Department for Energy Security & Net Zero

National Policy Statements for Energy

Appraisal of Sustainability – Post Adoption Statement

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Contents

1: Introduction

1.1: Background

This document is the Post Adoption Statement of the Appraisal of Sustainability (AoS) for the revised energy National Policy Statements (NPS). The NPS is set out as follows:

- **EN-1: Overarching National Policy Statement for Energy** – this sets out the Government's policy for delivery of major energy infrastructure and covers:
    - electricity generating stations (meeting the thresholds set out in the Planning Act 2008). This includes onshore generating stations (but not onshore wind or electricity storage, except hydroelectric storage) generating more than 50 megawatts (MW) 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, this 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; and
    - 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.

Where the need for a particular type of energy infrastructure set out above is established by EN-1, but that type of infrastructure is outside the scope of one of the technology specific NPSs, EN-1 alone will have effect and will be the primary basis for Secretary of State decision making. This will be the case for, but is not limited to, unconventional hydrocarbon extraction sites, hydrogen pipeline and storage infrastructure, Carbon Capture Storage (CCS) pipeline infrastructure and other infrastructure not included in EN-2 or EN-3.

Currently, EN-6 only has effect in relation to nuclear electricity generation deployable by the end of 2025, but also continues to provide information that may be important and relevant for projects which will deploy after 2025. EN-1 will have effect in relation to any new applications for nuclear electricity generation deployable after 2025, particularly in so far as it continues to establish the need for energy generation, including nuclear. A new technology specific NPS for nuclear electricity generation deployable after 2025 (EN-7) is proposed and will be developed to sit alongside EN-1.

- **EN-2: National Policy Statement for Natural Gas Generating Infrastructure**. This EN covers:
    - Natural gas-fired generating stations generating more than 50 megawatts (MW) in England and 350MW in Wales. Natural gas-fired generating stations configured to produce Combined Heat and Power (CHP) and be Carbon Capture Ready (CCR) and/or have Carbon Capture and Storage (CCS) technology applied; and
    - Hydrogen gas-fired electricity generating infrastructure over 50MW electricity generating capacity in England and over 350MW electricity generating capacity in Wales will require consent from the Secretary of State. The guidance that is contained in EN-2 has been drafted in respect of natural gas-fired electricity generating infrastructure but may also be important and relevant to hydrogen gas-fired electricity generating infrastructure.
- **EN-3: National Policy Statement for Renewable Electricity Generation**. This EN covers the following types of renewable electricity generating stations:
    - Energy from biomass and/or waste including mixed waste containing non-renewable fractions (>50 MW in England and >350MW in Wales);
    - Pumped hydro storage (>50 MW in England and >350MW in Wales);
    - Solar photovoltaic (PV) (>50 MW in England and >350MW in Wales);
    - Offshore wind (>100MW in England and >350MW in Wales); and
    - Tidal stream (>100MW in England and >350MW in Wales).
- **EN-4: National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines.** This EN covers:
    - Underground gas storage and LNG facilities (meeting tests relating to storage or working capacity and maximum flow rate;
    - Gas reception facilities with a projected maximum flow rate of at least 4.5 million standard cubic metres of gas per day;
    - Gas transporter pipelines (onshore) which are (a) expected to be more than 800mm in diameter and more than 40 kilometres in length or (b) the construction of which is likely to have a significant effect on the environment. The design operating pressure must be more than 7 bar gauge and must be expected to convey gas for supply (directly or indirectly) to at least 50,000 customers, or potential customers, of one or more gas supplier;
    - Pipelines over 16.093km (10 miles) long which would otherwise require authorisation under s.1 of the Pipelines Act 1962 together with diversions to such pipelines regardless of length.
- **EN-5: National Policy Statement for Electricity Networks Infrastructure**. This EN covers:
    - Above ground electricity lines whose nominal voltage is expected to be 132kV or above (other than a 132kV line associated with the construction or extension of a devolved Welsh generating station);
    - Above ground electricity lines whose length is greater than 2km;
    - Above ground electricity lines that are not a replacement line falling within Section 16(3)(ab) of the 2008 Act; and
    - Above ground electricity lines that are not otherwise exempted for reasons set out in Sections 16(3)(b) and (c), (3A) and (3B) of the 2008 Act.

Other kinds of electricity infrastructure (including lower voltage overhead lines, underground or sub-sea cables at any voltage, and associated infrastructure) will only be subject to EN-5 under certain circumstances.

The AoS that was undertaken of the NPS fulfilled two primary functions:

- The Environmental Assessment of Plans and Programmes Regulations 2004 (as amended), known as the Strategic Environmental Assessment (SEA) Regulations, require that before a plan or programme which establishes the framework for development consent is adopted, it should be subject to consultation alongside an environmental report which identifies, describes and evaluates the significant effects which its implementation is likely to have on the environment. Amongst other things, the energy NPS is a plan or programme for the purposes of the Regulations, and so an SEA was undertaken (as part of the wider AoS) alongside the development of the NPS to fulfil the function of an environmental report under the Regulations.
- The Planning Act requires that NPS must be the subject of an AoS before designation. 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 effects, 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).

By requiring the AoS to be produced alongside the NPS while still under preparation, the SEA Regulations and Planning Act aim to ensure that consultees are able to review and comment on the NPS with a sense of what it would mean in environmental and wider sustainability terms for a new generation of large-scale energy infrastructure to be built in accordance with decisions made on Planning Act applications for development consent, which will be decided on the basis of the energy NPS.

The AoS was undertaken in a staged approach as follows:

- Stage A - Scoping
- Stage B – Development and refining options and assessing effects
- Stage C – Preparing the AoS Report
- Stage D – Consulting on the NPS and AoS Report
- Stage E - Monitoring

See Section 3 for more detail on how the NPS was influenced by each of these stages of the AoS.

1.2: Purpose of this Post Adoption Statement

Part 4 of the SEA Regulations requires that information on the NPS, as well as how the SEA has been taken into account, should be published on adoption. Note that while the SEA Regulations focus on environmental effects, AoS covers a wider remit, with an additional focus on social and economic effects alongside environmental ones and this statement covers the three types of effects.

The purpose of the Post Adoption Statement is thus to describe:

- How sustainability considerations (including environmental) have been integrated into the NPS;
- How the AoS Report has been taken into account in preparation of the NPS;

- How the opinions expressed in the consultation on Scoping Report and the AoS Report have been taken into account;
- The reasons for choosing the NPS as adopted, in the light of other reasonable alternatives considered;
- The measures that are to be taken to monitor the significant sustainability effects (including significant environmental effects) of the implementation of the NPS.

This Post Adoption Statement is the last of three formal documents that have been produced as part of the AoS process, the first being the Scoping Report (March 2021) that set out the scope of the assessment and documents how the initial AoS Framework is identified. The second document was the AoS Report (published for public consultation in September – November 2021 and again in revised form in March - June 2023). A final AoS Report has been produced, which documents amendments made as a result of consultation comments received and has been published alongside the NPS on 22nd November 2022.

In addition, another separate document informed the preparation of the AoS Report: Habitats Regulations Assessment (HRA) Report also published alongside the AoS and NPS on 22nd November 2022.

The HRA Report was prepared for the draft NPS in a parallel process to the AoS and was the subject of public consultation alongside the draft NPS and the AoS Report in 2021. A revised HRA Report then accompanied the revised updated NPS during the second public consultation in 2023.

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 (as amended) (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 a 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.

It is important to note that the Habitats Regulations require assessment of the NPS as a plan and as such the HRA has been undertaken on that basis – this does not remove the requirement for detailed project level HRAs to be undertaken at development consent stage. There are no specific sites, allocations or any spatial component to the NPSs; therefore, the HRA has purely focused on the policy content within each NPS and has been applied to drafts of EN-1 to EN-5 in a manner which is consistent with their non-spatial, strategic nature.

While the lack of spatial information within the NPS made it impossible to reach certainty on the effect of the plan on the integrity of any habitat site, the potential for proposed energy infrastructure projects of the kind contemplated by EN-1 to EN-5 to have adverse effects on the integrity of such sites cannot be ruled out, based on following the precautionary principle. The HRA explains why the Government considers that EN-1 to EN-5 are, nevertheless, justified by imperative reasons of overriding public interest, while noting that its conclusions are only applicable at the NPS level and are without prejudice to any project-level HRA, which may result in the refusal of consent for a particular application.

This Post Adoption Statement should be read in conjunction with the NPS and AoS Report published on 22nd November 2023 and details the following:

Table 1.1 - How the Post Adoption Statement meets legislative requirements.

Purpose of the Post Adoption Statement	Where is this demonstrated in the Post Adoption Statement?
How environmental considerations have been integrated into the NPS	Section 2 sets out how environmental considerations were taken into account and notes that the cornerstone of doing this was through a comprehensive AoS Framework and its application through the assessment process.
How the AoS Report has been taken into account in preparation of the NPS	Section 3 notes how the AoS Report was taken into account. This section provides detail on key recommendations made through the AoS process and how other amendments such as those relating to Critical National Priority (CNP) for low carbon infrastructure were addressed.
How the opinions expressed in consultation have been taken into account	Section 4 notes that consultation took place in respect of the Scoping Report and of the main AoS Report on two occasions. Detail is provided in Appendix A on how these responses were addressed.
The reasons for choosing the NPS as adopted, in light of other reasonable alternatives considered	Section 5 sets out how consideration was made in the AoS in respect of a range of Alternatives to each NPS and notes that 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. Overall, it was shown that none of the alternatives presented were as good as, or better than, the proposals set out in the adopted NPS.
The measures that are to be taken to monitor the significant environmental effects of the implementation of the NPS	Measures to monitor significant effects are set out in Section 6. It is the intention that monitoring will focus upon significant effects that may give rise to irreversible damage, with a view to identifying trends before such damage is caused, and also significant effects where there was uncertainty in the AoS and where monitoring would enable preventative or mitigation measures to be undertaken.

2: How sustainability considerations (including environmental) have been integrated into Energy NPS

The energy NPS that were the subject of the AoS is concerned with the development of energy infrastructure in England and Wales.

Overarching EN-1 recognises that to produce the energy required for the UK and ensure it can be transported to where it is needed, a significant amount of infrastructure is needed at both local and national scale. High quality infrastructure is crucial for economic growth, boosting productivity and competitiveness, while also meeting decarbonisation targets. This type of infrastructure is, by its nature, typically largescale, with significant 'footprint', material and resource requirements to build and operate, along with significant construction, operation and decommissioning activities.

Recognition and addressing of these issues forms a key part of the NPS and the planning framework set out in EN-1 takes full account of the objective of contributing to the achievement of sustainable development. National Planning Policy Framework (NPPF), the Planning Practice Guidance (PPG) for England, and Planning Policy Wales and Technical Advice Notes (TANs) for Wales, are also taken into account, where appropriate. As such, EN-1 aims to ensure that the development of new energy infrastructure projects is consistent with the objectives for sustainable development, including consideration of other Government policies such as those for the environment, economic development, health and transport.

The approach to development of new energy infrastructure set out in EN-1 is built around a series of general policies and technical guidance, within which environmental and wider sustainability considerations form a key component. Among the considerations set out are those relating to general environmental effects, health, marine, biodiversity net gain, climate change adaptation and resilience, pollution control and other environmental regulatory regimes. More details on anticipated generic environmental impacts are then set out to cover the following topics:

- Air quality and emissions
- Greenhouse gas emissions
- Biodiversity and geological conservation
- Coastal change
- Dust, odour, artificial light, smoke steam and insect infestation
- Flood risk
- Historic environment
- Land use (including specific reference to certain designations)
- Noise and vibration
- Traffic and transport
- Resource and waste management
- Water quality and resources

While the above list is comprehensive in terms of generic environmental impacts applying to all infrastructure, EN-1 also recognises that there may be specific issues relevant to certain

technologies, or which warranted additional consideration due to the nature of different technologies.

Therefore, in addition to generic and overarching issues set out in EN-1, specific sustainability considerations pertinent to particular technologies are specified EN-2 to EN-5.

Of important note within EN-1 is that there is a requirement for all energy infrastructure proposals that are subject to the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) must be accompanied by an Environmental Statement (ES) describing the aspects of the environment likely to be significantly affected by the project.

The EIA Regulations specifically refer to effects on population, human health, biodiversity, land, soil, water, air, climate, the landscape, material assets and cultural heritage, and the interaction between them.

The EIA Regulations also require an assessment of the likely significant effects of the proposed project on the environment, covering the direct effects and any indirect, secondary, cumulative, transboundary, short, medium, and long-term, permanent and temporary, positive and negative effects at all stages of the project, and also of the measures envisaged for avoiding or mitigating significant adverse effects.

It is also the case that the NPS requires consideration of the potential environmental effects of a proposed project to be made even in those cases where the EIA Regulations do not apply and an ES is not required. In these circumstances, the applicant should instead provide information proportionate to the scale of the project on the likely significant environmental, social, and economic effects.

Therefore, it can be concluded that environmental considerations have been included in the NPS in a comprehensive and robust fashion from the very earliest stages of NPS development. The AoS process ensured that all relevant aspects were considered, tested and added as necessary to ensure the framework for the development of new nationally significant energy infrastructure projects was consistent with the objectives for sustainable development. How this was taken into account during the development of the NPS is set out next.

3: How the AoS Report was taken into account in developing the NPS

The AoS was undertaken in a series of stages and was developed alongside EN-1 to EN-5 in an iterative fashion, with environmental and wider sustainability considerations made in each stage. The AoS Framework of objectives and guide questions was a fundamental component of the AoS and was used as a mechanism to consistently test the environmental and wider sustainability performance of the NPS with all appropriate issues addressed (see Table 3-1). The AoS Framework was developed during the scoping stage and applied during the assessment of the NPS stage.

An overview of how the AoS influenced the NPS development during key stages is set out below.

Table 3.1 – AoS Objectives and Guide Questions

No	AoS Objective	Guide Questions
1	Consistent with the national target of reducing carbon emissions to Net Zero by 2050	Will the NPS… • Reduce carbon emissions of the national portfolio of major energy infrastructure consistent with the contribution share of the energy sector to the carbon budgets and Net Zero targets? • Reduce direct and indirect emissions of all greenhouse gases, including carbon dioxide, during construction, operation and decommissioning? • Maximise supply of energy from low carbon/renewable energy sources / use of low carbon/renewable energy? • Maximise opportunities for making use of waste heat? • Use carbon removals to offset residual emissions from energy such as Bioenergy with Carbon Capture & Storage (BECCS) and Nature Based Solutions? • Create new carbon sinks/removals through natural sequestration including that by natural habitats, green-blue Infrastructure and soils?

2	Maximise adaptation and resilience to climate change*
	
	*Adaptation is about taking the necessary steps to address the risks of climate change now and in the future. Resilience is the ability of a system to adsorb and bounce back after an adverse event now and in the future.
	
	Note that the risks of climate change to other built and natural infrastructure and assets are dealt with under AoS Objectives 3, 7 and 9.
		Will the NPS…
		• Require energy infrastructure that is resilient and adapted over its lifetime to the risks of climate change including:
		  ○ increased river, surface and groundwater flooding due to extreme winter rainfall events and increase in winter mean rainfall?
		  ○ increased coastal flooding and erosion damage due to sea level rise and storms?
		• Manage the risks associated with flooding over the energy infrastructure's lifetime, without increasing the flood risk elsewhere and identifying opportunities to reduce the risk overall, including through working with nature based solutions?
		• Avoid development in areas likely to be affected by coastal erosion or where this is not possible ensure that coastal change can be managed throughout the lifetime of the energy infrastructure?
		• Manage the risks associated to periods of limited water availability over the lifetime of the energy infrastructure?
		• Manage the risks associated with storms, heatwaves and wildfires over the lifetime of the energy infrastructure?
		• Contribute to the adaptation of nature to a changing climate?
		• Take advantage of the role and opportunity of nature based solutions to mitigate and adapt to climate change?

No	AoS Objective	Guide Questions
3	Enhance biodiversity, promote ecosystem resilience and functionality and contribute to the achievement of Biodiversity Net Gain and the delivery of the Nature Recovery Network	Will the NPS… • Protect and enhance nationally designated sites such as SSSIs, National Nature Reserves, Heritage Coasts and Marine Conservation Zones, including those of potential or candidate designation? • Protect and enhance valued habitat and populations of protected/threatened species on locally designated sites, including Key Wildlife Sites, Local Wildlife Sites and Local Nature Reserves? • Prevent development on irreplaceable habitats, such as ancient woodland and ancient and veteran trees except in wholly exceptional circumstances and with appropriate compensation measures? • Protect and enhance the Nature Recovery Network? • Protect and enhance priority habitats, and the habitat of priority species? • Promote new habitat creation or restoration and linkages with existing habitats? • Reduce or avoid impacts to habitats with important roles in carbon sequestration? • Increase the resilience of biodiversity to the potential effects of climate change? • 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? • Promote Biodiversity Net Gain for any new major infrastructure development in England using latest Defra metric? • Promote Net Benefit for Biodiversity for any new major infrastructure development in Wales? • Contribute to meeting relevant statutory targets in the Environment Act and delivering the Environmental Improvement Plan? • 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 loss of sites of international importance (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?

No	AoS Objective	Guide Questions
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 Historic Landscapes, Heritage Coasts, 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? • Avoid significant harm to heritage assets, for example from the generation of noise, pollutants and visual intrusion? • Ensure appropriate archaeological assessment prior to development? • Maintain or improve the interpretation, understanding and appreciation of the historic environment?
6	Conserve and enhance the natural beauty of protected landscapes, seascapes and townscapes, protect wider landscapes, seascapes and townscapes and enhance visual amenity	Will the NPS… • Support the integrity and uphold the statutory purposes of any areas designated for landscape value ie, National Parks and AONBs, including in conjunction with the provisions of any relevant Management Plan? • Maintain the character of those stretches of coastline identified and locally ‘designated’ as Heritage Coasts? • Conserve and enhance the intrinsic character or setting of designated landscapes, townscapes and seascapes? • Conserve, protect and enhance natural environmental assets (e.g. parks and green spaces, common land, woodland / forests etc) as they contribute to landscape and townscape quality? • Support measures to enhance the resilience of ecosystems at a landscape scale and also to maximise benefits including public access and enjoyment of landscapes? • Support functional landscapes e.g. those which reduce flood risk, sequester carbon or offer recreational opportunities in peri urban areas? • Minimise noise and light pollution from construction and operational activities on residential amenity and on sensitive locations, receptors and views?

No	AoS Objective	Guide Questions
7	Protect and enhance the water environment	Will the NPS… • Protect ground, surface, estuarine and coastal water quality, including during periods of increased summer temperatures due to climate change? • Safeguard the availability of water resources (surface and groundwater), including during periods of increased summer temperatures due to climate change? • Minimise the use of water resources / water consumption? • 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 avoids significant effects on seabed morphology and sediment transport processes? • Support measures to attain good environmental and ecological status of both marine and coastal/estuarine waters? • Contribute to meeting relevant statutory targets in the Environment Act 2021 and delivering the Environmental Improvement Plan?
8	Protect and enhance air quality	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? • Contribute to meeting relevant statutory targets in the Environment Act 2021 and delivering the Environmental Improvement Plan?
9	Protect soil resources and avoid land contamination	Will the NPS… • Assist in facilitating the re-use of previously developed land? • Avoid the loss of Best and Most Versatile agricultural land? • Protect soil resources and ensure their sustainable use and management? • Seek to remediate contaminated land? • Increase the resilience of soils to the potential effects of climate change through minimising erosion and pollution and promoting good water management to keep soil moisture in balance?

No	AoS Objective	Guide Questions
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? • 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 including air, noise, vibration and light pollution? • 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? • Promote Access to Greenspace and Green Infrastructure Standards? • Support enhanced security, reliability and affordability of the national energy supply?
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. 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	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? • Have wider socio-economic effects such as changes to the demographics, community services or house prices?

No	AoS Objective	Guide Questions
14	Promote sustainable use of resources and natural assets	Will the NPS… • Reduce consumption of materials, energy and resources during construction, operation and decommissioning of energy infrastructure? • Promote sustainable waste management practices in line with the waste hierarchy? • Encourage the use of recycled and / or secondary materials? • Promote the use of low carbon materials and technologies? • Produce waste by-products that require appropriate management? • Provide for safe and secure interim storage of waste, where necessary? • Promote the use of local suppliers that use sustainably-sourced and locally produced materials? • Support enhanced security, reliability and affordability of the national energy supply?

3.1: Stage A: Scoping

The AoS process for the NPS began in 2021, with the production of a Scoping Report which presented the output of the following tasks:

- Policies, plans and programmes of relevance to the NPS were identified and the relationships between them were considered, enabling any potential synergies to be exploited and any potential inconsistencies and incompatibilities to be identified and addressed.
- In line with the requirements of the Strategic Environmental Assessment (SEA) Regulations, baseline information was collated on the following 'SEA topics': biodiversity, population, human health, flora, fauna, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage and the landscape. As AoS is concerned with wider sustainability issues, than just environment, data on social and economic issues were also collated. This baseline information provided the basis for predicting and monitoring the likely effects of the NPS and helped identify alternative ways of dealing with any adverse effects identified.
- Drawing on the review of relevant plans, policies and programmes and the baseline information, key sustainability issues for the spatial area of the NPS (England and Wales), as well as Scotland and Northern Ireland were identified (including environmental problems, as required by the SEA Regulations). Consideration was given to the likely evolution of each issue if the NPS were not to be implemented.
- An AoS Framework was then developed, setting out the AoS objectives against which the NPS was subsequently appraised. The AoS Framework provides a way in which the sustainability impacts of implementing a plan can be described, analysed, and compared. It comprises a series of sustainability objectives and guide questions that have been used to 'interrogate' draft policies during the plan-making process. These AoS objectives define the long- term aspirations of the NPS with regard to social, economic, and environmental issues in relation to energy development in England and Wales. During the AoS, the 'performance' of the developing NPS was assessed against these AoS objectives and guide questions.
- The review of relevant plans, policies and programmes and the baseline information was updated as necessary during each stage of the AoS process to ensure that they reflected the most recent situation in and continued to provide an accurate basis for assessing the likely effects of the NPS.

Public and stakeholder participation was an important element of the NPS process. It helped ensure the robustness of the AoS report and that it had due regard for all appropriate information needed to support the NPS in making a contribution to sustainable development. The AoS Scoping Report for the NPS was published for consultation over the period 1st April 2021 to 6th May 2021 with the statutory consultees in England and the devolved administrations.

A series of consultation responses from a range of organisations were received to the AoS Scoping Report. How these responses were considered and taken into account is outlined below in Section 4.

3.2: Stage B: Development and refining options and assessing effects

Assessment was made of each of the components of the overarching EN-1 first against each of the AoS Objectives. Then the assessment of technology specific EN-2 to EN-5 was

undertaken nested within this overarching assessment and focussed on selected AoS Objectives most impacted by the type of technology.

Inter-relationships between topics and likely significant secondary, synergistic and cumulative effects were also reported where appropriate in each topic. Where significant adverse effects were predicted, possibilities for mitigation were suggested.

3.2.1: Recommendations made by the AoS

A key element of the AoS process is to make recommendations to plan makers in respect of how the plan can be strengthened in sustainability terms. Recommendations for clarifying and strengthening of the NPS were discussed within Government in an iterative fashion. Of particular note, an initial assessment was undertaken on a draft 'EN' document dated April 2021 and that this resulted in suggestions of additional mitigation (in the form of recommendations), to be considered in the drafting of the NPSs for public consultation. The following provides an overview of those key recommendations made and how these have been addressed in the NPSs.

EN-1

It was recommended that EN-1 acknowledged the need for all carbon emissions associated with NSIPs to be accounted for and that a new section dedicated solely to greenhouse Gas emissions was introduced in Chapter 5. It was also recommended that this new section should require new NSIPs planning applications to be accompanied by a Carbon Statement that will demonstrate:

- A whole life carbon assessment driving down construction, operational and decommissioning carbon impacts
- Measurement of embodied carbon impact from the products and construction stage
- Prioritisation of reduction in energy demand and consumption during operation over all other measures
- Calculation of in-use energy consumption and associated carbon emissions
- Calculation of renewable or abated energy generated during lifetime
- Calculation of carbon displacement ie. carbon savings by end user due to the use of particular low or zero carbon technology
- Any remaining residual carbon emissions offset/removed using a recognised framework

In relation to biodiversity, it was recommended that further detail on the mitigation of adverse effects was added to EN-1. This included requiring developments to implement a Biodiversity Management Strategy and biodiversity awareness training for employees and contractors so as to avoid unnecessary adverse impacts on biodiversity during the construction and operation stages. It was also suggested that timing of construction is planned to avoid or limit disturbance to habitats and species. It is to be noted that over the course of its development, the NPS in general considerably strengthened reference to the need for Biodiversity Net Gain as the requirements of the Environment Act 2021 became clearer.

Recommendations were also made in respect of landscape and how this can be enhanced, including through Landscape Management Plans. In addition, recommendation was made to ensure consideration of noise on residential amenity and sensitive receptors.

In relation to the water environment, recommendations were made for additional text relating to the management and treatment of surface water runoff during construction from exposed

topsoil prior to discharging and to limit the discharge of suspended solids e.g. from car parks or other areas of hard standing, during operation. It was also recommended that applicants were encouraged to consider protective measures to control the risk of pollution to groundwater beyond those outlined in River Basin Management Plans and Groundwater Protection Zones – this could include, for example, the use of protective barriers. Of particular note, it was recommended that EN-1 should note the need for applicants to describe relevant existing abstraction rates, proposed new abstraction rates and proposed changes to abstraction rates (including any impact on or use of mains supplies and reference to Abstraction Licensing Strategies) and also demonstrate how proposals minimise the use of water resources and water consumption in the first instance.

The NPS was also bolstered following recommendations through specific and detailed reference being made to 'Green Infrastructure' and it recognises that this can contribute to cleansing pollutants (along with a range of other environmental benefits). Reference has also been made to applicants being encouraged to develop and implement a Soil Management Plan which could help minimise potential land contamination. Similarly, for developments on previously developed land, applicants should ensure that they have considered the risk posed by land contamination, and where contamination is present, applicants should consider opportunities for remediation where possible. In addition, reference was also made following recommendation to the need to produce and implement a Geodiversity Management Strategy to preserve and enhance access to geological interest features, as part of relevant development proposals.

In relation to potential effects on people, recommendation was made to focus on vulnerable groups within society and the NPS was amended to reflect the need for opportunities to be taken to mitigate indirect impacts, by promoting local improvements to encourage health and wellbeing, this includes potential impacts on vulnerable groups within society and impacts on those with protected characteristics under the Equality Act 2010, i.e. those groups which may be differentially impacted by a development compared to wider society as a whole. The NPS also notes the requirement for consideration of disruption to services and infrastructure (such as road, rail and airports).

Recommendations were also made in relation to effects on the economy and the need to provide an accommodation strategy to be developed for construction and decommissioning phases, that would include for the need to provide temporary accommodation for construction workers if judged to be required. It was also recommended that note was made in EN-1 to encourage developers to ensure local suppliers are incorporated into the supply chain and expand on the assumption that apprenticeships and skills courses will be enacted through the noted Employment and Skills Plan to specifically note the need for provision of education and training programmes to be enacted. Furthermore, encouragement is now given through EN-1 for developers to proactively engage with local schools and colleges to further opportunities for 'upskilling'.

It was recommended that greater emphasis was placed within EN-1 to encourage developers to source materials in the first instance from recycled or reused sources. Materials used should also be low carbon where possible, with sustainable sources and local suppliers preferred. Emphasis should also be placed on ensuring that construction best practices are used to ensure that material is reused or recycled onsite where possible. Construction best practices should also be emphasised in relation to storing materials in an adequate and protected place on site as damages (including through deliberate vandalism) is a major source of waste arisings through construction. Note is now also made in EN-1 of

the benefits of using Building Information Management tools (or similar) to record the materials used in construction as this can help to reduce waste in future decommissioning of facilities, by identifying materials that can be recycled or reused.

Technology EN-2 to EN-5

In addition to those recommendations made to bolster generic environmental and population provisions in EN-1, recommendations were also made in respect of technology specific issues. For example, in EN-4 additional clarity was provided to note that there is a need to prevent or reduce leakage of gas. Similarly, additional clarity was provided in EN-5 in respect of fugitive SF6 (sulphur hexafluoride) emissions into the atmosphere, as well as the use of alternatives to SF6.

3.2.3: Addressing other changes to the NPS

In addition to the NPS being amended to reflect recommendations made by the AoS, there were also changes to the provisions of the NPS due to external influences and these were considered as required by the AoS. Of particular note were changes to wider Government policy such as the increased need for renewable energy generation due to the war in Ukraine followed by a new consideration of Critical National Priority (CNP) for low carbon infrastructure.

EN-1 recognises that there is an urgent requirement for the United Kingdom (UK) 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. This requirement aligns with the Government commitment to fully decarbonising the power system by 2035, subject to security of supply, to underpin 2050 net zero ambitions.

While clearly the climate crisis is the paramount environmental challenge, with profound implications for all economic, environmental and social issues identified in the 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 also have serious sustainability challenges and will require difficult decisions to be made during the planning process of any such new energy NSIP. As such, the NPS 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 CNP for the provision of new nationally significant low carbon infrastructure, which is defined as:

- for electricity generation, all onshore and offshore generation that does not involve fossil fuel combustion (that is, renewable generation, including anaerobic digestion and other plants that convert residual waste into energy, including combustion, provided they meet existing definitions of low carbon; and nuclear generation), 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 s35 of the Planning Act 2008, and fit within the normal definition of “low carbon”, such as interconnectors, Multi-Purpose Interconnectors, or ‘bootstraps’ to support the onshore network which are routed offshore.
- Lifetime extensions of nationally significant low carbon infrastructure, and repowering of projects.

Assessment was made of this new approach to CNP and it was noted that the application of CNP will have positive effects in respect of certain sustainability aspects. Most notably these positive effects are in relation to the need to address climate change, ensure security of energy supply and the needs of the economy.

Effects on health and wellbeing are considered to be potentially both positive and negative, but given the protection outlined in EN-1, the protection provided by other, separate and specific, legislation and the commitment that the CNP approach will not be applied if a development could result in an unacceptable risk to, or unacceptable interference with, human health, it is anticipated these positive or negative effects would not be significant.

However, it was considered that effects on the Built and Natural Environment, through the application of CNP, had the potential to be Large Negative.

As a result of this AoS finding, this issue was considered further by Government. This resulted in amendments to the CNP text to provide a greater level of clarification in respect of a number of issues, chiefly public safety, irreplacable habitats, the achievement of net zero, unacceptable interference offshore to navigation, or onshore to flood and coastal erosion risk.

While it should be emphasised that the nature of large scale energy infrastructure development means there will be inevitable effects on the environment and society, these amendments act to emphasise that there are particular issues which are of such importance that they can override the critical need for low carbon technologies. These clarifications significantly bolster the protection afforded to the environment, and are of particular note as issues such as biodiversity (irreplacable habitats), net zero (climate change), flood risk (climate resilience) act in a cross cutting fashion across many environmental topics.

3.3: Stage C: Preparing the AoS Report

The AoS Report described the process undertaken in carrying out the AoS of the NPS. The document sets out the findings of the appraisals, highlighting any likely significant effects (both positive and negative, and taking into account the likely secondary, cumulative, synergistic, short, medium, and long-term and permanent and temporary effects), making recommendations for improvements and clarifications that may help to mitigate negative effects and maximise the benefits of the NPS, and outlining proposed monitoring measures.

The AoS Report detailing the outcomes of the Stage A, B and C tasks accompanied the Draft NPS on public consultation in September - November 2021. A further round of consultation was undertaken in March - June 2023.

3.4: Stage D: Consulting on the NPS and AoS Report

The AoS Report was originally published for public consultation between September and November 2021. Due to consultation comments received, as well as changes to the global geo-political landscape and issues of energy security, it was decided to update the NPSs and associated AoS to reflect the latest situation.

The revised AoS Report was therefore published for further public consultation together with the revised draft NPSs between March and June 2023.

A series of consultation responses from a range of organisations were received to both iterations of the AoS Report. How these responses were considered and taken into account is outlined below in Section 4.

3.5: Stage E: Monitoring

Stage E will follow the adoption of the NPS. Chapter 12 of the AoS Report contains Monitoring that helps to examine the effects predicted through the AoS process against the actual effects of the NPSs when they are implemented. It is also a requirement of the SEA Regulations to describe the measures envisaged concerning how significant effects of implementing the NPS will be monitored – Section 17 (1) notes "*the responsible authority shall monitor the significant environmental effects of the implementation of each plan or programme with the purpose of identifying unforeseen adverse effects at an early stage and being able to undertake appropriate remedial action*". As ODPM Guidance advises, it is not necessary to monitor everything, or monitor an effect indefinitely, but rather monitoring needs to be focused on significant sustainability effects. Monitoring should therefore focus upon significant effects that may give rise to irreversible damage, with a view to identifying trends before such damage is caused, and significant effects where there was uncertainty in the AoS and where monitoring would enable preventative or mitigation measures to be undertaken.

Further detail is provided on Monitoring in Section 6 below.

4: How consultation responses have been taken into account

Consultation took place in respect of the Scoping Report and of the main AoS Report, and while not all organisations that were consulted responded, a large number of responses were made. The AoS Report sets out (in the Appendices Vol. I) a series of tables which note those responses made directly in respect of the AoS, or where comments were made in respect of the NPS, but which it was considered had implications for the AoS. These detailed tables also set out how the consultation responses were addressed and note where amendments were made to the NPS and/or the AoS Report.

An overview of amendments made to the NPS are as follows. Please see the detailed Tables in AoS Report Appendices Vol. I for further information. Note that a number of comments were received with particular reference to the HRA. Please see the HRA Report for further information.

Scoping Report

A number of comments received identified additional baseline information and this was added to the baseline overview and considered as to whether any particular implications arose from this for the AoS Framework. Similarly, additional documents were noted and added to the review of Plans and Policies. Although for the most part no additional AoS Themes were identified, this process helped to confirm that the AoS Framework captured all the key issues and as such was robust and appropriate. Where appropriate, reference was made to Technical Guidance documents that had not previously been noted.

Slight amendments to the wording of AoS Objectives were proposed, along with additional Guide Questions. These were considered and the AoS Framework was updated as considered appropriate.

Also, where appropriate, wording was amended to provide clarity or additional information of relevance. For example, additional text was added to emphasise and clarify that the NPS is ‘non-locational’ in nature and as such the AoS was necessarily generic.

While in relation to comments from Historic England, references were added to nationally important archaeological sites, Areas of Archaeological Importance and the Heritage at Risk Register.

Similarly, where a consultee noted issues relating to particular issues or technologies, reference was made as to where further detail could be found, or it was confirmed that the issue was being addressed in the AoS. For example in relation to comments received in respect of tidal energy, it was noted that effects were assessed generically in the AoS (in respect of EN-1) and tidal stream energy non-generic effects were specifically considered in AoS of EN-3.

Additional consideration was made to the environment, as well as relevant Plans and Policies in those parts of the UK outside the Plan area i.e. Scotland and Northern Ireland.

Responses to the first Public Consultation (2022)

Due to the passage of time since the original Scoping Report, a number of consultation comments referenced additional Plans and Programmes of relevance. These were considered and the AoS Framework checked to ensure that it remained appropriate and robust. The AoS Framework was also adjusted and expanded to better reflect issues raised and assessment results were confirmed – an example related to adaptation to climate

change. Text was revised to include direct and indirect climate risks to energy infrastructure: river surface and groundwater flooding; coastal flooding and erosion damage; heatwaves, wildfires, reduced water availability and soil desiccation.

New Guide Questions were added to reflect additional considerations – for example, reference was made to irreplacable habitat such as Ancient Woodland and Veteran Trees.

As with the Scoping Report, where a consultee noted issues relating to particular issues or technologies, reference was made as to where further detail could be found, or it was confirmed that the issue was being addressed in the AoS. An example of this relates to comments received in respect of Transboundary effects.

Clarification was provided in the AoS Report to expand upon how Sustainable Development Themes were identified and how these were used in the assessment of alternatives. It was also noted that the assessment of alternatives was necessarily high level and noted that one Alternative was no longer considered realistic (due to the latest offshore renewable energy policy as stated in the British Energy Security Strategy) and was removed from the AoS.

Clarification was also provided on the scope of the AoS / NPS where it was considered necessary to address particular comments. For example, it was noted that many issues would be addressed in detail at the Environmental Impact Assessment stage of the development process. It was also stressed that the Energy NPSs are high level policies that do not have a spatial dimension and therefore the AoS was unable to undertake spatially informed assessments.

Further clarification was provided as to how results of the AoS were derived. For example, in respect of certain heritage assets, it was clarified that it was anticipated harm will only occur in exceptional circumstances and the AoS assessment reflects this. Nevertheless, the text was also amended to reflect that there is potential for negative cumulative effects on the setting of heritage assets as well as physical impacts that ultimately may result in a change to the significance of heritage assets.

Additional text was added to the Monitoring Framework, to include two indicators suggested by Historic England. These related to measuring changes to heritage assets and measuring the number of asets that are placed on or removed from the Heritage at Risk Register as a result of development.

The approach taken to the AoS was also clarified and this noted that the AoS was informed by the requirements of the Strategic Environmental Assessment (SEA) Regulations 2004 and associated guidance. Note was also made that the AoS of the NPS was informed by a parallel assessment – HRA. The ‘Green Book’ guidance was reviewed and the remit of the AoS expanded to cover social cost of GHG, effects on natural environment and use of Climate Change Risk Assessment (CCRA) to consider current and potential future climate risks and vulnerability to energy infrastructure schemes.

Of particular note, the layout of the AoS Report was amended slightly to reflect some comments made. Further short introductory text to highlight particular key issues and potential adverse effects was added to section ‘Anticipated effects’ for each AoS objective. Also, the assessments were undertaken against each of the revised guide questions to form a more comprehensive view as to how each AoS objective had been addressed.

Responses to the second consultation (2023)

Following changes in Government priorities and policies due to world events such as the war in Ukraine, a new focus was placed on certain technologies and approaches outlined in the NPS. This resulted in a number of amendments to the NPS and the need for new consultation to be undertaken. A high level overview of amendments made to the AoS in light of this consultation are as follows.

As with the other consultation periods, additional reference was made to plans and policies where warranted e.g. where a new policy of relevance had been published. Similarly, slight amendments were made to provide greater accuracy or corrections. For example, the heritage monitoring indicators were changed to note Historic England as a source of data as was originally intended.

Clarification was provided within the AoS as to note there is a degree of uncertainty associated with findings, as effects can only be more fully known in light of the specific location and habitats affected and these issues are not known at this stage. It was also clarified that the AoS does not attempt to offset negative effects against positive effects. Rather it notes that there is a potential for both types of effect to occur and this is reflected in the AoS findings.

Additional text was also added to the AoS to clarify that it is anticipated that applicants must undertake a detailed assessment of the impacts for all phases of the life of a development in accordance with policy in EN-1. As per the NPS, there are a range of considerations that are applicable to a range of technology types, with ‘generic impacts’ and these are to be addressed.

Additional clarification has been added to the AoS to note that while there are provisions in the Environment Act 2021 to allow marine net gain to be made mandatory in the future, ongoing assessment is being undertaken by Defra in relation to environmental outcomes in the marine environment, with results uncertain at present.

A new section was added to the AoS Report to set out further consideration of the issue of environmental protection in exceptional circumstances, with a focus on CNP.

5: The reasons for choosing the NPS as adopted, in light of other reasonable alternatives considered

The NPS sets out national policy for the development of energy infrastructure and documents that there is a critical need for significant amounts of large scale energy infrastructure in order to meet the Government's energy objectives. When examining the reasons for choosing the NPS as adopted, it is important to understand the context within which the NPS was developed.

The NPS provides context on the development of such nationally significant energy infrastructure and sets out how the Energy White Paper, published in December 2020, outlined a strategy to transform the energy system, tackling emissions while continuing to ensure secure and reliable supply, and affordable bills for households and businesses. This was built on by the Net Zero Strategy, published in October 2021, which set out a long-term plan for the economy-wide transition to net zero that will take place over the next three decades. The British Energy Security Strategy, published in April 2022, and the Growth Plan of 23 September 2022 further reinforced ambitions and the importance of addressing underlying vulnerability to international oil and gas prices and reducing the UK's dependence on imported oil and gas. Powering Up Britain, published in March 2023, sets out how Government will enhance the country's energy security, seize the economic opportunities of the transition, and deliver on net zero commitments.

The requirements for energy security, with a secure, reliable and affordable supply, along with net zero commitments means there is a need for a step change in the energy system and the NPS recognises that meeting the Government objectives necessitates a significant amount of new energy infrastructure, both large nationally significant developments and small-scale developments determined at a local level. This includes the infrastructure needed to convert primary sources of energy (e.g. wind) into energy carriers (e.g. electricity or hydrogen), and to store and transport primary fuels and energy carriers into and around the country. It also includes the infrastructure needed to capture, transport and store carbon dioxide.

Decarbonisation means the UK is likely to become more dependent on some forms of energy compared to others. For example, using electrification to reduce emissions in large parts of transport, heating and industry could lead to more than half of final energy demand being met by electricity in 2050, up from 17 per cent in 2019, representing a doubling in demand for electricity. While there is a clear focus in the NPS on renewables, the NPS also recognises that there is a role for a mix of technologies, including nuclear and some limited residual use of unabated natural gas and crude oil and that transforming to a low carbon energy system will likely take some time.

The type of energy infrastructure needed to fulfil Government objectives are set out in the NPSs and include the following:

- Offshore Wind (including floating wind)
- Solar PV
- Wave
- Tidal Range
- Tidal Stream
- Pumped Hydro

- Energy from Waste (including ACTs) with or without CCS
- Biomass with or without CCS
- Natural Gas with or without CCS
- Low carbon hydrogen
- Large-scale nuclear, Small Modular Reactors, Advanced Modular Reactors, and fusion power plants
- Geothermal

It is recognised in the NPS that a combination of the above will be required, along with new electricity and gas networks / infrastructure, but the NPS notes that it is not the role of the planning system to deliver specific amounts or limit any form of infrastructure covered by this NPS. It is for industry to propose new energy infrastructure projects that they assess to be viable within the strategic framework set by Government. This is the nature of a market-based energy system. With the exception of new coal or large-scale oil-fired electricity generation, the Government does not consider it appropriate for planning policy to set limits on different technologies but planning policy can be used to support the Government's ambitions in energy policy and other policy areas.

Similarly, the NPS notes that it is not the Government's intention in presenting any of the figures or targets in this NPS to propose limits on any new infrastructure that can be consented in accordance with the energy NPSs. A large number of consented projects can help deliver an affordable electricity system, by driving competition and reducing costs within and amongst different technology and infrastructure types. Consenting new projects also enables projects utilising more advanced technology and greater efficiency to come forward. The delivery of an affordable energy system does not always mean picking the least cost technologies. A diversity of supply can aid in ensuring affordability for the system overall and relative costs can change over time, particularly for new and emerging technologies.

Within the context above, a number of reasonable alternatives were set out as in Table 5-1.

Table 5.1- NPS reasonable alternatives

Plan/Alternative	Overview of technologies
EN-1	Electricity generating stations including onshore generating stations (but not onshore wind or electricity storage, except hydroelectric storage) generating more than 50 megawatts (MW) in England and 350MW in Wales; 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; large gas reception and liquefied natural gas (LNG) facilities and underground gas storage facilities; cross-country gas and oil pipelines and Gas Transporter pipelines; above ground electric lines at or above 132kV. EN-1 will have effect in relation to any new applications for nuclear electricity generation deployable after 2025. A new technology specific NPS for nuclear electricity generation deployable after 2025 (EN-7) is proposed and will be developed to sit alongside EN-1.
EN-1 Alternative 1 (A1)	As EN-1 without Nuclear and Unabated Natural Gas.
EN-1 Alternative 2 (A2)	As EN-1 without Unabated Natural Gas.
EN-1 Alternative 3 (A3)	As EN-1 without Nuclear.
EN-2	Natural gas-fired generating stations generating more than 50 megawatts (MW) in England and 350MW in Wales. Natural gas-fired generating stations can be configured to produce Combined Heat and Power (CHP) and be Carbon Capture Ready (CCR) and/or have Carbon Capture and Storage (CCS) technology applied
EN-2 Alternative (a)	Only consent low carbon gas plant (i.e. natural gas with CCS or hydrogen-fired)
EN-2 Alternative (b)	Only consent combustion generation plants which can demonstrate that they are capable of converting to low carbon alternatives in future
EN-3	Energy from biomass and/or waste including mixed waste containing non-renewable fractions (>50 MW in England and >350MW in Wales); pumped hydro storage (>50 MW in England and >350MW in Wales); solar photovoltaic (PV) (>50 MW in England and >350MW in Wales); offshore wind (>100MW in England and >350MW in Wales); and tidal stream (>100MW in England and >350MW in Wales).
EN-3 Alternative (a)	Only consent biomass/ waste combustion plant with Combined Capture and Storage (CCS).
EN-4	Underground gas storage and LNG facilities (meeting tests relating to storage or working capacity and maximum flow rate; gas reception facilities with a projected maximum flow rate of at least 4.5 million standard cubic metres of gas per day; gas transporter pipelines (onshore) which are (a) expected to be more than 800mm in diameter and more than 40 kilometres in length or (b) the construction of which is likely to have a significant effect on the environment. The design operating pressure must be more than 7 bar gauge and must be expected to convey gas for supply (directly or indirectly) to at least 50,000 customers, or potential customers, of one or more gas supplier; pipelines over 16.093km (10 miles) long which would otherwise require authorisation under s.1 of the Pipelines Act 1962 together with diversions to such pipelines regardless of length

Plan/Alternative	Overview of technologies
EN-4 Alternative (a)	Only consent new gas infrastructure (gas pipelines and underground gas storage) which can demonstrate that it can convert to a low carbon alternative in future.
EN-5	Above ground electricity lines whose nominal voltage is expected to be 132kV or above (other than a 132kV line associated with the construction or extension of a devolved Welsh generating station); above ground electricity lines whose length is greater than 2km; above ground electricity lines that are not a replacement line falling within Section 16(3)(ab) of the 2008 Act; and above ground electricity lines that are not otherwise exempted for reasons set out in Sections 16(3)(b) and (c), (3A) and (3B) of the 2008 Act.
EN-5 Alternative (a)	Adopt a blanket presumption that all electricity lines should be put underground.

Note that in consideration of Alternatives, the assessment is undertaken in comparison to the revised NPSs. The findings of the AoS in respect of the revised 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. The same broad methodology was applied in relation to alternatives for revised EN-2 to EN-5 with the key differentiator being the inclusion or absence of particular aspects related to the particular technologies and the relative outcomes of such inclusion or absence.

In respect of EN-1, the key differences between the different alternatives and the plan (EN-1) are:

Alternative A1 As 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 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 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 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 EN-1) may require more land take due to the associated need for CCS infrastructure.

Alternative A3 As 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 to meet the same energy output as EN-1.

None of these alternatives are as good as, or better than, the proposals set out in EN-1 and therefore the Government's preferred option was to take forward the Energy NPS EN-1.

In respect of EN-2, the key differences between alternative (a) and EN-2 are:

- Alternative a) materially beneficial for the achievement of Net Zero due to no emissions from unabated gas.
- Alternative a) 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.

The key differences between alternative (b) and EN-2 are:

- Alternative b) beneficial for the achievement of Net Zero by ensuring that no new unabated gas plant is 'locked-in' without the capability to convert to low carbon alternatives when ready.
- Alternative b) adverse on Security of Supply, as although it would be less likely to be reliant (than alternative (a)) on yet to be fully proven technologies such as Hydrogen and Energy Storage at scale, there may still be a need for them to ensure peak supply and maintain the stability and security of the electricity system.

It is recognised that alternative (b) could present a more sustainable alternative than the policies set out in EN-1 and EN-2, if implemented in a way which minimises the potential impact on security of supply. As set out in the Energy White Paper, published in December 2020, the Government is committed to consult on proposals to update the Carbon Capture Readiness requirements to reflect technological advances, such as conversion to low carbon hydrogen and apply them more broadly, by removing the 300MW threshold and including all combustion technologies within scope. As noted in EN-1, if that consultation leads to

changes in the relevant legal or policy framework then those new requirements will apply and this NPS will be updated to reflect any revised requirements ahead of designation.

In relation to EN-3, the key difference between the alternative assessed and EN-3 would be its benefit for the achievement of net zero due to reduction of emissions from energy from waste and negative emissions through BECCS. 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 EN-1 and EN-3, if implemented in a way which minimises unintended consequences. As set out in the Energy White Paper, published in December 2020, the Government is committed to consult on proposals to update the Carbon Capture Readiness requirements to reflect technological advances, such as conversion to low carbon hydrogen and apply them more broadly, by removing the 300MW threshold and including all combustion technologies within scope. If that consultation leads to changes in the relevant legal or policy framework then those new requirements will apply and the NPS will be updated to reflect any revised requirements.

In relation to EN-4, the key material difference between the alternative assessed and EN-4 is that the alternative may materially compromise security of supply and affordability through providing less confidence for developers to come forward with planning applications**.** This may result in energy shortages which will in turn may compromise the economy. EN-4 thus represents a more sustainable alternative.

The key differences between the alternative assessed for EN-5 and 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 was considered better to adopt the policies set out in EN-1 and 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.

Overall, it was shown that none of the alternatives presented were as good as, or better than the proposals set out in the NPS and therefore the Government’s preferred option was to take forward EN-1 (and the technology-specific EN-2 to EN-5). It is also to be noted that the British Energy Security Strategy emphasises the importance of addressing underlying vulnerability to international energy prices by reducing dependence on imported oil and gas, and accelerating deployment of renewables, nuclear, hydrogen, CCUS, and related network infrastructure and the NPS is set out to reflect these wider requirements by introducing greater flexibility in energy infrastructure provision at the national level.

6: Measures to monitor significant sustainability (including environmental) effects

Monitoring helps to examine the effects predicted through the AoS process against the actual effects of the NPSs when they are implemented. It is also a requirement of the SEA Regulations to describe the measures envisaged concerning how significant effects of implementing the NPS will be monitored – Section 17 (1) notes “the responsible authority shall monitor the significant environmental effects of the implementation of each plan or programme with the purpose of identifying unforeseen adverse effects at an early stage and being able to undertake appropriate remedial action”. As ODPM Guidance[1] advises, it is not necessary to monitor everything, or monitor an effect indefinitely, but rather monitoring needs to be focused on significant sustainability effects. Monitoring should therefore focus upon significant effects that may give rise to irreversible damage, with a view to identifying trends before such damage is caused, and significant effects where there was uncertainty in the AoS and where monitoring would enable preventative or mitigation measures to be undertaken.

While significant effects have not been identified in relation to all Objectives and it is considered that in many instances the NPS text 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. On this basis a monitoring programme was set out and is detailed in Chapter 11 of the AoS Report, to which reference should be made to the for further detail. The following table 6-1 sets out an overview of the rationale for monitoring in respect of EN1 – EN-5 for each AoS Objective.

[1] Practical Guide to the Strategic Environmental Assessment Directive (ODPM, September 2005).

Table 6.1 - Rationale for measures to monitor significant effects for EN-1 to EN-5

AoS Objective	Rationale for monitoring (EN-1 to EN-5)
Objective 1 Consistent with the national target of reducing carbon emissions to net zero by 2050	Generally, the NPS is predicted to perform significant positive 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, there is some uncertainty 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. The promotion of three particular technologies (unabated gas, unabated waste incineration and electricity distribution networks) by the NPS 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 to climate change	The NPS generally performs 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 change. There is 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, promote ecosystem resilience and functionality and contribute to the achievement of Biodiversity Net Gain and the delivery of the Nature Recovery Network	The technologies promoted by the NPS could 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 are opportunities for counteracting positive effects through achievement of Biodiversity Net Gain as part of the implementation of the energy projects. There is, however, a degree of uncertainty associated with the effects identified due to the non-spatial nature of the NPS and a potential for unforeseen effects, due to issues such as clustering of technology and in combination effects with other non-energy projects which will need to be carefully monitored.

AoS Objective	Rationale for monitoring (EN-1 to EN-5)
Objective 4 Protect and enhance sites designated for their international importance for nature conservation purposes	There is potential 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 are uncertain as they will depend on the specific locations and scale of development, which is largely unknown at this 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 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 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 Conserve and enhance the natural beauty of protected landscapes, seascapes and townscapes, protect wider landscapes, seascapes and townscapes and enhance visual amenity	Significant negative effects for landscape, seascape and townscape and visual receptors are 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 is also 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.

AoS Objective	Rationale for monitoring (EN-1 to EN-5)
Objective 7 Protect and enhance the water environment	Minor negative effects for water quality are likely 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 nuclear and gas fired 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 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	While the NPS notes a robust approach to managing effects on air quality, it is anticipated that such effects will likely 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 and avoid land contamination	Minor negative effects on soil resources are likely 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. The effects identified are 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 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 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.

AoS Objective	Rationale for monitoring (EN-1 to EN-5)
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 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 (across the short, medium and long term) are also likely, with consequent beneficial effects on wellbeing. The NPS makes 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 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 provides 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 transportpublic 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 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 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 Promote a strong economy with opportunities for local communities	Development of new energy infrastructure as promoted by the NPS will support the security, reliability and affordability of the national energy supply and 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 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 are 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 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.

AoS Objective	Rationale for monitoring (EN-1 to EN-5)
Objective 14 Promote sustainable use of resources and natural assets	The NPS provides a robust approach to promoting sustainable use of resources and natural assets and notes how good design can reduce the requirement for consumption of materials and 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.

The sustainability effects of the energy NPS may be monitored through the monitoring frameworks already carried out by the environmental regulators and the local authorities. Pollution control and environmental management monitoring, including status of water quality and resources, protected habitats and species, is carried out by the environmental agencies; human health protection is the responsibility of the health authorities and Public Health England (now replaced by UK Health Security Agency and Office for Health Improvement and Disparities); and the extent of nuclear generating activities will be monitored through the nuclear licensing procedures. Local Planning Authorities monitor the effectiveness of their spatial plans, including indicators such as employment and access to community facilities and services. Nationally, Government[2] assesses and reports annually on progress against sustainable development indicators (including greenhouse gas and carbon dioxide emissions), energy use (including renewables), and resources (including water).

[2] Defra national SD indicators Sustainable development indicators (SDIs) - GOV.UK (www.gov.uk)

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