Department for Energy Security & Net Zero

National Policy Statement for Energy - Update 2025

Appraisal of Sustainability – Non-Technical Summary

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Contents

1. Overview of National Policy Statement for Energy and Appraisal of Sustainability

An Appraisal of Sustainability (AoS) has been prepared for an updated National Policy Statement (NPS) for Energy. The NPS for Energy is made up of the following NPS series:

- EN-1: Overarching NPS
- EN-2: Natural Gas Electricity Generation
- EN-3: Renewable electricity generation (both onshore and offshore)
- EN-4: Gas supply infrastructure and gas and oil pipelines
- EN-5: The electricity transmission and distribution network
- EN-6: Nuclear generation

Note that the NPS relating to nuclear generation (EN-6) remains as designated by the Department of Energy and Climate Change in 2011. EN-6 only has effect in relation to nuclear electricity generation deployable by the end of 2025, but it continues to provide information that may be important and relevant for projects which will deploy after 2025. A new NPS (EN-7) for new Nuclear generation is in the process of being developed in a separate process and, once designated, will sit alongside the other elements of the Energy NPS. Other than EN-6, all other elements of the NPS (EN-1 to EN-5) were reviewed and updated in 2024.

Following a further review in 2025 only EN-1, EN-3 and EN-5 have been updated, as such only EN-1, EN-3 and EN-5 are the subject of this AoS. The updated NPSs and AoS are published for consultation by the Secretary of State for Department of Energy Security and Net Zero (DESNZ). Note that while the review is undertaken, the current suite of energy NPS remain relevant government policy and EN-1 to EN-5 have effect for the purposes of the 2008 Planning Act.

Planning consents for a new generation of large-scale energy infrastructure will be decided on the basis of provisions in the energy NPSs. The updated AoS sets out the likely significant sustainability effects of developing new energy infrastructure of the types envisaged by the updated energy NPSs. AoS fulfils the requirements of the Environmental Assessment of Plans and Programmes Regulations 2004 (as amended), known as the Strategic Environmental Assessment (SEA) Regulations and the Planning Act 2008 requirement that an AoS of the policy set out in the proposed amendment to an NPS must be carried out before those amendments are adopted. The scope of such an appraisal is similar to that of an environmental report under the SEA Regulations, but with more emphasis on social and economic impacts, and informed overall with the principles of sustainable development (often

summarised as ensuring that development meets the needs of the present without compromising the ability of future generations to meet their own needs).

It is the purpose of this updated AoS to consider the effects of the material changes made by DESNZ throughout EN-1, EN-3 and EN-5 as part of the updating and review process. The material changes were set out in the consultation document 'Revised draft National Policy Statements for energy infrastructure' which was issued for consultation in April 2025. In addition, this updated AoS has also allowed for consideration of a revised AoS Framework, developed as part of the periodic review process, that was consulted upon during February to March 2025 and which has been applied to the updated assessments of updated EN-1, EN-3 and EN-5. The revised framework is set out in Chapter 2 and reflects changes in policy direction and/or new policy introduced since the last scoping exercise was undertaken and makes updates to understanding of baseline conditions and any new sustainability issues. Of particular relevance to the assessment is the government's priorities as set out in the Clean Power 2030 mission.

Note, that whilst no revisions to EN-2 and EN-4 were made as part of the review and update process, it was also considered that the changes to the AoS framework did not merit reopening the assessments for the particular technologies set out with EN-2 and EN-4, and as such the reader should refer to National Policy Statement for energy – Appraisal of Sustainability (January 2024)[1] for full assessment details.

Updates to the Habitats Regulations Assessment (HRA) has been undertaken in parallel to the updates to the AoS and its results incorporated into the updated AoS as appropriate, though such updateshave been reported separately, in order to meet the requirements of the Habitats Regulations.

The updated AoS and HRA continue to apply to the same geographical area of the NPS – namely England and Wales, though in certain circumstances elements will apply to Scotland. The Energy NPSs do not apply to Northern Ireland. The temporal scope of the updated AoS and the HRA continue to be aligned with that for the NPSs, which remain in force unless withdrawn or suspended in whole or in part by the Secretary of State. It should be noted though, that the updated AoS and the HRA continue to consider the full lifetime of any individual energy related development which might arise from the updated NPSs and that includes the construction, operation and decommissioning stages.

What energy infrastructure is covered by the updated NPS?

The updated NPS (EN-1, EN-3 and EN-5) cover the following Nationally Significant Infrastructure Projects (NSIP) :

- **electricity generating stations (meeting the thresholds set out in the Planning Act 2008).** This includes onshore generating stations (but not electricity storage, except

[1] See National Policy Statements for energy infrastructure - GOV.UK

hydroelectric storage) generating more than 50 megawatts (MW) in England and 350MW in Wales, onshore wind generating more than 100MW in England only, and solar generating more than 100MW in England and 350MW in Wales. It also includes offshore generating stations generating more than 100MW offshore in territorial waters adjacent to England and within the English part of the Renewable Energy Zone, and those generating more than 350MW in territorial waters adjacent to Wales and the Welsh part of the Renewable Energy Zone (the Welsh Zone as defined by section 158 of the Government of Wales Act 2006). For these types of infrastructure, the Overarching NPS (EN-1) in conjunction with any of the relevant technology specific NPSs will be the primary policy for Secretary of State decision making.

- **large gas reception and liquefied natural gas (LNG) facilities and underground gas storage facilities (meeting the thresholds set out in the Planning Act 2008).** For this infrastructure, EN-1 in conjunction with EN-4 (for natural gas only) will be the primary policy for Secretary of State decision making.
- **cross-country gas and oil pipe-lines and Gas Transporter pipe-lines (meeting the thresholds and conditions set out in the Planning Act 2008).** For this infrastructure EN-1 in conjunction with EN-4 (for natural gas only) will be the primary policy for Secretary of State decision making.
- **above ground electric lines at or above 132kV (meeting the thresholds set out in the Planning Act 2008).** For this infrastructure, EN-1 in conjunction with the Electricity Networks NPS (EN-5) will be the primary basis for Secretary of State decision making.

An overview of the material changes to EN-1, EN-3 and EN-5, considered to have particular implications for the AoS, as they broadly change policy direction or introduce new or expanded elements to the NPS, are as follows:

Clean Power 2030: In the Clean Power 2030 Action Plan, government committed to updating the NPSs for Energy in 2025 to reflect the needs of Clean Power 2030, improving policy certainty for developers and examining authorities. The policy narrative through EN-1 has been updated to bring Clean Power 2030 front and centre as the primary policy that the NPSs enable. It points towards the Clean Power 2030 Action Plan, which contains the capacity ranges for technologies in 2030 that the NPSs support. Successfully delivering Clean Power 2030 will require rapid deployment of new clean energy capacity. Delivering Clean Power 2030 also paves the way to decarbonising the wider economy by 2050, and focussing the narrative around the planning system on it will enable meeting those ranges by ensuring developers bring forward relevant projects.

Infrastructure projects relevant for Clean Power 2030 can be deemed Critical National Priority (CNP), with a presumption in favour of consent. The updated NPS remove Energy from Waste projects from CNP policy as such projects do not meet the definition of a clean power technology in the Clean Power 2030 Action Plan.

CNP policy was introduced in 2024 to the NPSs. The policy allows for the importance of low-carbon energy infrastructure to be considered during the decision-making process by the Secretary of State. The policy means that for qualifying infrastructure projects, where residual impacts remain after the mitigation hierarchy has been applied, it is unlikely that consent will be refused on the basis of these residual impacts.

Onshore Wind: Onshore wind is mature, efficient and low-cost technology that plays an important role in the UK's energy mix. The mass deployment of onshore wind farms is critical in meeting the government's 2030 clean power pathway. The Clean Power 2030 Action Plan estimates the need for 27-29GW of operational onshore wind capacity by 2030.

It is considered vital that developers use the most efficient planning route to seek consent for their energy projects in order to make the UK a clean energy superpower. This is why, following consultation, government committed in December 2024 to reintroduce onshore wind into the NSIP regime at a threshold of 100MW.

Reintroducing onshore wind into the NSIP regime will ensure there is a level playing field with other generating technologies such as solar, offshore wind and nuclear. This will provide an appropriate route for large-scale projects seeking planning consent, where local impacts can be carefully balanced against the national benefits and meeting the UK's wider decarbonisation goals. To support the assessment and determination of onshore projects entering the NSIP regime, government has included a new section within EN-3 addressing the impacts, considerations and other matters specific to onshore wind.

Offshore wind: As part of the pre-application phase for a proposed offshore wind farm, it is proposed in updated EN-3 that an assessment of inter-array wake effects takes place between applicants and those of consented and operational wind farms in the pre-application stage to inform and support the consideration of potential mitigations.

It is also proposed that developers should make reasonable efforts to demonstrate that they have worked to manage the impact of wake effects on other occupiers and set out non-exhaustive examples of what this could include.

It makes clear that potential approaches include explaining how the project configuration has been evolved during the design process to reduce the impact or avoid the most impactful configurations, or manage the planned layout of an offshore wind turbine array to select layouts with reduced long-distance wake impact on other occupiers.

The aim of these inclusions is to provide greater clarity on how applicants can consider and potentially mitigate the impact of inter-array wake effects between new developments and nearby consented and operational wind farms, and how they could demonstrate their efforts to manage those effects, while still allowing for a variety of approaches depending on individual circumstances.

Electricity Networks Infrastructure: Great Britain's electricity network needs a once in a generation expansion to deliver new homegrown, clean energy to homes and businesses up

and down the country. The proposed changes will support this new infrastructure to be built faster, whilst maintaining a rigorous process to minimise costs and impacts.

Taking a holistic approach to planning transmission infrastructure is crucial to meet the rise in demand for low carbon electricity to achieve energy security and the national net zero goal. Building on the work of the "Pathway to 2030" Holistic Network Design for offshore wind and "Beyond 2030" reports, the Centralised Strategic Network Plan (CSNP) will help reduce the overall impact of infrastructure by taking a coordinated view of both the onshore and offshore network. The CSNP will provide an independent, long-term approach out to 2050 on how the transmission network should develop to meet energy security and decarbonisation goals. It will be delivered by the National Energy System Operator (NESO) and regulated by Ofgem. The first CSNP will be delivered in 2027. Network plans will take account of environmental and community impacts, alongside deliverability, operability and economic cost, from the outset.

The CSNP process will provide a robust assessment of the possible options. Endorsement through the NPS would mean that the need case and technology type for projects that adhere to the recommendations of the CSNP do not have to be examined in the consenting process. The CSNP would establish the need case and technological solution; removing this from the consenting process could accelerate the pre-consenting stage and reduce project level risk.

Endorsement will include:

- The need case of reinforcements
- The strategic parameters of reinforcements: onshore/offshore, high voltage direct current (HVDC) or high voltage alternate current (HVAC), the spatial envelope – a defined area where options will be assessed, and how it connects to the Main Interconnected Transmission System.

Endorsement will not include:

- Indicative routing between recommended infrastructure: routing decisions will be confirmed during the Detailed Network Design process in accordance with appropriate surveys and consultation. As such, routes are subject to change and should not be considered fixed for planning purposes.

Energy from Waste (EfW): In the context of the NPS, EfW plants include conventional waste to energy facilities (i.e. electricity and heat generation) and Advanced Thermal Treatment and Advanced Conversion Technologies that process residual wastes to create a syngas or liquid fuel. Their primary purpose is to reduce the amount of residual waste going to landfill in accordance with the waste hierarchy, with the recovery of energy from that waste as electricity, heat, or fuel considered to be a secondary benefit that should be maximised as far as possible.

As the primary function of EfW plants, or similar processes, is to treat waste, it is the intention that such plants:

- Meet a clearly defined need to facilitate the diversion of non-recyclable waste away from landfill, or enable the replacement of older, less efficient waste incinerators;

- Can be built Carbon Capture ready, in accordance with the government's 'Decarbonisation Readiness' requirements once they come into force; and
- Demonstrate that making use of the heat they produce is viable and they can connect to a heat network within three years of the plant's operation.

It is worth noting that EfW plants will also be included in efforts to incentivise the deployment of carbon capture technology through the Industrial Carbon Capture Business Model for industrial users who often have no viable alternatives available to achieve deep decarbonisation.

It is also important to note that Critical National Priority policy does not apply to applications for EfW projects and the Welsh Government has put in place a moratorium on all new EfW plants greater than 10MW generation capacity in Wales.

2. The process followed for the updated AoS

There are five stages in the AoS process. The updates of the first three stages, as described below, have been completed thus far:

Stage 1: Identifying other plans, programmes and sustainability objectives that inform and influence the development of the NPSs; establishing an understanding of the social, environmental and economic current and future baseline conditions of the UK, with particular emphasis on England and Wales; identifying key sustainability issues in England and Wales; outlining AoS Objectives against which to later evaluate the NPS proposals; and gathering consultation feedback on the proposed breadth of coverage and level of detail for the AoS. An updated AoS Scoping Report was developed and consulted upon February to March 2025.

Stage 2 – Initial assessment of updated NPSs proposals against the AoS Objectives and provision of recommendations to enhance their sustainability; assessing alternatives to key policy stances in the updated NPSs; completing an assessment of the preferred updated NPSs; identifying the cumulative, synergistic and indirect effects likely to arise as a result of the implementation of the preferred updated NPSs proposals; identifying appropriate mitigation to avoid predicted negative effects; and confirming an updated monitoring programme for significant effects.

Stage 3 – Preparing updated AoS Report to accompany the updated NPSs for public consultation (April 2025). This is the current stage and as with Stage 1 and 2, has revised, updated and built upon the AoS process carried out for the previous iteration of EN-1, EN-3 and EN-5. This process has reflected changes to both wider sustainability policy and energy policy that have occurred since the previous publication.

Stage 4- Preparing revised AoS Report taking on board public consultation comments and changes to the NPS to accompany the updated NPS.

Stage 5 - Government will consider comments received during public consultation, and the updated NPSs will be subject to approval by Parliament before final adoption. Upon adoption of the updated NPSs, an AoS Post Adoption Statement will be published, and this will outline how the findings of the updated AoS and the responses to consultation have been taken into account. It will also provide further information on how monitoring of the significant effects of implementing the updated NPSs will be carried out.

The process followed for the updated HRA

In England and Wales, under the Conservation of Habitats and Species Regulations 2017 (as amended), as well as the Conservation of Offshore Marine Habitats and Species Regulations

2017 (together known as the 'Habitats Regulations'), an 'Appropriate Assessment' is required to be undertaken on proposed plans or projects which are not necessary for the management of the habitat site but which are likely to have a significant effect on one or more habitat sites either individually, or in combination with other plans or projects.

Habitat sites include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) which are typically designated for rare, vulnerable and regularly occurring migratory bird species and internationally important wetlands. As a matter of Government policy, listed or proposed Ramsar sites, potential SPAs (pSPA), candidate SACs (cSAC) and sites identified, or required, as compensatory measures for adverse effects on habitats sites, pSPAs, cSACs and listed or proposed Ramsar sites, are treated in the same way as Habitat sites. Hereafter, all the above sites are referred to as habitat sites.

An updated HRA report was prepared for the updated NPSs (EN-1, EN-3 and EN-5) and considers the potential effects of publishing the updated NPSs on habitat sites.

The updated AoS Framework

The establishment of appropriate objectives and guide questions (AoS Framework) is central to the appraisal process and provides a method to enable the consistent and systematic assessment of the effects of the updated NPSs. Broadly, the objectives present the preferred social, economic or environmental outcomes which typically involve minimising detrimental effects and enhancing positive effects where relevant. Guide questions are also developed for each of the objectives to illustrate its relevance to energy infrastructure development and give more detail and focus to the appraisal process. The questions explore direct, indirect as well as cumulative and synergistic effects where appropriate for the different technologies. The AoS framework is an iteration of that developed for the previous AoS of Energy NPSs and has been updated to reflect changes to baseline and a review of latest legislation, plans and policies as well as changes in approaches to sustainability and energy policy.

Key elements of change relate to the need to reflect the change in policy direction as set in the NPS consultation document. These include the Clean Power 2030 Action Plan, which accelerates the delivery of renewable and low carbon power, reintroducing onshore wind into the NSIP regime, the Centralised Strategic Network Plan approach, Electricity Transmission Design Principles, amendments to approach to EfW and so on. The framework was also updated to better reflect principles such as avoiding environmental harm, being precautionary and embedding environmental protection, which are a cornerstone of the Environment Act 2021.

In addition, some objectives or guide questions were amended to provide greater or more succinct clarity on certain aspects, for example to better reflect receptors in respect of climate change. The updated framework was also influenced by recent AoS undertaken in respect of nuclear generation (proposed EN-7) which also examined an up-to-date baseline and recent plans and policies. Table NTS-1: The updated AoS Framework

No.	AoS Objective	Guide Questions
1	Consistent with the national target of reducing carbon emissions to Net Zero by 2050	Will the NPSs support … • Reduction of the carbon emissions of the national portfolio of major energy infrastructure? • Reduction of direct and indirect emissions of all greenhouse gases, including carbon dioxide, during construction, operation and decommissioning? • Supply of energy from low carbon/renewable energy sources / use of low carbon/renewable energy? • Use carbon removals to offset residual emissions from energy such Negative Emissions Technologies (NET) and Nature Based Solutions (NBS)? • Creation of new carbon sinks/removals through natural sequestration including that by natural habitats, blue-green infrastructure and soils? • Support an energy system consistent with reducing carbon emissions to Net Zero by 2050 and long term emphasis on electrification of Clean Power 2030?
2	Maximise adaptation and resilience of built assets, communities and people as well as natural assets, habitats and species, to the multiple effects of climate change * *Adaptation is about taking steps to live with the effects of climate change such as building quay walls and flood barriers. Resilience is the ability of a system to adsorb and bounce back after an adverse event.	Will the NPS… • Promote future proofing against the effects and risks of climate change (e.g. flooding, sea level rise, coastal erosion and change in weather patterns)? • Encourage design for successful adaptation to the predicted changes in weather conditions and frequency of extreme weather events (freezing, heat waves, intense storms)? • Address the climate induced risks of cascading failures from interdependent infrastructure energy networks? • Lead to major infrastructure development that is flood resilient over its lifetime, considering the effects of climate change, without increasing the flood risk elsewhere and identifying opportunities to reduce the risk overall? • Avoid inappropriate development in areas at risk from flooding and coastal erosion?

No.	AoS Objective	Guide Questions
		• Manage the risks of flooding and coastal erosion, particularly through working with natural processes? • Ensure provision of appropriate compensatory measures is in place when there is no other option to land take from areas of flood plain?
3	Enhance biodiversity and ecological networks, deliver biodiversity net gain, protect and support ecosystem resilience and functionality	Will the NPS… • Protect and enhance nationally designated sites such as SSSIs and National Nature Reserves, Marine Conservation Zones, Marine Protection Areas and Highly Protected Marine Areas, including those of potential or candidate designation? • Protect and enhance valued habitat and populations of protected/scarce species on locally designated sites, including Key Wildlife Sites, Local Wildlife Sites and Local Nature Reserves? • Protect the structure and function/ecosystem processes, including in the marine environment? • Protect and enhance the Nature Recovery Network? • Protect and enhance priority habitats, irreplaceable habitats and the habitat of priority species? • Promote new habitat creation or restoration and linkages with existing habitats? • Protect and enhance the wider green and blue infrastructure network? • Increase the resilience of biodiversity to the potential effects of climate change? • Reduce or avoid impacts to habitats with important roles in carbon sequestration? • Encourage sensitive or nature inclusive design in terrestrial and marine environments? • Ensure energy activities protect fish stocks and marine mammals? • Ensure energy activities do not exacerbate disturbance to bird populations?

No.	AoS Objective	Guide Questions
		• Deliver a minimum 10% net gain in biodiversity for any new major infrastructure development? • Increase the resilience of biodiversity to the potential effects of climate change? • Prevent spread of invasive species (native and non-native), including new invasive species because of climate change?
4	Protect and enhance sites designated for their international importance for nature conservation purposes *(linked to separate HRA process for Energy NPS)*	Will the NPS… • Avoid the direct loss of, or indirect harm to, 'Habitats Sites' (SPAs, SACs and Ramsar sites), including those of potential designation (candidate SPAs, proposed SACs, Sites of Community Importance (SCI) and proposed Ramsar sites) both onshore and offshore? • Support continued improvements to the condition status of the UK's national site network?
5	Protect and enhance cultural heritage assets and their settings, and the wider historic environment	Will the NPS… • Conserve and enhance designated heritage assets and their settings (World Heritage Sites, Scheduled Monuments, Listed Buildings and structures, Registered Parks and Gardens, Registered Battlefields and Conservation Areas), as well as maritime assets such as protected wrecks? • Conserve and enhance non-designated and / or locally listed heritage assets (including newly discovered heritage assets and archaeology) and their settings? • Address heritage assets at risk, or protect them from further threats? • Avoid significant harm to heritage assets, for example from the generation of noise, pollutants and visual intrusion?

No.	AoS Objective	Guide Questions
		• Ensure appropriate archaeological assessment prior to development? • Maintain or improve the interpretation, understanding and appreciation of the historic environment? • Increase public access to heritage assets?
6	Protect and enhance the character and quality of the landscapes, townscapes and waterscapes and protect and enhance visual amenity	Will the NPS… • Avoid the development in National Parks and National Landscapes (formerly AONBs)? • Support the integrity of any areas designated for landscape value, including in conjunction with the provisions of any relevant Management Plan (e.g. National Parks, National Landscapes, Heritage Coasts and local landscape designations)? • Conserve and enhance the intrinsic character or setting of local landscapes or townscapes or waterscapes? • Minimise noise and light pollution from construction and operational activities on residential amenity and on sensitive locations, receptors and views? • Prevent reduced tranquility / preserve tranquility? • Conserve, protect and enhance natural environmental assets (e.g. parks and green spaces, common land, woodland / forests etc) where they contribute to landscape and townscape quality?
7	Protect and enhance the water environment	Will the NPS… • Protect ground, surface, estuarine and coastal water quality in line with Water Framework Directive and Marine Strategy Framework requirements? • Result in changes to groundwater distribution and flow? • Safeguard the availability of water resources (surface and groundwater)? • Minimise the use of water resources / water consumption?

No.	AoS Objective	Guide Questions
		• Protect the integrity of coastal and estuarine processes? • Reduce operational and accidental discharges to the water environment? • Protect the quality of the seabed and its sediments, and avoid significant effects on seabed morphology and sediment transport processes?
8	Protect and enhance air quality on a local, regional, national and international scale	Will the NPS… • Minimise emissions of dust and other air pollutants that affect human health or biodiversity? • Improve air quality within AQMAs and avoid the need for new AQMAs? • Promote enhancements to green infrastructure networks to help improve air quality?
9	Protect soil resources, promote use of brownfield land and avoid land contamination	Will the NPS… • Assist in facilitating the re-use of previously developed land? • Avoid development upon the best and most versatile agricultural land? • Ensure the protection of soil resources and avoid soil health degradation through sustainable soil management and re-use? • Seek to remediate contaminated land? • Minimise development (hardstanding) footprint to reduce soil sealing?
10	Protect, enhance and promote geodiversity	Will the NPS… • Protect and enhance geodiversity resource? • Protect or enhance SSSIs designated for their geological interest? • Avoid the degradation and removal, wherever possible, of RIGS? • Protect geodiversity on the shoreline and marine waters?

No.	AoS Objective	Guide Questions
		• Support access to, interpretation and understanding of geodiversity?
11	Improve health and well-being and safety for all citizens and reduce inequalities in health	Will the NPS… • Protect the health of communities through prevention of accidental pollutant discharges, exposure to electric and magnetic fields, shadow flicker or radiation? • Minimise nuisance on communities and their facilities such as noise, artificial light, odour, dust, steam, smoke and infestation of insects? • Result in loss of recreational and amenity land or loss of access? • Provide for facilities that can promote more social interaction and a more active lifestyle and enjoyment of the countryside and coasts? • Promote initiatives that enhance safety and personal security for all?
12	Promote sustainable transport and minimise detrimental impacts on strategic transport network and disruption to basic services and infrastructure	Will the NPS… • Prevent adverse changes to strategic transport infrastructure road/rail/airport? • Prevent loss or disruption to basic services and infrastructure (e.g. telecommunications, electricity, gas)? • Promote transportation of goods and people by low/zero carbon transport modes? • Reduce travel distances to work and reduce the need for out commuting? • Facilitate working from home, remote working and home-based businesses?
13	To promote a strong economy with opportunities for local communities	Will the NPS … • Support enhanced security, reliability and affordability of the national energy supply? • Support creation of both temporary and permanent jobs and increase skills, particularly in areas of need?

No.	AoS Objective	Guide Questions
		• Have wider socio-economic effects such as changes to the demographics, community services or house prices? • Delivery of infrastructure to support economic investment in the local economy?
14	Promote sustainable use of resources and natural assets	Will the NPS… • Reduce consumption of materials, energy and resources? • Promote sustainable waste management practices in line with the waste hierarchy? • Encourage the use of recycled and / or secondary materials? • Encourage the development of a circular economy? • Promote the use of low carbon materials and technologies? • Produce waste by-products that require appropriate management? • Promote the use of local suppliers that use sustainably-sourced and locally produced materials?

3. Approach to appraisal

The appraisal of the updated NPSs policies was undertaken in a topic by topic manner, with the overarching NPS for energy (EN-1) tested against each of the 14 AoS objectives. The appraisal of the policies in the updated technology NPSs was undertaken against a selection of AoS objectives only that reflect non-generic effects associated with the technologies.

The appraisal was carried out in accordance with the criteria set out in Annex II of the Office of the Deputy Prime Minister (ODPM) guidelines. In predicting effects, changes to the baseline which would occur as a result of implementing the NPS are identified. These changes are then described (where possible) in terms of their geographic scale, the timescale over which they could occur, whether the effects would be temporary or permanent, positive or negative, likely or unlikely, frequent or rare and whether or not they are secondary, cumulative or synergistic.

Quantitative information is not available to help inform the development of predictions in most cases. In such cases, the effects were predicted based on professional judgement and by reference to relevant legislation and regulations and baseline data. Significance of likely effects was predicted according to the five categories set out in the following table:

Table NTS-2: Key to appraising significance of predicted effects

Likely significance of effects		
Significant positive effect likely	**+++**	Policy is expected to address an existing sustainability problem (for example air pollution) or deliver sustainability enhancements, such as substantial environmental net gain above existing/emerging policy.
Minor positive effect likely	**+**	Policy is expected to lead to environmental net gain in line with existing or emerging Government policy OR result in protection and conservation of a sustainability asset (for example, a designated biodiversity site or designated heritage asset).
No effect likely or not applicable	**0**	No perceptible effects expected, or the objective is not relevant to the part of the NPS being assessed.
Minor negative effect likely	**-**	Policy is expected to result in adverse effects of a lower magnitude or smaller scale, which can be mitigated through standard measures and best practice.
Significant negative effect likely	**--**	Policy is expected to result in adverse effects of a greater magnitude or larger scale, which cannot be mitigated OR will require extensive and bespoke mitigation solutions (further studies may be required to identify appropriate solutions).

AoS of reasonable strategic alternatives for implementing the aims of the NPSs was also undertaken. To maintain the AoS at a level proportionate to the level of detail within the NPS,

the strategic alternatives were assessed at a higher level than the AoS Framework by using six sustainable development themes, identified through aggregating the AoS objectives into topics that better reflected the strategic characteristics of the options.

Table NTS-3: Sustainable development themes and AoS Objectives

Headline SD Theme	AoS / SEA Objectives (numbers refer to AoS Objective)
Climate change	Net Zero (1)
Security of energy supply	Health (11), Economy (13)
Health and well-being	Air Quality (8), Health (11)
The economy	Health (11), Economy (13), Resources (14)
The built environment	Transport (12), Heritage (5), Adaptation and Resilience (2), Landscapes and Townscapes (6)
The natural environment	Adaptation and Resilience (2), Biodiversity (3 & 4), Heritage (5), Landscapes and Townscapes (6), Water (7), Soils (9), Geodiversity (10)

Note that in consideration of Alternatives, the assessment is undertaken in comparison to the updated NPSs. The findings of the AoS in respect of the updated EN-1 broadly apply to all of the alternatives – the key differentiator being the inclusion or absence of specific technologies and the relative outcomes of such inclusion or absence.

In order to draw comparison between the Alternatives on a broad level, the following scale is used:

Table NTS-4: Differentiator Scale for Alternatives

Scale	Description
Large Positive	A materially different positive outcome is anticipated compared to EN-1*
Positive	A more positive outcome is anticipated compared to EN-1*
Neutral	This alternative is anticipated to have the same outcome as EN-1*
Negative	A more adverse outcome is anticipated compared to EN-1*
Large Negative	A materially different adverse outcome is anticipated compared to EN-1*

*EN-2 to EN-5 for technology specific AoS

4. Summary of key AoS findings for updated EN-1

The AoS team provided recommendations for clarifying and strengthening of the updated NPS and these were discussed with NPSs development team in an iterative fashion alongside the consideration of alternatives. Key findings for overarching EN-1 and technology (relating to EN-3 and EN-5) specific sustainability effects are provided below. The AoS for EN-3 and EN-5 noted additional specific non-generic adverse effects related to individual technologies, over and above those noted within EN-1.

Note that for all assessments there is uncertainty as to the precise level of effect as this will be dependent upon the precise nature of the energy infrastructure and the area within which it is to be located.

AoS Findings for EN-1: Overarching National Policy Statement for Energy

The following sets out key findings from the AoS for updated EN-1.

- The energy NPSs continue to be transformational in enabling England and Wales to transition to a low carbon economy and thus help to realise UK Net Zero commitments sooner than continuation under the current planning system. However, there is also some uncertainty about the exact level of transformation. While Clean Power 2030 provides greater clarity on how government views energy infrastructure developing, it is still difficult to predict the mix of technology that will be delivered by the market against the framework set by the Government and its cumulative contribution.
- It is important to recognise that energy NPSs will still result in the generation of residual carbon emissions (due to some of the proposed technologies being emitters) and these carbon emissions will need to be addressed if the Government target of Net Zero by 2050 is to be met. Also, some climate change is inevitable and as such, there is a need for energy infrastructure to be resilient to climate change – the NPS, particularly in EN-1, continues to set out a clear and robust approach for ensuring this is done.
- The energy NPSs are likely to continue to contribute positively and cumulatively towards improving the vitality and competitiveness of the UK energy market by providing greater clarity for developers. This should improve the UK's security of supply and, less directly through increased economic opportunities for local communities, have positive effects for health and well-being in the medium to longer term through helping to secure affordable supplies of energy and minimising fuel poverty. However, it is to be recognised that in health terms there is the potential for effects to continue to be distributed disproportionally at a local level, with vulnerable groups being potentially susceptible to effects, though these issues can be addressed when details of schemes and their location are known.

- The development of new energy infrastructure supported by the updated energy NPSs, at the scale and speed required to meet the current and future need, is likely to continue to have some minor negative effects, potentially cumulative, on cultural heritage, the water environment, air quality, soils and potentially geodiversity. This is an inevitable reflection of the nature of this largescale infrastructure, the 'footprint', material and resource requirements as well as the construction activities involved to develop these assets.
- Short-term construction negative effects (from new energy infrastructure supported by the energy NPSs) continue to be likely through an increased use of raw materials and resources and also changes to existing land and sea uses which may affect the local economy. In general, it should be possible to mitigate satisfactorily the most significant potential negative effects of new energy infrastructure consented in accordance with the energy NPSs, and they explain ways in which this can be done.
- Due to the nature and size of potential infrastructure schemes (as well as likely potential locations in areas such as coastal areas), opportunities for landscape mitigation will continue to be limited and while energy NPSs, and in particular EN-1, set out a robust approach to addressing impacts on landscape, townscape and seascape across the short, medium and long timeframes, significant adverse and potentially cumulative effects are likely to remain.
- There is potential for significant negative, including cumulative, effects on biodiversity to arise from construction and operation activities to continue as a result of energy NPSs infrastructure schemes. However, due to the possibility of enhancement of the natural environment and biodiversity net gains as part of such schemes, there is also potential for significant positive cumulative effects on biodiversity in the medium to long term.

Apart from carbon emissions that result in global cumulative negative effects once in the atmosphere, cumulative negative effects will likely continue to be felt mostly at the regional or sub-regional scale on biodiversity, landscape, water and air quality, water resources, flood risk, coastal change and health levels depending upon location and the extent of clustering of new energy and other infrastructure. Proposed energy developments will still be subject to project level assessments, including Environmental Impact Assessment, and this will address locationally specific effects. The energy NPSs set out mitigation for cumulative negative effects by requiring the Secretary of State to consider accumulation of effects as a whole in their decision-making on individual applications for development consent.

Table NTS-5: Summary of Key Findings for updated EN-1

AoS Objective	**Timescales**		
	Short	Medium	Long
1. Consistent with the national target of reducing carbon emissions to Net Zero by 2050	**- / +**	**- / ++**	**++**

2. Maximise adaptation and resilience of built assets, communities and people as well as natural assets, habitats and species, to the multiple effects of climate change	**+**	**++**	**++**
3. Enhance biodiversity and ecological networks, deliver biodiversity net gain, protect and support ecosystem resilience and functionality	**--**	**-- / ++**	**-- / ++**
4. Protect and enhance sites designated for their international importance for nature conservation purposes	**--**	**--**	**--**
5. Protect and enhance cultural heritage assets and their settings, and the wider historic environment	**-**	**-**	**-**
6. Protect and enhance the character and quality of the landscapes, townscapes and waterscapes and protect and enhance visual amenity	**--**	**--**	**--**
7. Protect and enhance the water environment	**-**	**-**	**-**
8. Protect and enhance air quality on a local, regional, national and international scale	**-**	**-**	**-**
9. Protect soil resources, promote use of brownfield land and avoid land contamination	**-**	**-**	**-**
10. Protect, enhance and promote geodiversity	**-**	**-/+**	**-/+**
11. Improve health and well-being and safety for all citizens and reduce inequalities in health	**+**	**+**	**+**
12. Promote sustainable transport and minimise detrimental impacts on strategic transport network and disruption to basic services and infrastructure	**-**	**+**	**+**
13. To promote a strong economy with opportunities for local communities	**- / ++**	**++**	**++**
14. Promote sustainable use of resources and natural assets	**-**	**0**	**0 / +**

As required by the SEA Regulations, an assessment of reasonable alternatives has also been carried out in respect of updated EN-1. The alternatives assessed against updated EN-1 were:

Table NTS-6: Plan and alternatives considered for EN-1

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

Note is made updated EN-1 adds Onshore Wind to the technologies and stipulates that Energy from Waste can no longer be Unabated.

Table NTS-7: Summary of AoS findings for Alternatives to EN-1

Headline SD Themes	EN-1	Alternative A1	Alternative A2	Alternative A3
Climate change (Net Zero)		Large Positive	Large Positive	Negative
Security of energy supply		Large Negative	Negative	Negative
Health and well-being		Neutral	Neutral	Neutral
The economy		Neutral	Neutral	Neutral
The built environment		Positive / Negative	Negative	Negative
The natural environment		Negative	Negative	Negative

The key differences between the different alternatives and the updated EN-1 are:

Alternative A1: As updated EN-1 without Nuclear and Unabated Natural Gas would:

- be materially beneficial for the achievement of Net Zero due to no emissions from unabated gas, although reliant on smaller group of low carbon technologies for delivery;
- be materially adverse on security of supply as reliant on technologies still under development such as Hydrogen and Energy Storage at scale to ensure peak supply and maintain the stability and security of the electricity system;
- have no differential effects on the economy or human health (compared to updated EN-1) because of providing for a range of low energy sources to meet future energy needs,

as well as economic stimulus and improved employment opportunities, though note some negative effects may arise due to disruption to existing industries / communities; and

- have a mix of beneficial and negative effects on the built and natural environment due to positive environment effects through for example mitigation of climate change, though negative due to large areas of land and sea required for renewables.

Alternative A2: As updated EN-1 without Unabated Natural Gas would:

- be materially beneficial for the achievement Net Zero due to no emissions from unabated gas;
- have adverse effects on Security of Supply, as although it would be less reliant (than alternative A1) on yet to be fully proven technologies, such as Hydrogen and Energy Storage at scale, there would still be a need for them to ensure peak supply and maintain the stability and security of the electricity system;
- be neutral (compared to updated EN-1) in relation to benefits to the Health and Well-being and Economy SD themes by providing for a range of low energy sources to meet future energy needs, as well as economic stimulus and improved employment opportunities though there may also be economic and community costs at the local scale; and
- have a negative effect for the Built and Natural Environment as greater use of Natural Gas with CCS (compared to updated EN-1) may require more land take due to the associated need for CCS infrastructure.

Alternative A3: As updated EN-1 without Nuclear would:

- have adverse effects on the achievement of Net Zero due to greater ongoing emissions from unabated gas;
- have adverse effects on Security of Supply as reliant on a smaller range of electricity generating technologies;
- be neutral in terms of Health and Well-being and the Economy by providing for a range of low energy sources to meet future energy needs, as well as economic stimulus and improved employment opportunities though there may also be economic and community costs at the local scale;
- have adverse effects for the Built Environment due to additional land take by wind and solar Renewables and location near to coasts, estuaries or rivers by Natural Gas with or without CCS, affecting flood risk; and
- have adverse effects for the Natural Environment as emphasis on Renewables and Natural Gas with CCS would require larger areas (both on land and at sea) to meet the same energy output as updated EN-1.

None of these alternatives are as good as, or better than, the proposals set out in updated EN-1 and therefore the government's preferred option is to take forward the updated Energy NPS EN-1 (and the technology-specific updated NPSs EN-3 and EN-5, see following sections).

5. AoS findings for updated EN-3 Renewable Energy Infrastructure

Key points from the AoS for updated EN-3 (AoS-3) are:

- Renewable energy infrastructure development has similar effects to other types of energy infrastructure matching many of the strategic effects identified for EN-1. Solar, biomass or energy from waste facilities, as well as onshore wind, will occupy land and as such potentially result in a whole range of terrestrial impacts. Offshore wind will, conversely, have impacts on marine and coastal environments.
- Non-generic effects associated with additional detail provided about the Technologies in updated EN-3 were considered for eight AoS objectives (Carbon Emissions, Biodiversity, Water Environment, Landscape / Seascape, Air Quality, Health, Economy and Resources). The non-generic effects continue to be found to be generally negative across short, medium and long terms, though there are some elements of positivity in respect of health, the need to promote sustainable use of resources and natural assets.
- Consistency with the national target of reducing carbon emissions to Net Zero by 2050 has changed to be considered minor negative over the short andmedium term for updated EN-3 reflecting residual emissions from biomass and the updates requiring EfW plants to installed with CCR in the short to medium term, followed by neutral effects in the long term as CCR plants have CCS installed or new plants are built with CCS.
- Negative effects on biodiversity are likely to continue occur with all renewable energy generation projects covered in updated EN-3, some of which could be significant. This includes impacts on fish; seabed habitats and species including intertidal and subtidal; marine mammals; and birds from wind farms in terrestrial and marine environments. In terrestrial environments there could also be habitat loss or alteration resulting from land clearance and soil compaction; and/ or construction of infrastructure; and compromised water quality impacting aquatic flora and fauna from a variety of renewable energy technology.
- Positive specific effects associated with the technologies may continue to occur on the fishing industry from offshore wind farms acting as fish nurseries; on biodiversity from solar farms, where land is no longer managed intensively; on biodiversity from pumped hydro storage schemes, as a result of habitat creation and fish re-stocking; on biodiversity from onshore Wind Farms (where opportunities are taken for enhancement as set out in the updated EN-3) and on resources where residues from biomass plants can be recovered and re-used rather than being sent to landfill. Renewable energy generation is also anticipated to continue to provide economic opportunities for local communities and benefit the wider economy.

Updated EN-1 (informed by updated AoS-1) includes extensive mitigations to ensure these effects are considered by applicants and the Planning Inspectorate when preparing and

determining applications. Updated EN-3 (informed by updated AoS-3) contains a range of specific mitigation measures, along with those proposed in updated EN-1, which seek to address the range of non-generic negative effects identified. In some cases, such as for noise impacts, which are included under the Health AoS objective, it is recognised that the effect may not be able to be mitigated completely. Overall, it is considered that residual negative but uncertain effects will remain for the AoS objectives considered. It should be noted, however, that these technologies have an important role to play in meeting the UK's energy needs and supporting delivery towards the UK's net zero target, and EN-3 notes that the benefits of meeting this target may outweigh some negative effects.

Table NTS-8: Summary of key AoS findings – Biomass and energy from waste

AoS Objective	**Assessment of non-generic effects (by timescale)**		
	S	M	L
Consistent with the national target of reducing carbon emissions to Net Zero by 2050	**-**	**-**	**0**
Protect and enhance the character and quality of the landscapes, townscapes and waterscapes and protect and enhance visual amenity	**-**	**-**	**-**
Protect and enhance air quality on a local, regional, national and international scale	**-**	**-**	**-**
Improve health and well-being and safety for all citizens and reduce inequalities in health	**-**	**-**	**-**
Promote sustainable use of resources and natural assets	**-/+**	**-/+**	**-/+**

Note that the AoS assessment has changed for this objective due to the policy changes concerning EfW discussed previously improving the consistency with the national net zero target.

Table NTS-9: Summary of key AoS findings – Offshore wind

AoS Objective	**Assessment of non-generic effects (by timescale)**		
	S	M	L
Enhance biodiversity and ecological networks, deliver biodiversity net gain, protect and support ecosystem resilience and functionality	**-**	**-**	**-**
Protect and enhance the character and quality of the landscapes, townscapes and waterscapes and protect and enhance visual amenity	**-**	**-**	**-**

To promote a strong economy with opportunities for local communities	**-/+**	**-/+**	**-/+**

Table NTS-10: Summary of key AoS findings – Pumped Hydro

AoS Objective	**Assessment of non-generic effects (by timescale)**		
	S	M	L
Enhance biodiversity and ecological networks, deliver biodiversity net gain, protect and support ecosystem resilience and functionality	**-**	**-/+**	**-/+**
Protect and enhance the character and quality of the landscapes, townscapes and waterscapes and protect and enhance visual amenity	**-**	**-**	**-**
Improve health and well-being and safety for all citizens and reduce inequalities in health	**--**	**--**	**-**
To promote a strong economy with opportunities for local communities	**-/+**	**-/+**	**-/+**

Table NTS-11: Summary of key AoS findings – Solar Photovoltaic

AoS Objective	**Assessment of non-generic effects (by timescale)**		
	S	M	L
Enhance biodiversity and ecological networks, deliver biodiversity net gain, protect and support ecosystem resilience and functionality	**-**	**-/+**	**-/+**
Protect and enhance the character and quality of the landscapes, townscapes and waterscapes and protect and enhance visual amenity	**-**	**-**	**-**
Improve health and well-being and safety for all citizens and reduce inequalities in health	**-**	**-**	**-**

Table NTS-12: Summary of key AoS findings – Tidal Stream Energy

AoS Objective	**Assessment of non-generic effects (by timescale)**		
	S	M	L

Enhance biodiversity and ecological networks, deliver biodiversity net gain, protect and support ecosystem resilience and functionality	-	-	-
Protect and enhance the character and quality of the landscapes, townscapes and waterscapes and protect and enhance visual amenity	-	-	-

Table NTS-13: Summary of key AoS findings – Onshore wind

AoS Objective	**Assessment of non-generic effects (by timescale)**		
	S	M	L
Enhance biodiversity and ecological networks, deliver biodiversity net gain, protect and support ecosystem resilience and functionality	**-/+**	**-/+**	**-/+**
Protect and enhance the character and quality of the landscapes, townscapes and waterscapes and protect and enhance visual amenity	**--**	**--**	**--**
Improve health and well-being and safety for all citizens and reduce inequalities in health	**-**	**-**	**-**
To promote a strong economy with opportunities for local communities	**-/+**	**-/+**	**-/+**

Note that the introduction of Onshore Wind as a technology has merit undertaking a whole new assessment of this technology in the updated AoS.

As required by the SEA Regulations, an assessment of reasonable alternatives has also been carried out in respect of the updated EN-3. Two alternatives assessed against updated EN-3 are:

- EN-3 (a): only consent biomass/ EfW plant with Combined Capture and Storage (CCS),
- EN-3 (b): not consent Onshore Wind

Note that alternative EN-3 (b) is new in the updated AoS and reflects the fact that the previous EN-3 excluded such technology.

Table NTS-14: Summary of AoS findings for Alternatives to EN-3

Headline SD themes	**EN-3**	**Alternative (a)**	**Alternative (b)**
Climate Change (Net Zero)		Positive / Negative	Negative
Security of Energy Supply		Negative	Negative
Health & Well-Being		Positive / Negative	Negative
The Economy		Positive / Negative	Negative

The Built Environment		Positive / Negative	Positive
The Natural Environment		Positive / Negative	Positive

The key difference between alternative (a) and updated EN-3 would be the benefit for the achievement of net zero due to reduction of emissions from EfW and also biomass due to the installation of CCS. This assessment is highly uncertain and would depend on what happens to the waste if not used within the power sector (as energy recovery from residual waste has a lower greenhouse gas impact than landfill) and the extent to which biomass may be more cost effective in decarbonising other sectors (such as heat and transport) over the long-term.

However, the use of carbon capture and storage with biomass and energy from waste could present a more sustainable alternative than the policies set out in updated EN-1 and updated EN-3, if implemented in a way which minimises unintended consequences.

Alternative (b), not consenting onshore wind, could be detrimental in meeting Net Zero targets as reliance would need to be replaced on other energy generating technologies with a higher carbon footprint. Alternative (b) could also be detrimental to Security of Supply, the Economy and Health and Wellbeing as it may compromise security of supply with a knock on effect on the economy and increase energy bills for consumers.

Across the remaining sustainable development themes (Built Environment and Natural Environment), the adoption of alternative (b) compared with updated EN-3 could deliver better protection for landscapes, townscapes and visual amenity as well as biodiversity, archaeology and cultural heritage.

The key differences between this alternative and updated EN-3 are potential benefits for the Built and Natural Environment but disbenefits for Climate Change, Security of Supply, Health and Wellbeing and the Economy. The inclusion of onshore wind in updated EN-3 is therefore the preferred approach as it will help decarbonise the electricity system quicker and achieve net zero targets, diversify the energy mix with less reliance on fossil fuels hence enhancing security of supply and through being one of the cheapest forms of renewable energy generation will contribute to lowering electricity costs and energy bills.

6. AoS findings for updated EN-5 Electricity Networks Infrastructure

Key points from the AoS for updated EN-5 are:

- Electricity networks infrastructure development has similar effects to other types of energy infrastructure, although due to the linear nature of cross-country, long electricity lines effects are often more dispersed and spread across a wider area. Therefore, for the majority of AoS objectives, the strategic effects of updated EN-5 are considered to match those identified in updated AoS-1.
- Non-generic effects associated with additional detail provided about the Technologies in EN-5 were considered for four AoS objectives (Carbon Emissions, Biodiversity, Landscape and Townscape, as well as Health and Wellbeing). The non-generic effects were found to continue to be generally negative across short, medium and long terms for these AoS Objectives, other than health and wellbeing which is considered neutral.
- In relation to the national target of reducing carbon emissions to Net Zero by 2050, effects are considered to continue to be negative across the short, medium and long term, due to the potentially unavoidable use of SF6 in switchgear.
- Minor negative effects of technology on biodiversity in the short, medium and long term, due to the possibility of overhead lines continuing to affect birds in certain circumstances, despite mitigations proposed.
- Significant and ongoing negative effects on landscape and townscape / visual amenity, across the short, medium and long term, due to overhead lines permanently affecting character and setting of landscapes and townscapes.
- Minor negative effects on health and well-being continue to be expected to arise across short, medium of long term, due to potential EMF exposure by people living near power lines.

The updated EN-1 (informed by updated AoS-1) includes extensive mitigations to ensure these effects are considered by applicants and the Planning Inspectorate when preparing and determining applications, respectively.

Updated EN-5 also sets out that a strategic approach to network planning is essential. This will be undertaken through the Holistic Network Design (HND) and associated follow up exercises, along with the Centralised Strategic Network Plans (CSNP). It is the intention that this approach will help reduce the overall impact of infrastructure by identifying opportunities for coordination, where appropriate, and taking a holistic view of both the onshore and offshore network.

The CSNP will provide an independent, long-term approach out to 2050 on how the transmission network should develop to meet energy security and decarbonisation goals. It will be delivered by the National Energy System Operator (NESO) and regulated by Ofgem. The first CSNP will be delivered in 2027. A range of environmental assessments will also be undertaken of proposals set out in this strategic approach and it is the case that the choice of strategic solution must be consistent with applicable Sections of updated EN-1 and updated EN-5, for example with regards to undergrounding in certain designated landscapes.

Updated EN-5 (informed by updated AoS-5) contains a range of technology specific mitigation measures, along with those proposed in updated EN-1, which seek to address the range of negative effects identified. Nevertheless, it is considered that residual negative, but uncertain, effects will continue to remain in most cases for the four AoS objectives considered.

Table NTS-15: Summary of key AoS findings specific to Electricity Networks

AoS Objective	**Assessment of non-generic effects (by timescale)**		
	S	**M**	**L**
Consistent with the national target of reducing carbon emissions to Net Zero by 2050	**-**	**-**	**-**
Enhance biodiversity and ecological networks, deliver biodiversity net gain, protect and support ecosystem resilience and functionality	**-**	**-**	**-**
Protect and enhance the character and quality of the landscapes, townscapes and waterscapes and protect and enhance visual amenity	**--**	**--**	**--**
Improve health and well-being and safety for all citizens and reduce inequalities in health	**-**	**-**	**-**

As required by the SEA Regulations, an assessment of reasonable alternatives was carried out in respect of updated EN-5. One alternative was identified and assessed: adopt a blanket presumption that all electricity lines should be put underground.

Table NTS-16: Summary of AoS findings for alternatives to updated EN-5

Headline SD Themes	**EN-5**	**Alternative (a)**
Climate change (Net Zero)		Negative
Security of energy supply		Negative
Health and well-being		Positive / Negative
The economy		Negative
The built environment		Negative
The natural environment		Positive / Negative

The key differences between this alternative and updated EN-5 are:

- adverse for the achievement of Net Zero due to the additional emissions associated with energy intensive tunnelling technologies.
- adverse for the Security of Energy Supply and the Economy due to higher costs and increased disruption for maintenance and repair.
- adverse for the Built Environment as excavations for undergrounding may affect unknown archaeology.

Given that underground lines are not without a range of adverse impacts of their own, and that they are significantly more expensive, it is considered better to adopt the policies set out in updated EN-1 and updated EN-5. This is because the range of factors to be taken into account means that any decision to underground is best taken within a more flexible policy framework that follows a case by case evaluation of all of the impacts of a particular project and supports the use of both undergrounding and overhead lines as appropriate, in line with the appraisal findings.

7. Cumulative effects with other plans and programmes

Cumulative effects on economies, communities and the environment that may arise where the effects of several proposed pieces of new energy infrastructure interact are intrinsic to the assessments of EN-1 to EN-5, including any updates made to the ENs.

Cumulative effects can also arise due to effects from the energy NPSs combining with effects from other plans and policies. However, due to the strategic and high level nature of the energy NPSs and the lack of any locational and specific detail on any infrastructure developments that are likely to be brought forward, as well as that inevitably there is going to be a delay between the adoption of the energy NPSs and any subsequent energy infrastructure development, it is not possible to know when (or indeed if) any subsequent project proposal will come forward and it is not therefore possible to predict what other plans and projects will be relevant to future project assessments. While this is the case in respect of this updated AoS, it is recognised that a more strategic approach is likely, through elements such as Holistic Network Design, the Strategic Spatial Energy Plan and the Centralised Strategic Network Plan (in respect of transmission lines set out in updated EN-5) and consideration of cumulative effects will be made as part of those processes.

The type of PPPs that could have cumulative or in-combination effects with infrastructure developed under the updated NPSs are:

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

Typical types of effects that could lead to cumulative or in-combination effects include (but are not limited to):

- Weakened resilience to climate change
- Noise, vibration and light disturbance;
- Air, land and water pollution;
- Changes to water quantity / flow and coastal change,
- Changes to landscape;

- Increased species injury and mortality;
- Changes in habitat extent, composition and structure;
- Changes to factors that affect Health and Wellbeing;
- New transport requirements; and
- Changes to factors that affect the Economy

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 sustainability parameters can tolerate and becoming significant effects. Note that projects that include non-energy infrastructure development and smaller scale development that is not an NSIP can also lead to cumulative or in-combination effects and should be considered at the appropriate point. 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.

8. Transboundary effects

Transboundary effects extend to multiple countries rather than just the UK. Potential transboundary effects from the NPSs are approached in a similar way to other cumulative effects, only that the assessment looks at effects that originate within the UK but have the ability to extend across national borders. Transboundary effects are addressed through Regulation 14 of the SEA Regulations, which requires notification to Member States of the European Union of any Plan or Programme which is considered likely to have significant effect on the environment of that Member State.

The updates made in respect of EN-1, EN-3 and EN-5 are not considered to give rise to new transboundary effects. As such, the assessment of transboundary effects remains unchanged from the previous iteration of the NPS. The two types of technology which continue to be considered in this assessment of transboundary effects remain nuclear and offshore wind and they are restated here for completeness.

Transboundary effects from nuclear power stations are addressed in the AoS of EN-6 and are expected to be addressed in new EN-7. Unintended release of radiation from nuclear power stations may result in transboundary effects. In the UK, the nuclear regulatory bodies will need to be satisfied that the radiological and other risks to the public associated with accidental releases of radioactive substances are as low as reasonably practicable and within the relevant radiological risk limit. As part of the site licensing process, a potential operator will be required to demonstrate that the nuclear facility is designed and can be operated such that several levels of protection and defence are provided against significant faults or failures, that accident management and emergency preparedness strategies are in place and that all reasonably practicable steps have been taken to minimise the radiological consequences of an accident. The robustness of the regulatory regime surrounding these installations in the UK thus result in a low probability of an unintended release and therefore any significant transboundary effects.

Radioactive releases from nuclear power stations are strictly controlled in accordance with limits laid down in permits issued by the Nuclear Installations Inspectorate and the Environment Agency under the Environmental Permitting (England and Wales) Regulations 2016. This regulatory system ensures that permitted radioactive discharges are within authorised limits. These releases are likely to remain sufficiently localised so as not to impact significantly on neighbouring countries.

Transboundary effects of offshore wind farms are identified in relation to fish, marine mammals and birds as their movements are independent of national geographical boundaries. The biodiversity assessment for this technology concluded that there are likely significant transboundary effects on these receptors. The HRA concludes that there is potential for adverse effects on habitat sites in other nations (transboundary), particularly as a result of offshore wind and coastal development.

Transboundary effects of offshore wind farms are also identified on human activities such as on navigation, wind energy, grid connection and other.

Therefore, it is considered that Ireland, France, Belgium, Germany, Denmark, Sweden and the Netherlands should be consulted on the potential for significant environmental effect from implementation of the NPS. For the same reasons, there would also be potential effects on Norway and the Crown Dependencies of the Isle of Man and the Channel Islands.

9. Note on Critical National Priority policy

The updated EN-1 recognise that there is an urgent requirement for the United Kingdom to become more energy independent, with secure and resilient energy supply and that this will require a smooth transition to a much greater reliance on low carbon sources of energy to achieve 2050 net zero ambitions. This requirement clearly aligns with the government's latest Clean Power 2030 Action Plan which accelerates the delivery of renewable and low carbon power in Great Britain to 2030 with at least 95% of the generation met by clean sources and a long term emphasis on electrification.

While climate change is the paramount environmental challenge, with profound implications for all economic, environmental and social issues identified in this updated AoS, it is also to be recognised that a focus on low carbon and renewable energy generation in pursuit of Net Zero targets and security of supply can have serious sustainability challenges and will require difficult decisions to be made during the planning process of any such new energy NSIP. As such, updated EN-1 sets out that there is a need to ensure the UK can maintain high environmental standards and minimise impacts, while increasing the levels of deployment needed to meet energy security and net zero ambitions.

On this basis, government has concluded that there is a critical national priority (CNP) for the provision of new nationally significant low carbon infrastructure, which is defined as a policy presumption that, subject to any legal requirements (including under section 104 of the Planning Act 2008), the urgent need for CNP Infrastructure to achieving energy objectives, together with the national security, economic, commercial, and net zero benefits, will in general outweigh any other residual impacts not capable of being addressed by application of the mitigation hierarchy.

Noting the exclusion of EfW and the addition of onshore wind, updated EN-1 identifies the following energy generating technologies as low carbon and therefore CNP infrastructure:

- for electricity generation, all onshore and offshore generation that does not involve fossil fuel combustion (that is, renewable generation, including anaerobic digestion plants, provided they meet existing definitions of low carbon; and nuclear energy generation) for the production of electricity and heat, including for other end uses such as hydrogen for decarbonising heavy industry and transport, as well as natural gas fired generation which is carbon capture ready.
- for electricity grid infrastructure, all power lines in scope of EN-5 including network reinforcement and upgrade works, and associated infrastructure such as substations. This is not limited to those associated specifically with a particular technology, because all new grid projects have a role in efficiently constructing, operating and connecting low carbon infrastructure to the National Electricity Transmission System.

- for other energy infrastructure, technologies, fuels, pipelines and storage infrastructure which fits within the normal definition of “low carbon”, such as hydrogen distribution, and carbon dioxide distribution.
- for energy infrastructure which is directed into the NSIP regime under section 35 of the Planning Act 2008 and fit within the normal definition of “low carbon”, such as interconnectors, Offshore Hybrid Assets, or ‘bootstraps’ to support the onshore network which are routed offshore.
- Lifetime extensions of nationally significant low carbon infrastructure, and repowering of projects, are also CNP infrastructure.

Assessment principles and processes outlined in the relevant updated and non-updated NPSs will continue to apply to any CNP Infrastructure, with consideration made of all relevant impacts and benefits for all planning applications, on a case-by-case basis. Applicants for CNP infrastructure must therefore continue to show how their application meets the requirements set out in the updated EN-1 and the relevant technology specific NPS, applying the mitigation hierarchy, as well as any other legal and regulatory requirements. Note though that updated EN-1 sets out that mitigation which results in a material reduction in generation capacity for CNP infrastructure should not be considered to be appropriate mitigation.

As such, it is anticipated that legal requirements such as those under Environmental Impact Assessment Regulations, or Habitats Regulations (or successor legislation), will continue to apply to all relevant energy infrastructure development and that every effort will be made to avoid, reduce and only after that compensate significant impacts of such NSIPs.

Developers must demonstrate in their application that the mitigation hierarchy has been applied. Developers should also demonstrate that the advice of the appropriate Statutory Nature Conservation Body (SNCB) has been sought, in order to determine that all residual impacts are genuinely those that cannot be avoided, reduced, or mitigated. Early engagement with SNCBs is encouraged, in order to help ensure that only applications which are fully prepared and comprehensive can be accepted for examination, enabling them to be properly assessed by the Examining Authority and leading to a clear recommendation report to the Secretary of State.

Therefore, it is anticipated that robust measures to ensure environmental protection will be provided for the vast majority of environmental issues. and it is only in exceptional circumstances, where residual impacts that are not capable of being addressed by application of the mitigation hierarchy, of any sort other than those that present an unacceptable risk to, or unacceptable interference with, human health, national defence or navigation, will the need for these protection measures be derogated ‘as a last resort’, when it can be satisfactorily demonstrated that the low carbon infrastructure could otherwise not be developed due to certain significant residual environmental impacts.

This ‘last resort’ approach will continue to result not only in likely significant effects on the environment but also on likely significant effects for other sustainability aspects, not

necessarily only of an environmental nature, which can be of positive or negative nature, or a combination of both. Effects may also differ between technologies.

It is also important to note that government's recent Clean Power 2030 Action Plan states clear objectives as far as avoiding significant environmental impacts for low carbon energy infrastructure. Such objectives include 'ensuring protection of nature is embedded into the delivery of Clean Power 2030' and 'new energy infrastructure should be built in a way that protects the natural environment by following a "mitigation hierarchy" to do what is possible to avoid damage to nature, and then minimising, restoring and delivering compensation when damage is impossible to avoid. The real opportunity available to the UK is to deliver clean power by 2030 in a nature positive way, such as rewetting lowland peat soils at the same time as constructing new solar farms or creating new wildlife corridors alongside or underneath linear energy infrastructure. This approach is not so much about "balancing" energy and the environmental needs; it's about integrating them. It's about rebuilding natural infrastructure at the same time as building the new energy infrastructure we need'. Given that most of the energy generating technologies identified as CNP are part of the low carbon energy infrastructure that Clean Power 2030 relies on, it is a recommendation of the AoS that Clean Power 2030 stated objectives need to be embedded in the assessment process of CNP infrastructure by the applicant and in the decisions made by the Secretary of State.

As the current CNP approach stops at compensation in the mitigation hierarchy it will not rebuild nature at the same as building the new energy infrastructure. It is recommended that CNP policy clearly states that enhancement will be required as part of any CNP compensation package.

10. Monitoring the effects of implementing the updated NPS

Monitoring involves measuring indicators which will enable the establishment of a causal link between the implementation of the plan and the likely significant effect (positive or negative) being monitored. It thus helps to ensure that any adverse effects which arise during implementation, whether or not they were foreseen, can be identified and that action can be taken to deal with them.

While significant effects have not been identified in relation to all Objectives and it is considered that in many instances the NPS provides robust policy to address issues, the non-specific spatial nature of the NPS does mean that there is, in some instances, a degree of uncertainty in findings and as such a potential for unforeseen individual or cumulative effects to arise. Therefore, it was considered important to take a precautionary approach to monitoring.

The monitoring programme prepared in the previous iteration of the NPS remains relevant and is presented below.

Table NTS-17: Overall effects and monitoring requirements for EN-1 to EN-5, including updates

AoS Objective	Overall effects of NPS and need for monitoring
Objective 1: Consistent with the national target of reducing carbon emissions to Net Zero by 2050	Generally, the NPS continue to be predicted to perform significantly positively in respect of this Objective through the promotion of a variety of zero and low carbon technologies and will likely be transformational in enabling England and Wales to transition to a low carbon economy and thus help to realise UK Net Zero commitments sooner than continuation under the current planning system. However, some uncertainty continues about the exact level of transformation as it is difficult to predict the mix of technology that will be delivered by the market against the framework set by the Government and its cumulative contribution in terms of GHG emissions. There remains a requirement for certain technologies which have been identified as resulting in negative effects across the short, medium and long term, due to the potential use of unabated carbon technologies and of SF6 in switchgear, respectively. It is thus important that these particular effects are monitored.
Objective 2: Maximise adaptation and resilience of built assets, communities and people	The NPS continue to generally perform well in respect of adaptation and resilience to climate change through the requirements that are placed on developers to address this extremely important topic in the face of unavoidable climate

as well as natural assets, habitats and species, to the multiple effects of climate change *	change. There continues to be a degree of uncertainty over the severity of such climatic events, how technologies may adapt to such circumstances and in combination effects with other non-energy infrastructure projects may affect such adaptation. As such there is a high chance of unforeseen effects arising against this objective which will need to be carefully monitored.
Objective 3: Enhance biodiversity and ecological networks, deliver biodiversity net gain, protect and support ecosystem resilience and functionality	The technologies promoted by the NPS continue to potentially result in significant adverse effects on biodiversity, both onshore and offshore, particularly in the short term but also in the medium to long term. The effects could be direct, indirect, cumulative or synergistic. Longer term, there continue to be opportunities for positive effects through achievement of Biodiversity Net Gain or other environmental enhancement as part of the implementation of the energy projects. However, there continues to be a degree of uncertainty associated with the effects identified due to the non-spatial nature of the NPS and a potential for unforeseen effects, from issues such as clustering of technology and in combination effects with other non-energy projects which will need to be carefully monitored.
Objective 4: Protect and enhance sites designated for their international importance for nature conservation purposes	There continues to bepotential for significant negative effects on sites designated for their international importance and nature conservation purposes (as a result of the implementation of energy projects promoted by the NPS or in combination with other non-energy projects) in the short, medium and long term. This could include effects on sites which are in the jurisdiction of other countries (transboundary). The effects identified continue to be uncertain as they will depend on the specific locations and scale of development, which is largely unknown at this stage given that the NPSs do not outline specific proposals. Such effects will require monitoring.
Objective 5: Protect and enhance cultural heritage assets and their settings, and the wider historic environment	For the most part, it is anticipated that there is the potential for continuation of minor negative effects (including cumulative effects) on heritage assets and their settings (designated and non-designated) on land and at sea in the short, medium and long term. It is considered that there are sufficient requirements planned by the NPS on developers to address the anticipated adverse effects associated with this Objective. However, it is considered that there is also a potential for continuation of unforeseen potentially significant effects to occur due to issues such as clustering of technologies which cannot be determined at this stage due to the non-specific / spatial elements of the NPS as well as in-combination effects with non-energy infrastructure projects. Such effects will require monitoring.

Objective 6: Protect and enhance the character and quality of the landscapes, townscapes and waterscapes and protect and enhance visual amenity	Significant negative effects for landscape, seascape and townscape and visual receptors continue to be likely as a result of the NPS implementation in the short, medium and long term and it is to be noted that due to the considerable size of energy infrastructure projects supported by the NPS, opportunities for mitigation of such effects will be limited. It is also considered that there continues to be a potential for unforeseen significant effects to occur due to issues such as clustering of technologies due to the non-specific / spatial elements of the NPS as well as in combination effects with non-energy infrastructure projects. It is thus important that such effects are monitored.
Objective 7: Protect and enhance the water environment	Minor negative effects for water quality are likely to continue as a result of the NPS implementation in the short term through to the long term as it will not be possible to avoid all negative effects on the water environment, given the likely scale and nature of the technologies being supported by the NPS. The effects may occur, for example, through construction activities releasing pollutants into the water environment and cooling water abstraction and discharge for technologies such as power stations. While it is considered that the NPS provides a robust approach to dealing with these issues, there remains the potential for significant effects to continue to occur due to unforeseen issues associated with the non-specific / spatial elements of the NPS and the potential for clustering of certain types of energy infrastructure and in combination effects with other non-energy infrastructure projects. Such effects will require monitoring.
Objective 8: Protect and enhance air quality on a local, regional, national and international scale	While the NPS notes a robust approach to managing effects on air quality, it is anticipated that such effects will likely continue to be slightly adverse, due to the potential for emissions of air pollutants during construction of projects and residual operational emissions for some types of technologies. While it is considered that the NPS provides a robust approach to dealing with these issues, there remains the potential for significant effects to occur due to unforeseen issues associated with the non-specific / spatial elements of the NPS and the potential for clustering of certain types of energy infrastructure and in combination effects with other non-energy infrastructure projects. Such effects will require monitoring.
Objective 9: Protect soil resources, promote use of brownfield land and avoid land contamination	Minor negative effects on soil resources are likely to continue as a result of the NPS implementation in the short, medium and long term due to the potential for loss of agricultural land and contamination of soil, potentially from spills of oil or chemicals used in the construction, operations and decommissioning of

	certain types of energy infrastructure. Some development of infrastructure may continue to provide opportunities to address contamination, or redevelop brownfield sites. The effects identified continue to be uncertain (and as such potentially unforeseen) as they will depend on the specific nature, location and scale of development. It is thus important that such effects are monitored.
Objective 10: Protect, enhance and promote geodiversity	There is potential for continuation of negative effects on geodiversity due to NPS implementation in the short, medium and long term, through loss of land / seabed, changes to coastal processes etc., particularly during construction impacting geodiverse sites. However, due to the potential for enhancement of access to geological features, there is also potential for continuation of minor positive effects in the medium to long term. The effects identified are uncertain (and as such potentially unforeseen) as they will depend on the specific location, nature, design and scale of development.
Objective 11: Improve health and well-being and safety for all citizens and reduce inequalities in health	Reliable energy supplies nationally promoted by the NPS will continue to contribute to positive effects generally on the economy and skills with indirect positive effects for health and well-being in the medium to longer term through helping to secure affordable supplies of energy and minimising fuel poverty. Opportunities for employment and training (across the short, medium and long term) are also continue to be likely, with consequent indirect beneficial effects on wellbeing. The NPS continues to make clear the need to identify potential adverse health impacts, including on vulnerable groups within society and notes that opportunities should be taken to mitigate direct impacts by promoting local improvements to encourage health and wellbeing. The potential for in combination effects with other non-energy infrastructure projects will also need to be considered. The success of such an approach would be informed through effective monitoring.
Objective 12: Promote sustainable transport and minimise detrimental impacts on strategic transport network and disruption to basic services and infrastructure	The NPS continues to provide for a robust approach to promoting sustainable transport, as well as minimising detrimental impacts on the strategic transport network and disruption to services and infrastructure. It also describes the need to promote sustainable transport modes (including water borne transport, as well as improving access by active, public and shared transport, walking and cycling), as well as to reduce the need for parking. As such, it is anticipated that uncertain (and as such unforeseen) effects may continue to be experienced in the short (construction) term but with benefits experienced across the later timescale of the

	development. There remains, however, the potential for significant effects to continue to occur due to unforeseen issues associated with the non-specific / spatial elements of the NPS and the potential for clustering of certain types of energy infrastructure and in combination effects with other non-energy infrastructure projects. Such effects will require monitoring.
Objective 13: To promote a strong economy with opportunities for local communities	Development of new energy infrastructure as promoted by the NPS will continue to support the security, reliability and affordability of the national energy supply and continue to lead to the provision of jobs in local areas to the development and further afield. Some of these jobs are likely to be specialist in nature, but others will be lower skilled, or suitable for apprenticeships or will provide opportunities to further develop skills. It is anticipated that most jobs created would be during the construction phase, with significantly less fewer jobs during operation and then an increase during any decommissioning phase. As noted though, a significant increase in workers can lead to stress on local housing and labour markets (particularly in more rural areas / smaller towns) and it is considered monitoring would help to inform approaches to these issues. As such, some slight adverse effects continue to be anticipated in the short term, but overall, there should be significant benefits in local areas during construction, with ongoing benefits through the medium to long term. There remains, however, the potential for continuation of significant effects to occur due to unforeseen issues associated with the non-specific / spatial elements of the NPS and the potential for clustering of certain types of energy infrastructure and in combination effects with other non-energy infrastructure projects. Such effects will require monitoring.
Objective 14: Promote sustainable use of resources and natural assets	The NPS continues to provide a robust approach to promoting sustainable use of resources and natural assets. A strong emphasis is placed on promoting the ‘Circular Economy’ and note is made of how good design can reduce the requirement for consumption of materials. Applying this to a project at as early a stage as possible will act to reduce consumption. Clear note is also made of a number of key aspects such as the waste hierarchy, and the requirement to set out the arrangements that are proposed for managing any waste produced for waste management plans, as well as the sourcing of materials from recycled or reused sources and the use of low carbon materials. While there will be a high level of consumption of sources in the short term (construction phases), including virgin material, this will reduce during the operational phase and techniques such as the

	use of Building Information management tools (or similar) will provide opportunities in the long term for realising the recovery and reuse of materials used at the construction stage. Use of resources and waste arisings will need to be monitored as part of scheme development.

Glossary and List of Abbreviations

Abbreviation	**Term**
ALC	Agricultural Land Classification
AONB	Area of Outstanding Natural Beauty (Now National Landscape)
AoS	Appraisal of Sustainability
AQMA	Air Quality Management Area
BAP	Biodiversity Action Plan
BAT	Best Available Techniques
BCCUS	Bioenergy with Carbon Capture Usage and Storage
BEIS	Department for Business, Energy and Industrial Strategy
BIM	Building Information Management
BMV	Best and Most Versatile
BNG	Biodiversity Net Gain
CCA	Climate Change Act
CCC	Climate Change Committee
CCR	Carbon Capture Ready
CCS	Carbon Capture and Storage
CCUS	Carbon Capture Usage and Storage
CfD	Contracts for Difference
CHP	Combined Heat and Power
CO2	Carbon Dioxide

CNP	Critical National Priority
CPS	Carbon Price Support
CSNP	Centralised Strategic Network Plans
DCO	Development Consent Order
DECC	Department for Energy and Climate Change
Defra	Department for Environment, Farming and Rural Affairs
DfT	Department for Transport
DNOs	Distribution Network Operators
DTI	Department for Trade and Industry
DWSZ	Drinking Water Safeguard Zone
EA	Environment Agency
EIA	Environmental Impact Assessment
EfW	Energy from Waste
EMF	Electro-Magnetic Field
EP	Environmental Permitting
EPR	Environmental Permitting Regulations
EPS	Emissions Performance Standards
EQLS	European Quality of Life Survey
ES	Environmental Statement
ETS	Emission Trading Scheme
EU	European Union
FCERM	Flood and Coastal Erosion Risk Management
FRA	Flood Risk Assessment
GHG	Greenhouse Gas

GVA	Gross Value Added
GW	Giga Watt
HDD	Horizontal Directional Drilling
HGV	Heavy Goods Vehicle
HND	Holistic Network Design
HIA	Health Impact Assessment
HMT	HM Treasury
HRA	Habitats Regulation Assessment
IED	Industrial Emissions Directive
IPCC	Intergovernmental Panel on Climate Change
kV	Kilo Volt
kWh	Kilo Watt hour
LDD	Local Development Document
LNG	Liquefied Natural Gas
LNR	Local Nature Reserve
LVIA	Landscape and Visual Impact Assessment
LWS	Local Wildlife Site
Mcm	Million standard cubic metres
MMO	Marine Management Organisation
MNR	Marine Nature Reserves
MPA	Marine Protected Area
MSFD	Marine Strategy Framework Directive
MW	Mega Watt
MWe	Mega Watt equivalent

NDC	Nationally Determined Contribution
NE	Natural England
NESO	National Energy System Operator
NGCC	Natural Gas Combined Cycle
NMVOC	Non-Methane Volatile Organic Compound
NNR	National Nature Reserves
NOx	Nitrogen Oxides
NPPF	National Planning Policy Framework
NPPG	National Planning Policy Guidance
NPS	National Policy Statement
NRW	Natural Resource Wales
NSIP	Nationally Significant Infrastructure Project
NVZ	Nitrate Vulnerable Zone
NZ	Net Zero
ODPM	Office of the Deputy Prime Minister
OECD	Organisation for Economic Co-operation and Development
OHA	Offshore Hybrid Assets
PM	Particulate Matter
PPP	Plans, Policies and Programmes
PV	Photovoltaic
RBD	River Basin District
RBMP	River Basin Management Plan
RO	Renewables Obligation
SA	Sustainability Appraisal

SAC	Special Areas of Conservation
SAM	Scheduled Ancient Monument
SCI	Sites of Community Importance
SCR	Selective Catalytic Reduction
SEA	Strategic Environmental Assessment
SF6	Sulphur Hexaflouride
SLVIA	Seascape and Landscape Visual Impact Assessment
SNCI	Site Nature Conservation Interest
SO2	Sulphur Dioxide
SPA	Special Protection Area
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
TAN	Technical Advice Note
UK	United Kingdom
UKCIP	UK Climate Impacts Programme
UKETS	UK Emissions Trading Scheme
WFD	Water Framework Directive
WfH	Waste from Households
WHS	World Heritage Site

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