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:

Habitat loss / fragmentation / severance

- Configure site so valuable habitats can be retained, if possible.
- Create alternative wildlife corridors (including features such as unlit bat flight paths) as close as possible to those lost as a result of development, particularly where these maintain links between key sites for species and supporting habitat (note that habitat enhancement / creation is only mitigation where it addresses a particular issue and maintains the integrity of a Habitats Site. Also 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).

Air pollution

- Use of electric vehicles and machinery, where possible, with the provision of solar charging opportunities.
- 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).

Noise pollution and vibration

- Consideration of site uses with noise / vibration impacts away from sensitive receptors.
- Select quieter vehicles and equipment with built in noise suppression.
- Maintain vehicles and equipment to keep noise outputs to a minimum.

- 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.
- Assess security requirements to minimise the amount of high-powered security lighting needed.

Change in water quality / temperature (fresh and marine)

- During construction follow industry good practice guidance for pollution prevention and control.
- 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.
- Where wet cooling is applied, design of cooling systems to 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).
- Where wet cooling is applied, 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.

Changes in hydrology / drainage

- Model effects on hydrology taking into account climate change and seasonal fluctuations and design a system which is adaptive.
- 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.

Introduction of invasive non-native species

- Implement a biosecurity plan.
- Use locally / nationally sourced materials, where possible - implement a plant passport system for any species used in landscaping.

Land contamination

- Implement 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.

Impingement and entrainment of fish

- Design development so that it does not obstruct any watercourses.
- 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.

Although climate change effects on habitats and species is not a project impact, such longterm effects will need to be considered in the environmental assessment for any project. This may include contribution to creating connected ecological networks to allow species to move through the landscape in response to changing conditions. 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. Ensuring a project doesn’t contribute or minimises its contribution to climate change is important and this might be through implementing more sustainable transport and operational practices, and the sourcing of sustainable materials in the design and build process. Ultimately it is recognised that fusion energy generation should play a key role in addressing the cause of climate change and this is covered in more detail in the AoS Report.

Summary of appropriate assessment

Given the potential for the draft NPS EN-8 to result in adverse effects on Habitats Sites, and the fact that the NPS does not specify projects or locations for development, it is not possible to rule out adverse effects on the integrity of Habitats Sites. There is potential for adverse effects on Habitats Sites within the UK and on Habitats Sites in other countries (transboundary effects), particularly as a result of coastal fusion energy infrastructure with wet cooling technology.

Where this is the case, the Habitats Regulations require alternative solutions to be considered. If there are no alternative solutions and adverse effects on integrity may still occur, development may be able to proceed if IROPI apply.

If, early in project-level HRA it is identified that there is potential for adverse effects on Habitats Sites in other nations[31] (transboundary) surrounding the UK, they should be informed of the potential for significant environmental effect.

[31] Such as Ireland, France, Belgium, Germany, Denmark, Sweden, Netherlands, Norway and the Crown Dependencies of the Isle of Man and the Channel Islands.

Stage 3 Consideration of the derogations

HRA Stage 3 is reached when adverse effects on site integrity remain following the consideration of avoidance or mitigation measures within the assessment. It requires the following three steps to be sequentially met to allow the competent authority to provide consent:

- There are no feasible alternative solutions that would be less damaging or avoid damage to the site.
- The proposal needs to be carried out for IROPI.
- The necessary compensatory measures can be secured.

Approach to the 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…".*

UK government guidance on HRA (protecting a Habitats Site)[32] indicates that an alternative solution is acceptable if it achieves the same overall objective, is feasible and is less damaging to the Habitats Site and does not have an adverse effect on the integrity of this or any other Habitats Site. 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. There are four accepted 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 Habitats 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 Habitats Site?

[32] Department for Environment, Food and Rural Affairs, Habitats regulations assessments: protecting a 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.

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

The key objectives of draft EN-8, combined with EN-1, are to provide the planning policy for development of fusion energy infrastructure.

Table 1 and Table 2 set out the potential impacts and likely significant effects of the draft NPS. However, at this strategic stage it is not possible to define a specific 'problem' (a specific adverse impact or effect on a Habitats Site), as such risks to the integrity of the Habitats Sites have been identified at a high level and are largely precautionary. Detailed alternatives to developments can only be considered during the project stage of any arising energy infrastructure development, once specific effects, pathways and receptors have been identified.

Step 2: Understand the need for the Plan

The purpose of draft EN-8 (in conjunction with EN-1) is set out in Step 1.

The need for domestic large-scale clean energy is increasing to meet growing demand and to build resilience to threats posed by global climate change and challenges to energy security. There is an increased focus by governments internationally on energy sources that are cheap, abundant and reliable which do not depend on other nations for either electricity generation or supply chains.

This drives a global imperative to explore and progress all credible options for clean energy supply, both to help meet net zero commitments and in sustaining net zero.

Renewables and nuclear fission have an important role to play as part of a portfolio of solutions; but alone may not provide global long-term energy security. Fusion has the potential to complement these and provide low carbon, secure, continuous and abundant energy. The benefits of fusion energy for the UK not only include the potential for a low carbon and reliable base load energy source for the future, but the potential to deliver economic and social benefits through the creation of jobs, attracting investment into the UK and the development of high value skills. All of these elements make energy generating facilities which utilise fusion technology, of national significance.

Step 3: Financially, legally and technically feasible alternative solutions

When considering potential alternatives to draft EN-8 as the plan being assessed, and as stated in the AoS Report, issues such as the need for new fusion energy generation, the need for a mix of technologies, the need for safe generation and so on, have been addressed in EN-1 and as such are considered to be 'settled'. The need for fusion energy generation has been demonstrated in the overarching energy NPS EN-1 and is set out again in draft EN-8.

Therefore, in terms of protection of the highest priority Habitats Sites, DESNZ focussed on the following reasonable alternative for draft EN-8 NPS which has been assessed by the HRA (and also by the AoS):

Alternative 1

The NPS provides full protection to highest priority designated habitats (SAC, SPA, Ramsar sites) – fusion energy infrastructure development will not be granted DCO where it will inevitably (i.e. after reasonably practicable mitigations) cause residual harm to those sites.

When considering this 'reasonable alternative' in respect of HRA, such an alternative would ensure that development of fusion energy infrastructure avoids or minimises harm to Habitats Sites by preventing development within and in close vicinity of Habitats Sites. As Habitats Sites cover a significant proportion of England and Wales coastal areas, in many cases extending into territorial waters and beyond, this alternative would exclude outright extensive areas of the coast from development for fusion energy with wet cooling technology. Only a limited number of new locations would potentially be available, though even for such sites, avoidance and minimisation of harm cannot be guaranteed due to their location near Habitats Sites. Excluding development which will cause residual harm to the highest priority designated Habitats Sites would thus severely limit the amount of land available for the development of fusion energy generation facilities.

The AoS has considered the wider implications of such limitations on the amount of available land, in particular in respect of the limited restrictions that apply to this type of technology in terms of location near population areas which means that a larger number of inland and coastal sites would be suitable for development. The AoS concluded that, in terms of security of energy supply, an alternative that provides full protection in respect of Habitats Sites could still potentially reduce the availability of otherwise suitable sites for large fusion energy infrastructure and reduce the likelihood of the UK meeting targets related to domestic low carbon energy generating capacity, as compared to draft EN-8. Restricting the potential for development could also reduce the overall economic output of the UK.

Similarly, in economic terms, the alternative could result in areas being excluded from potential fusion energy infrastructure development as compared to draft EN-8. Such areas could lose out on economic benefits that would be anticipated from the development of such infrastructure (well paid job opportunities, opportunities for suppliers etc.).

On this basis, it was determined by DESNZ that draft EN-8 should not provide full protection to priority designated habitats and note is made in draft EN-8 to Section 5.4 Biodiversity and Geological Conservation of EN-1 which sets out guidance for the protection of nationally and internationally designated sites of ecological and geological importance, including Habitats Sites. It is worth noting that EN-1 itself has been subject to HRA.

EN-1 Section 5.4 does not avoid direct loss or indirect harm to Habitats Sites as it focuses on obtaining derogation under the Habitats Regulations. It sets out that if an AA is required, the applicant must provide the Secretary of State with such information as may reasonably be required to enable the Secretary of State to conduct the AA. This should include information on

any mitigation measures that are proposed to minimise or avoid likely significant effects. If, during the pre-application stage, Statutory Nature Conservation Bodies (SNBC) indicate that the proposed development is likely to adversely impact the integrity of Habitat Sites, the applicant must include with their application such information as may reasonably be required to assess a potential derogation under the Habitats Regulations. If the SNCB gives such an indication at a later stage in the development consent process, the applicant must provide this information as soon as is reasonably possible and before the close of the examination. This information must include assessment of alternative solutions, a case for Imperative Reasons of Overriding Public Interest (IROPI) and appropriate environmental compensation.

Approach to considering Imperative Reasons for Overriding Public Interest (IROPI)

The AA concluded that the potential for adverse effects on the integrity of Habitats Sites, either from draft EN-8 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 Habitats 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 Habitats Site, IROPI must be considered. The assessment of alternatives has demonstrated that there is only one alternative way of meeting the objectives of EN-8, without having the potential for adverse effects on the integrity of any Habitats Site but that alternative would severely limit the amount of land available for fusion energy infrastructure with wider energy security and socio-economic consequences.

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 AA. 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.

[33] Department for Environment, Food and Rural Affairs (2012) ‘Habitats Directive: guidance on the application of article 6(4) Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures’

Whilst the overarching EN-1 states that 'development should at the very least aim to avoid significant harm to biodiversity and geological conservation interests', it 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 is set out in EN-1 and applies to the Energy NPSs, including draft EN-8. 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 Habitats Site(s) affected.

Case for IROPI

The case for IROPI is predicated by the principal and essential need for the NPS in providing a framework for delivering the UK's international commitments on climate change in accordance with the objectives of the Paris Agreement[34]. 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.

The United Kingdom 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[35].

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'[36]. 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

[34] The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at the UN Climate Change Conference (COP21) in Paris, France, on 12 December 2015. It entered into force on 4 November 2016.
[35] 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
[36] Committee on Climate Change (2019) 'Net Zero - The UK's contribution to stopping global warming'

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 – net zero). 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.

Under the CCA 2008, the UK has so far set six 'carbon budgets'. These set interim five-year caps on emissions from 2008 to 2037. The UK is currently in the fourth budget period (2023 to 2027). The first (2008-12), second (2013-17) and third (2018-22) carbon budget have been met by the UK. However, the UK is not on track to meet the fourth (2023-27) or the fifth (2028-32) which require a 50% and 57% reduction in emissions below the base year (1990), respectively.

In December 2020, the UK set out its NDC to reduce GHG emissions by at least 68% from 1990 levels by 2030. In April 2021, the government announced the sixth carbon budget (CB6) to reduce GHG emissions by ~78% by 2035 compared to 1990 levels. In November 2024, the government updated the target to 81% cut by 2035.

Why we need EN-8 Fusion energy generation and its associated infrastructure

The need for domestic large-scale clean energy is increasing to meet growing demand and to build resilience to threats posed by global climate change and challenges to energy security. There is an increased focus by governments internationally on energy sources that are cheap, abundant and reliable which do not depend on other nations for either electricity generation or supply chains. This drives a global imperative to explore and progress all credible options for clean energy supply, both to meet net zero commitments and in sustaining decarbonisation post 2050.

Renewables and nuclear fission have an important role to play as part of a portfolio of solutions; but alone may not provide global long-term energy security. Fusion has the potential to complement these and provide low carbon, secure, continuous and abundant energy. The benefits of fusion energy for the UK not only include the potential for a low carbon and reliable base load energy source for the future, but the potential to deliver economic and social benefits through the creation of jobs, attracting investment into the UK and the development of high value skills. All of these elements make energy generating facilities which utilise fusion technology, of national significance.

IROPI for projects

The case for IROPI set out above relates to EN-1 and draft EN-8. HRA of projects coming forward under the NPS must follow the full HRA process and f 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 Habitats Site even after alternatives and mitigation have been considered, may be refused if IROPI does not apply.

Compensation

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

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

- Is the proposed compensation technically feasible, based on sound scientific understanding?
- Is there a robust delivery and management plan in place for the duration?
- Where is the proposed compensation in relation to the Habitats Site? Does this affect its efficacy?
- How much time is needed for the compensation to establish to the required quality?
- Is the methodology proposed reasonable or technically proven?
- Are the measures sustainable in the long-term? Will long-term management need to be secured?

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

The appropriate authority must secure the necessary compensatory measures to ensure that the coherence of the national site network of Habitats 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:

- 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 Habitats 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, 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 Habitats Sites, in line with the NPPF[37], and will be designated as part of the national site network or an extension to the Habitats Site.

[37] Ministry of Housing, Communities and Local Government (2023) 'National Planning Policy Framework (NPPF)', Paragraph 181.

Conclusions

Given the strategic nature of the draft NPS, the Critical National Priority for low carbon energy generating infrastructure set by government and the lack of site-specific proposals, it allows for a range of fusion energy infrastructure to take place in any part of England and Wales including territorial waters. As such, it is not possible to conclude that there will be no effects on Habitats Sites as a result of development coming forward under the draft NPS EN-8. It was not possible to screen out LSEs at the screening stage, nor adverse effects on integrity at the AA stage.

It is acknowledged that an AA 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 Habitats Site[38]. In the Opinion of Advocate General Kokott[39] 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".

An alternative to draft EN-8 was considered, as this seeks avoiding construction of fusion energy infrastructure that would directly or indirectly impact Habitats Sites and would also avoid the potential for adverse effects on the integrity of the Habitats Sites. However, the alternative was deemed to not meet the wider objectives of draft EN-8 as it would restrict the land area available for potential fusion energy infrastructure and thus potentially compromise the ability to meet security of supply and economic objectives.

The government has concluded that, whilst energy development should seek to avoid significant adverse effects on Habitats Sites, there is a case for IROPI. This means that the NPS can be designated, even if it could result in adverse effects on the integrity of Habitats Sites. Each project proposal coming forward under the NPS 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 draft NPS EN-8. Where a project is found to have adverse effects on the integrity of a Habitats Site after avoidance, mitigation and consideration of alternatives, and IROPI applies, sufficient, project specific compensatory measures must be provided.

[38] 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

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

Appendices

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

Construction activities

- All fusion energy infrastructure development will include a construction phase, and relevant activities and impacts will be similar for all.
- Earthworks and excavations may result in direct habitat loss, fragmentation, severance or disturbance:
  - Habitat loss and fragmentation could result in the displacement of qualifying species 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 current legislation).
  - Fragmentation may occur where projects either temporarily or permanently isolate / separate some or part of a Habitats Sites or break interlinkages between them, including severance for species.
  - 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 affect groundwater dependent terrestrial ecosystems (GWDTE), e.g. leading to lower water levels in groundwater fed waterbodies or loss of wetland habitat. Lower water levels may affect not only the volume of water, and therefore ‘space’ available for aquatic species, but could alter the flow regimen 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 pipelines/ linear infrastructure, drilling activities and loss of landscape features, such as hedgerows, will mostly be temporary effects and with adequate mitigation only minor residual landscape impacts should remain.

- Construction can lead to emissions of air pollutants, including nitrous oxides (NOx), sulphur oxides (SOx), particulates and dust. Gaseous emissions, and some particulates may arise from emissions of construction plant and vehicles, and the movement of material in construction can release dust. As well as the potential for direct toxic effect, these can lead to nutrient enrichment and eutrophication at Habitats Sites, which could, if they exceed critical loads, lead to adverse impacts on protected species and habitats. Acidification of Habitats Sites is also a potential impact. Particulates can also adversely affect respiratory systems of animals.
- Construction works 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' below.

Water abstraction and discharge

- This applies particularly to developments that utilise water for cooling purposes, such as most fusion energy infrastructure. After cooling, the water will then be discharged into a suitable waterbody. Discharge may be to the sea, rivers or lakes.
- Water is needed for cooling purposes and may be abstracted from groundwater sources, the sea, rivers or lakes. Water intake from surface waterbodies 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.
    - Return of biota as polluting matter to the environment from cooling water systems.
    - 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 Habitats 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 Habitats 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 waterbody 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.

Changes to drainage and water quality

- 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 during construction and decommissioning in particular, 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 drains, or streams and associated water bodies, causing a reduction in water quality.
- There may also be an increased risk of spills and leaks of pollutants (including hydrocarbons) to the water environment, from vehicles themselves or the materials they are carrying.

Vehicle and personnel movements

- The transport of materials, goods and personnel to and from a development, radioactive waste disposal and radioactive materials 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, or the use of diesel generators during construction or operation, involve emissions to air (such as NOx, SOx and particulates). These can lead to nutrient enrichment and eutrophication, or potential acidification at Habitats 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 the site brings a risk of spreading invasive, non-native species.

Physical presence of site

- 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.
- The physical presence of buildings and structures on site may cause direct disturbance by affecting flight lines / flight paths / lines of sight, shading, 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.
- Operation of the physical infrastructure on-site can result in noise and vibration impacts. This applies to all technologies, although some 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.

Decommissioning

- 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 Environmental Impact Assessment 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.
- There is also likely to be an increase in vehicle movements during decommissioning. Decommissioning fusion 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 waste to an appropriate waste management facility. See ‘vehicle and personnel movements’ for likely effects.
- Decommissioning fusion energy infrastructure may take longer than other types of energy infrastructure, due to the need to remove radioactive materials from storage facilities.

Restoration (to be undertaken as part of the decommissioning phase)

- As part of 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.

- Impact from restoring and creating habitat could include:
  - Remediation of contaminated land.
  - Planting and seeding.
  - Fencing (this could be temporary or permanent, depending on the end use).
  - Increased human presence

This publication is available from:
www.gov.uk/government/consultations/draft-national-policy-statement-for-fusion-energy-generation-en-8

Any enquiries regarding this publication should be sent to us at:
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