



UK Government

Department for Energy Security & Net Zero

Overarching National Policy Statement for Energy (EN-1)

December 2025



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Presented to Parliament pursuant to Section 9(8) of the Planning Act 2008

December 2025



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ISBN 978-1-5286-6066-2

E03485970 11/25

Printed on paper containing 40% recycled fibre content minimum

Printed in the UK by HH Associates Ltd. on behalf of the Controller of His Majesty's Stationery Office

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1 Introduction

1.1 Background

- 1.1.1 This National Policy Statement (NPS) sets out national policy for the energy infrastructure described in Section 1.3 below. Part 1 of this NPS sets out the background context to the NPSs, including the scope of EN-1 and geographical coverage. Part 2 outlines the policy context for the development of nationally significant energy infrastructure. Part 3 explains the urgent need for significant amounts of large-scale energy infrastructure in meeting government's energy objectives. Part 4 sets out the general policies for the submission and assessment of energy infrastructure applications. Part 5 outlines generic impacts which arise from the development of all types of energy infrastructure covered by the energy NPSs.
- 1.1.2 It has effect for the decisions by the Secretary of State¹ on applications for energy developments that are nationally significant under the Planning Act 2008. For such applications this NPS, combined with any technology specific energy NPS where relevant, provides the primary policy for decisions by the Secretary of State.
- 1.1.3 Under the Planning Act 2008, where an NPS has effect, the Secretary of State must also have regard to any local impact report² submitted by a relevant local authority, any relevant matters prescribed in regulations, the UK Marine Policy Statement (MPS) and any applicable Marine Plan³, and any other matters which the Secretary of State thinks are both important and relevant to the planning decision.
- 1.1.4 The Planning Act 2008 also requires that, where an NPS has effect, the Secretary of State must decide an application for energy infrastructure in accordance with the relevant NPSs except to the extent the Secretary of State is satisfied that to do so would:
- Lead to the UK being in breach of its international obligations;

¹ The reviewed NPSs EN-1 to EN-5 use the term "Secretary of State" to refer to the Secretary of State as decision maker under the Planning Act 2008. Where appropriate these references should also be taken as references to the Examining Authority appointed by the Secretary of State under section 65 or 79 of the Planning Act 2008 (or any replacement appointed under section 68 or 82), and to any decision making delegated by the Secretary of State to the Planning Inspectorate. EN-6 continues to refer to the Infrastructure Planning Commission (IPC) and should be interpreted as set out in Section 1.4 of EN-6.

² A report prepared under section 60 of the Planning Act 2008.

³ See <https://www.gov.uk/government/collections/marine-planning-in-england> and <https://www.gov.wales/marine-planning>

- Be in breach of any statutory duty that applies to the Secretary of State;
 - Be unlawful;
 - Result in adverse impacts from the development outweighing the benefits;
 - Be contrary to regulations about how its decisions are to be taken.
- 1.1.5 Applicants should therefore ensure that their applications, and any accompanying supporting documents, are consistent with the instructions and guidance in this NPS, any relevant technology specific NPS and any other NPSs that are relevant to the application in question.
- 1.1.6 This NPS, in particular the policy and guidance on generic impacts in Part 5, may also be helpful to local planning authorities (LPAs) in preparing their local impact reports.
- 1.1.7 Part 5 of the Planning Act 2008⁴ sets out the requirements for consultation and publicity before any application for a Development Consent Order is made, including a duty to consult the local community⁵.

1.2 Role of this NPS in the wider planning system

- 1.2.1 In England, this NPS, in combination with any relevant technology specific NPSs, may be a material consideration in decision making on applications that fall under the Town and Country Planning Act 1990 (as amended).
- 1.2.2 Whether the policies in this NPS are material, and to what extent, will be judged on a case-by-case basis and will depend upon the extent to which the matters are already covered by applicable planning policy. For the purposes of applications made under the Planning Act 2008, this NPS in conjunction with any of the relevant technology specific NPSs are the primary policy for Secretary of State decision making.
- 1.2.3 The Secretary of State may also receive applications for variations to existing consents for energy infrastructure under section 36C of the Electricity Act 1989 for which this NPS, in combination with any relevant technology specific NPSs, may be a relevant consideration.

⁴ See Planning Act 2008: Pre-application stage for Nationally Significant Infrastructure Projects - GOV.UK

⁵ See Nationally Significant Infrastructure Projects: Advice pages - GOV.UK

- 1.2.4 Under the Marine and Coastal Access Act 2009, the Marine Management Organisation (MMO) will determine applications under section 36 and section 36A of the Electricity Act 1989 where they relate to a generating station in English waters provided that the application does not exceed the capacity threshold set out in the Planning Act 2008.
- 1.2.5 The MMO will determine applications in accordance with the MPS and any applicable marine plans, unless relevant considerations indicate otherwise.
- 1.2.6 This NPS, in combination with any relevant technology specific NPS, should be a relevant consideration for the MMO when it is determining such applications.
- 1.2.7 The MMO may also receive applications for a marine licence for other energy infrastructure that falls outside the scope of the Planning Act 2008 or the Electricity Act 1989 for which the NPSs may be a relevant consideration. The MMO will determine applications in accordance with the MPS and any applicable marine plans, unless relevant considerations indicate otherwise.
- 1.2.8 The NPSs may also be a relevant consideration in the preparation of relevant marine plans.
- 1.2.9 The role of the MPS and marine plans in relation to Secretary of State decisions is set out in Section 4.5⁶.

1.3 Scope of the Overarching National Policy Statement for Energy

- 1.3.1 This Overarching National Policy Statement for Energy (EN-1) is part of a suite of NPSs issued by the Secretary of State for Energy Security and Net Zero. It sets out the government's policy for delivery of major energy infrastructure.
- 1.3.2 A further five technology specific NPSs for the energy sector cover:
 - natural gas electricity generation (**EN-2**)

⁶ Welsh Ministers are responsible for marine licences for operations carried out in both inshore and offshore Welsh waters, under the Marine and Coastal Access Act (2009). With the exception of the enforcement function this power has been delegated to Natural Resources Wales. Welsh Ministers are also responsible for determining applications under section 36 and section 36A of the Electricity Act 1989 where they relate to a generating station that does not exceed the capacity threshold set out in the Planning Act 2008

- renewable electricity generation (both onshore and offshore) (**EN-3**)
 - gas supply infrastructure and gas and oil pipelines (**EN-4**)
 - the electricity transmission and distribution network (**EN-5**)
 - and nuclear electricity generation (**EN-6**)
- 1.3.3 Further technology specific NPS may be designated and added to the suite if it becomes appropriate to do so. These should be read in conjunction with this NPS where they are relevant to an application.
- 1.3.4 The Planning Act 2008⁷ sets out the thresholds for nationally significant infrastructure projects (NSIPs) in the energy sector. The Act defines the following forms of energy infrastructure as being an NSIP⁸:
- **electricity generating stations (meeting the thresholds set out in the Planning Act 2008⁹)**. This includes onshore generating stations with an installed capacity greater than 50 megawatts (MW) in England and 350MW in Wales (but not onshore wind in Wales or electricity storage in England and Wales, except hydroelectric storage). When the Infrastructure Planning (Onshore Wind and Solar Generation) Order 2025 takes effect, proposed for 31 December 2025, this will include onshore wind and solar generating stations in England only where they generate more than 100MW. 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

⁷ Part 3 Planning Act 2008.

⁸ Since the Energy NPSs were first designated, there have been five relevant amendments to the Planning Act 2008 which affect the application of the Act to electric lines and energy generating stations: i) the Planning Act 2008 (Nationally Significant Infrastructure Projects) (Electric Lines) Order 2013 removed lines of less than 2km and certain replacement lines from the definition of nationally significant electricity lines; ii) the Infrastructure Planning (Onshore Wind Generating Stations) Order 2016 removed all onshore wind generating stations in England and Wales from the definition of nationally significant energy generating stations; iii) the Wales Act 2017 devolved responsibility for development consent decisions in relation to all electricity generating stations with 350MW capacity or less in Wales (and made amendments to remove electricity lines associated with such stations from the definition of nationally significant electricity lines); iv) the Infrastructure Planning (Electricity Storage Facilities) Order 2020 removed all forms of electricity storage, other than pumped hydroelectric storage, from the definition of nationally significant energy generating stations; and (v) the proposed Infrastructure Planning (Onshore Wind and Solar Generation) Order 2025 reintroduces onshore wind into the definition of nationally significant energy generating stations at a threshold of more than 100MW for England only, and increases the threshold for solar defined as nationally significant energy generating stations from more than 50MW to more than 100MW in England.

⁹ What amounts to a single generating station for the purposes of the Act will be a matter of fact to be considered on a case-by-case basis, however the starting presumption will be that even where multiple generating station types are co-located, each generation type will be a separate generating station for the purposes of the thresholds.

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
- **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

1.3.5 Where the need for a particular type of energy infrastructure set out above is established by this NPS, but that type of infrastructure is outside the scope of one of the technology specific NPSs, this NPS 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.

1.3.6 As set out in the written ministerial statement of 7 December 2017¹⁰, 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. This NPS (EN-1) will have effect¹¹ 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 is proposed and will be developed to sit alongside this NPS.

¹⁰ See <https://questions-statements.parliament.uk/written-statements/detail/2017-12-07/HCWS321>

¹¹ Subject to the transitional arrangements set out at Section 1.6 below.

- 1.3.7 In addition to the above specific categories of NSIP, section 35 of the Planning Act 2008 allows the Secretary of State to give a direction that a particular development, that does not meet one of the statutory NSIP categories (either because it involves novel technology or due to capacity size), should nonetheless be treated as development for which development consent is required.
- 1.3.8 The Secretary of State may give a direction, on receipt of a qualifying request, in relation to a proposed development in England, English waters, or a Renewable Energy Zone, except any part of a Renewable Energy Zone in relation to which the Scottish Ministers have functions.
- 1.3.9 The Secretary of State must be satisfied that the proposed development is or forms part of a project in the field of energy, or a business or commercial project of a prescribed description; and that it is nationally significant either by itself or in combination with one or more other developments in the field of energy.
- 1.3.10 EN-1, in conjunction with any relevant technology specific NPS, will be the primary policy for Secretary of State decision making on projects in the field of energy for which a direction has been given under section 35.
- 1.3.11 The Planning Act 2008 enables the Secretary of State to issue a Development Consent Order including consent for development which is associated with the energy infrastructure NSIP (subject to certain restrictions set out in section 115 of the Act). Government has issued guidance to which the Secretary of State must have regard in deciding whether development is associated development¹².
- 1.3.12 EN-1, in conjunction with any relevant technology specific NPS, will be the primary policy for Secretary of State decision making on associated development. EN-1 and any relevant technology specific NPS should be considered in applications and Secretary of State decision making, noting the cross-references between these technology specific NPSs and text in EN-1 is often not duplicated in full between them.
- 1.3.13 The Planning Act 2008 enables the Secretary of State to issue a Development Consent Order that can make provision relating to, or to matters ancillary to, the development of the energy infrastructure NSIP. This may include, for example, the authorisation of tree lopping and the compulsory acquisition of land or rights over land.

¹² See <https://www.gov.uk/government/publications/planning-act-2008-associated-development-applications-for-major-infrastructure-projects>

1.4 Geographical coverage

- 1.4.1 The Secretary of State will decide all applications for NSIPs in England and Wales, adjacent territorial waters or in the UK Renewable Energy Zone (REZ) (defined in section 84(4) of the Energy Act 2004) except any part in relation to which Scottish Ministers have functions.
- 1.4.2 In Scotland and in those areas of the REZ where Scottish Ministers have functions, the Secretary of State will have no functions under the Planning Act 2008 in relation to consenting energy infrastructure projects except as set out in this section. However, energy policy is generally a matter reserved to UK Ministers and this NPS may therefore be a relevant consideration in planning decisions in Wales, Northern Ireland and Scotland.
- 1.4.3 The Secretary of State has no functions in relation to planning applications in Wales that do not relate to nationally significant infrastructure. In Wales, the Secretary of State will not examine applications for LNG facilities, gas reception facilities or gas transporter pipelines. The Secretary of State will only examine applications for underground gas storage facilities in Wales, where the applicant is a licensed gas transporter, and the storage is in natural porous strata (rather than in cavities); precise details are set out in EN-4 and section 17 of the Planning Act 2008.
- 1.4.4 The Secretary of State will only examine electricity generating stations in Wales, in territorial waters adjacent to Wales or in the Welsh Zone if their capacity is greater than 350MW, except onshore wind in which all generating stations regardless of capacity will be decided by the relevant Welsh authority.
- 1.4.5 The Secretary of State will examine applications for cross country oil and gas pipe-lines (meeting the conditions set out in section 21 of the Planning Act 2008) that are in more than one of these territories.
- 1.4.6 In Northern Ireland, planning consents and marine licences in inshore waters are devolved to the Northern Ireland Executive. The Secretary of State will not, therefore examine applications for energy infrastructure in Northern Ireland and the NPS will not apply there. In the UK Renewable Energy Zone (REZ), the Secretary of State is responsible for all marine licences (delegated to MMO) and for planning consents above 100MW other than in the Welsh zone or where Scottish Ministers have functions.

1.5 Period of validity and review

- 1.5.1 This NPS will remain in force in its entirety unless withdrawn or suspended in whole or in part by the Secretary of State. It will be subject to review by the Secretary of State in order to ensure that it remains appropriate.
- 1.5.2 The exact timing of a review will depend how specific circumstances apply to each NPS, but it is expected that a public announcement on the consideration as to whether a review is required should be made at least every 5 years.
- 1.5.3 Information on the review process is set out in paragraphs 10 to 12 of the Annex to CLG's letter of 9 November 2009¹³ and the MHCLG guidance on Review of NPSs¹⁴.

1.6 Transitional provisions following review

- 1.6.1 The suite of energy NPSs was first designated in 2011 and last updated in January 2024. In July 2024, the Chancellor announced that relevant NPSs would be updated and a number of amendments have been made as a result of this.
- 1.6.2 The 2024 NPSs included transitional provisions between the 2011 and 2024 NPS which remain in place. The Secretary of State has decided that similar transition provisions should apply for the 2025 NPSs, so that for any application accepted for examination before the final publication of the approved 2025 amendments, the 2024 suite of NPSs should have effect in accordance with the terms of those NPSs.
- 1.6.3 The 2025 amendments will therefore have effect only in relation to those applications for development consent accepted for examination after the final publication of those amendments. However, any emerging draft NPSs (or those designated but not yet having effect) are potentially capable of being important and relevant considerations in the decision-making process. The extent to which they are relevant is a matter for the relevant Secretary of State to consider within the framework of the Planning Act 2008 and with regard to the specific circumstances of each Development Consent Order application.

¹³ See <https://www.gov.uk/guidance/planning-guidance-letters-to-chief-planning-officers>

¹⁴ See <https://www.gov.uk/guidance/planning-act-2008-guidance-on-the-process-for-carrying-out-a-review-of-existing-national-policy-statements>

1.7 The Appraisal of Sustainability and Habitats Regulations Assessment

- 1.7.1 All the NPSs have been subject to an Appraisal of Sustainability (AoS) required by the Planning Act 2008 and the Environmental Assessment of Plans and Programmes Regulations 2004. A Habitats Regulations Assessment (HRA) has also been prepared in accordance with the Conservation of Habitats and Species Regulations 2017 and the Conservation of Offshore Marine Habitats and Species Regulations 2017. These are published alongside this NPS and available at <https://www.gov.uk/government/consultations/planning-for-new-energy-infrastructure-2025-revisions-to-national-policy-statements>

2 Government policy on energy and energy infrastructure development

2.1 Introduction

- 2.1.1 This energy NPS considers the large-scale infrastructure which will be required to ensure the UK can provide a secure, reliable, and affordable supply of energy, while also meeting our decarbonisation targets. This part outlines the policy context for the development of nationally significant energy infrastructure.
- 2.1.2 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. Part 3 of this NPS provides further details on the need for, and importance of, energy to economic prosperity and social wellbeing.

2.2 Clean Power 2030 and net zero by 2050

- 2.2.1 Energy underpins almost every aspect of our way of life. It enables us to heat and light our homes; to manufacture goods; to produce and transport food; and to travel to work and for leisure. Our businesses and jobs rely on the use of energy. Energy is essential for the critical services we rely on – from hospitals to traffic lights and mobile devices. It is difficult to overestimate the extent to which our quality of life is dependent on adequate energy supplies. It is an essential foundation of our economy and society.
- 2.2.2 Cleaning up our power system is central to the decarbonisation of our economy. A clean electricity supply opens up routes to the electrification of heat, transport and industry and reduces pollution, protects our environment and quality of life.
- 2.2.3 In June 2019, the UK became the first major economy to legislate for a 2050 net zero Greenhouse Gases ('GHG') emissions target through the Climate Change Act 2008 (2050 Target Amendment) Order 2019¹⁵.

¹⁵ See The Climate Change Act 2008 (2050 Target Amendment) Order 2019

- 2.2.4 In December 2020, the UK communicated its Nationally Determined Contributions to reduce GHG emissions by at least 68 per cent from 1990 levels by 2030¹⁶. In April 2021, the government legislated for the sixth carbon budget (CB6), which requires the UK to reduce GHG emissions by 78 per cent by 2035 compared to 1990 levels¹⁷.
- 2.2.5 In October 2021 the government published the Net Zero Strategy. This set out our vision for transitioning to a net zero economy and the policies and proposals for decarbonising all sectors of the UK economy to meet our net zero target by 2050, making the most of new growth and employment opportunities across the UK.
- 2.2.6 In December 2024 the government published the Clean Power 2030 Action Plan. The plan sets out infrastructure deployment pathways and generation capacity ranges that will ensure by 2030 clean sources produce at least 95% of Great Britain's generation, meeting the sixth Carbon Budget advice and pushing the country towards net zero 2050.
- 2.2.7 The government will continue to update its decarbonisation plan in coming years and the following should be read in conjunction with such updates as may be published from time to time.

2.3 Meeting Clean Power 2030 and net zero

- 2.3.1 Making Britain a Clean Energy Superpower is one of the five missions set out by the UK government. The Clean Power 2030 Action Plan sets out the government's first major steps towards delivering our Clean Power 2030 Mission in partnership with the Scottish and Welsh governments, industry and the public.
- 2.3.2 Delivering Clean Power by 2030 paves the way to decarbonising the wider economy by 2050 as we pursue the electrification of heat in buildings, transport, and industry, enhancing the environment and quality of life, and protecting consumers from the global pricing volatility of fossil fuels.
- 2.3.3 Our objectives for meeting the Clean Power 2030 Mission are to ensure our supply of energy always remains secure, reliable, affordable, and consistent with meeting our target to cut GHG emissions to net zero by 2050. This includes through delivery of our carbon budgets and Nationally Determined Contribution.

¹⁶ See <https://www.gov.uk/government/publications/the-uks-nationally-determined-contribution-communication-to-the-unfccc>

¹⁷ See <https://www.gov.uk/government/news/uk-enshrines-new-target-in-law-to-slash-emissions-by-78-by-2035>

- 2.3.4 Meeting the Clean Power 2030 Mission objectives necessitates a significant investment in new energy infrastructure, both large nationally significant developments and smaller-scale developments determined at a local level. This requirement for new energy infrastructure will present opportunities for the UK and contributes towards the creation of secure, well paid jobs in the UK's clean energy industry and building domestic supply chains.
- 2.3.5 As set out in the Clean Power Action Plan, this will be driven through rapid deployment of low carbon generation, flexibility infrastructure, and electricity transmission infrastructure. The Action Plan sets out targets for the 2030 capacities of key technologies at a national and regional level.
- 2.3.6 Securing affordable, homegrown and abundant renewable resources means we will be able to run our power system for increasing periods on clean, low carbon generation, with renewables providing the vast majority of generation, and nuclear continuing to deliver a backbone of vital low carbon power. A clean power system will enable further electrification of demand sectors and therefore increased emissions reduction.
- 2.3.7 Reducing emissions in large parts of transport, heating and industry could lead to more than half of total energy demand being met by clean electricity in 2050, up from 17 per cent in 2019, representing a doubling in demand for electricity¹⁸.
- 2.3.8 This switch will break down the siloes which have traditionally existed between separate heat, transport, and electricity networks. We will need to adapt existing networks or build new ones to integrate low carbon hydrogen into the system and enable the transport and storage of carbon dioxide.
- 2.3.9 To ensure that supplies remain reliable and to keep our energy affordable we will also need to reduce the amount of energy we waste, using new and innovative low carbon technologies and more energy efficiency measures.
- 2.3.10 This transformational approach tackles long-term problems to deliver growth that creates high-quality jobs across the UK and makes the most of the strengths of the Union. However, this transformation cannot be instantaneous. The use of unabated natural gas and crude oil fuels for heating, cooking, electricity and transport, and the

¹⁸ The Impact Assessment for CB6 shows an illustrative range of 610-800TWh in 2050. The illustrative total greenhouse gas emissions under different technology scenarios is shown in Table 5.

production of many everyday essentials like medicines, plastics, cosmetics and household appliances, will still be needed during the transition to a net zero economy. This will enable secure, reliable, and affordable supplies of energy as we develop the means to address the carbon dioxide and other greenhouse gases associated with their use, including the development and deployment of low carbon alternatives.

- 2.3.11 The UK's oil and gas sector recognises the demand for oil and gas will be much reduced in the future but also recognises the key role that it can play in helping the UK meet its net zero commitment. Clear action will need to be taken to build on the proven capabilities within the sector to lead in new and emerging energy technologies.
- 2.3.12 Some limited residual use of unabated natural gas and crude oil may be needed beyond 2050 to meet our energy objectives. Due to policy uncertainties for the post 2050 period, a detailed assessment for this period has not been conducted at this stage. However, this can be consistent with our net zero target if any emissions are balanced by negative emissions from Greenhouse Gas Removal (GGR) technologies.
- 2.3.13 Since the designation of the first iteration of EN-1, overall GHG emissions from the power sector have reduced by more than two-thirds, from ~145MtCO₂e in 2011 to ~44MtCO₂e in 2023 (see figure 1). This can be mainly attributed to the proportion of renewable generation more than quadrupling from 10 per cent to 46 per cent between 2011 and 2023 whilst the last operational coal-fired power plant in the UK, Ratcliffe-on-Soar, closed on 30 September 2024¹⁹.

¹⁹ DESNZ (2024), Energy Trends, Table 5.1, see <https://www.gov.uk/government/statistics/energy-trends-december-2024> .

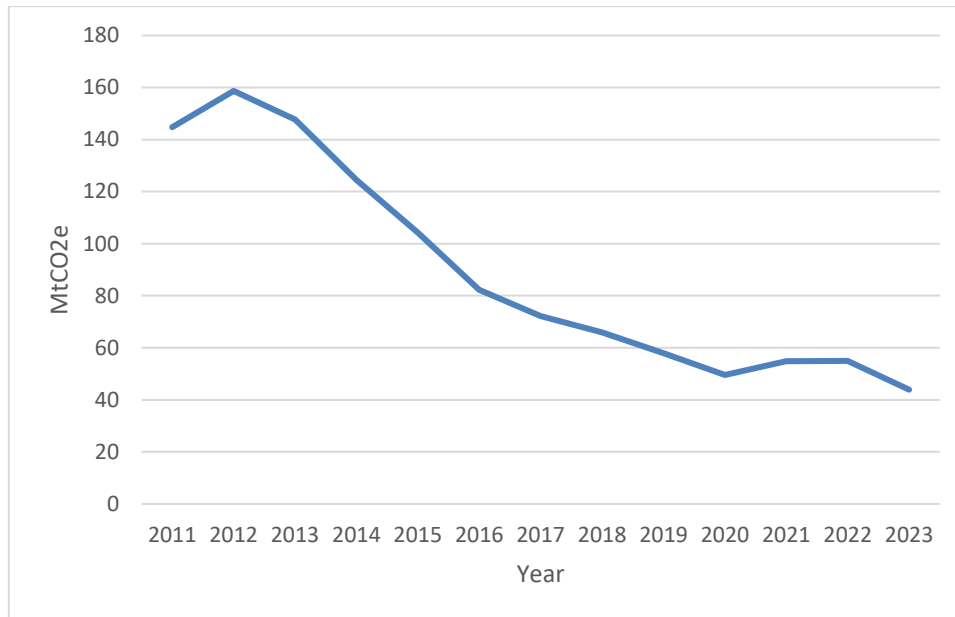


Figure 1: GHG emissions from power stations 2011-2023

- 2.3.14 A key mechanism for increasing deployment of low carbon generation has been the implementation of Contracts for Difference (CfD).
- 2.3.15 The CfD scheme opened in 2014, with CfDs being awarded to developers of eligible projects through regular, competitive auctions, with the lowest-priced bids successful. Since its introduction in 2014, the CfD scheme has awarded contracts to around 36GW of new renewable capacity across all technologies, including around 22GW of offshore wind. Despite recent global macroeconomic pressures, clearing prices remain significantly below the first auction in 2015, with the offshore wind price having halved since then.
- 2.3.16 Government is developing business models to incentivise the deployment of carbon capture, utilisation and storage (CCUS) facilities and low carbon hydrogen production in the UK. The British Energy Security Strategy committed to designing, by 2025, new business models for hydrogen transport and storage infrastructure. To accelerate deployment of hydrogen to power (H2P), government is implementing a H2P business model (H2P BM) to de-risk investment and mitigate our identified deployment barriers. We will deliver a H2P BM based on a Dispatchable Power Agreement style mechanism.
- 2.3.17 We will put in place a commercial framework which will enable developers to finance the construction and operation of power CCUS and industrial carbon capture (ICC) facilities and CO₂ transport and storage networks, stimulating a pipeline of projects and building a UK supply chain.

- 2.3.18 For power CCUS, we will introduce the Dispatchable Power Agreement Business Model, to incentivise power CCUS to play a role in the electricity system which complements renewables and nuclear.
- 2.3.19 In addition, for ICC, we will incentivise the deployment of carbon capture technology through the Industrial Carbon Capture Business Model for industrial users who often have no viable alternatives available to achieve deep decarbonisation. This will include energy from waste (EfW) facilities, which are covered by EN-3.
- 2.3.20 We are also developing the Transportation and Storage regulatory investment ('TRI Model') which is based on an economic regulation funding model consisting of three elements: revenue model, economic regulatory regime and a government support package (GSP).
- 2.3.21 Government periodically consults and provides updates on all CCUS business models²⁰.
- 2.3.22 In addition, the government has other levers to encourage further decarbonisation within the power sector:
- UK Emissions Trading Scheme (UK ETS)
 - Carbon Price Support (CPS)
 - Emissions Performance Standard (EPS)

2.4 Security of energy supplies

- 2.4.1 Given the vital role of energy to economic prosperity and social wellbeing, it is important that our supplies of energy remain secure, reliable and affordable.
- 2.4.2 We have a diverse electricity mix and flexible sources of gas supply, which ensures that households, businesses and heavy industry get the energy they need.
- 2.4.3 Great Britain's (GB) gas system has delivered securely to date and is expected to continue to function well, with a diverse range of supply sources and sufficient delivery capacity to provide security of supply.
- 2.4.4 This diversity in gas supply includes pipelines from the UK and Norway continental shelf (UKCS & NCS), interconnection with the Continent through the Interconnector Ltd and BBL pipelines, and three

²⁰ Further detail on CCUS Business Models can be found on the [www.gov.uk](https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-business-models) website: see <https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-business-models>

LNG terminals, providing GB with one of the largest LNG import infrastructures in Europe.

- 2.4.5 However as global energy costs rise due to demand soaring as the economy reopened after COVID-19 and the Russian invasion of Ukraine, security of supply requires a greater focus on domestic energy production.
- 2.4.6 The Clean Power 2030 Action Plan²¹ sets the need to maintain high levels of resilience and security as we rapidly deploy new energy infrastructure – including to severe weather events which are expected to increase in intensity and frequency as a result of climate change, and in managing threats to our national security, such as cyber threats, as our energy system becomes increasingly interconnected.
- 2.4.7 The Capacity Market (CM) is the UK government's main tool for ensuring continued security of electricity supply. The CM is technology neutral, providing incentives for all forms of capacity, including generation, storage, consumer-led flexibility and interconnection to be on the system to deliver when needed.
- 2.4.8 We continue to work closely with Ofgem, key stakeholders and the National Energy System Operator (NESO) to constantly monitor electricity supply vs forecast demand to ensure electricity operators have the right tools to respond to market signals. The NESO has all the tools it needs to operate the electricity system reliably. It can call on a range of technologies to balance electricity supply and demand, including gas-fired generation and flexible technologies such as batteries and consumer led flexibility.
- 2.4.9 Government is committed to developing policy to ensure that unabated capacity on the system with long-term Capacity Market agreements have pathways to decarbonise. In July 2019, the government introduced CO2 emissions limits in the Capacity Market.
- 2.4.10 Plants burning fossil fuels that began generating before July 2019 must either demonstrate that they emit below 550gCO₂/kWh electricity generated or must not emit more than 350kgCO₂ per year per installed KWe on average. Existing plants which exceed these emission limits have been excluded from being awarded agreements for all delivery years since 1 October 2024. From February 2026, new gas plants will need to be built 'decarbonisation ready', demonstrating

²¹ See <https://www.gov.uk/government/publications/clean-power-2030-action-plan>

they are compatible with carbon capture, utilisation and storage or able to convert to hydrogen powered generation.

- 2.4.11 The Phase 2 Capacity Market Consultation (October - December 2023), represented the next phase of the evolution of the Capacity Market, aiming to improve security of supply and, by accelerating investment in low carbon technologies, increase the role that they play in the Capacity Market, improving alignment with the government's net zero objectives. These amendments aim to improve access by removing participation barriers and encouraging investment in low carbon technologies. These technologies can provide flexible power to the grid at short notice, helping to bolster security of supply as the power sector decarbonises.

2.5 Sustainable development

- 2.5.1 The government's wider objectives for energy infrastructure include contributing to sustainable development²² and ensuring that our energy infrastructure is safe.
- 2.5.2 Sustainable development is relevant not just in terms of addressing climate change, but because the way energy infrastructure is deployed affects the wellbeing of the environment, society and the economy, for both current and future generations. For example, the availability of appropriate infrastructure supports the efficient working of the market so as to ensure competitive prices for consumers. The regulatory framework also encourages the energy industry to protect the more vulnerable.
- 2.5.3 The principle of sustainable development will also ensure that energy infrastructure is deployed in areas with the local environmental capacity to enable those developments. This in turn will unlock economic growth, restore nature and provide critical services to communities.
- 2.5.4 The planning framework set out in this NPS and the suite of energy NPSs takes full account of the objective of contributing to the achievement of sustainable development and this has been tested through the AoS.
- 2.5.5 The AoS has examined whether the NPS framework for the development of new energy infrastructure projects is consistent with

²² As defined in 1987 by the World Commission on Environment and Development report Our Common Future - See <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>

the objectives for sustainable development, including consideration of other government policies such as those for the environment, economic development, health and transport.

- 2.5.6 Whatever incentives, rules or other signals developers are responding to, the government believes that the NPSs set out planning policies which both respect the principles of sustainable development and can facilitate, for the foreseeable future, the consenting of energy infrastructure on the scale and of the kinds necessary to help us maintain safe, secure, affordable and low carbon supplies of energy.

3 The need for new nationally significant energy infrastructure projects

3.1 Introduction

- 3.1.1 This Part of the NPS explains why the government sees a need for significant amounts of new large-scale energy infrastructure to meet its energy objectives and why the government considers that the need for such infrastructure is urgent.
- 3.1.2 However, it will not be possible to develop the necessary amounts of such infrastructure without some significant residual adverse impacts. These effects will be minimised by the application of policy set out in Parts 4 and 5 of this NPS. See also Part 2 of each technology specific NPS.

3.2 Secretary of State decision making

- 3.2.1 The government's objectives for the energy system are to decarbonise power generation to meet the Clean Power 2030 Mission, ensuring our supply of energy always remains secure, reliable, affordable, and consistent with net zero emissions in 2050 for a wide range of future scenarios, including delivery of our carbon budgets and Nationally Determined Contributions.
- 3.2.2 We need a range of different types of energy infrastructure to deliver these objectives. This includes the infrastructure described within this NPS but also more nascent technologies, data, and innovative infrastructure projects consistent with these objectives.
- 3.2.3 The Clean Power 2030 Action Plan sets out a DESNZ 'Clean Power Capacity range' which is a range of possible installed capacities for each technology in 2030. The range reflects that there is no singular path to achieving clean power, but instead, that there are a range of scenarios that could get us there.
- 3.2.4 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 generation²³, 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.

- 3.2.5 The government's strategic framework includes the Clean Power 2030 Action Plan and the pathways to 2030, the Strategic Spatial Energy Plan, and the Centralised Strategic Network Plan. These should be considered by applicants, together with other relevant considerations, and used to inform developments of new energy infrastructure projects.
- 3.2.6 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 forward²⁴. 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 and security for the system overall and relative costs can change over time, particularly for new and emerging technologies. It is not the role of the planning system to compare the costs of individual developments or technology types.
- 3.2.7 The government has other mechanisms to influence the delivery of its energy objectives and imposing limits on the consenting of different types of energy infrastructure would reduce competition, increase costs, and disincentivise newer, more efficient solutions coming forward. This does not reduce the need for individual projects to demonstrate compliance with planning and environmental requirements or mean that everything that obtains development consent will get built.
- 3.2.8 The Secretary of State should assess all applications for development consent for the types of infrastructure covered by this NPS on the basis that the government has demonstrated that there is a need for those types of infrastructure which is urgent, as described for each of them in this Part.

²³ A further exception to this is EfW plants where the primary function is to treat residual waste and planning decisions will be made on the demand for waste infrastructure. See EN-3 for further detail.

²⁴ An exception to this is EfW plants as their primary function is to treat residual waste. Further EfW developments will only be consented where these align with Defra's policy statement on EfW. See EN-3 for further detail.

- 3.2.9 In addition, the Secretary of State has determined that substantial weight should be given to this need when considering applications for development consent under the Planning Act 2008.
- 3.2.10 The Secretary of State is not required to consider separately the specific contribution of any individual project to satisfying the need established in this NPS.
- 3.2.11 This NPS, along with any technology specific energy NPSs, sets out policy for nationally significant energy infrastructure covered by sections 15-21 of the Planning Act 2008.
- 3.2.12 Other novel technologies or processes may emerge during the life of this NPS and can help deliver our energy objectives. Where these contribute towards the objectives set out in paragraph 3.2.1, the Secretary of State should determine that there is a need for such technologies and that substantial weight should be given to this need.
- 3.2.13 Where an energy infrastructure project is not covered by sections 15-21 of the Planning Act 2008 but is considered to be nationally significant, there is a power under section 35 of the Planning Act 2008 (which applies in England, English waters, and the Renewable Energy Zone, except any part of the Renewable Energy Zone in relation to which the Scottish Ministers have functions) for the Secretary of State, on request, to give a direction that a development should be treated as a nationally significant infrastructure project for which development consent is required. This could include novel technologies or processes which may emerge during the life of this NPS.
- 3.2.14 In these circumstances any application for development consent would need to be considered in accordance with this NPS. In particular:
- Where the application is for electricity generation infrastructure not covered by sections 15-21 of the Planning Act 2008, the Secretary of State should give substantial weight to the need established at paragraphs 3.3.4 to 3.3.7 of this NPS;
 - Where the application is for electricity network infrastructure not covered by sections 15-21 of the Planning Act 2008, including underground or offshore infrastructure, the Secretary of State should give substantial weight to the need established at paragraphs 3.3.65 to 3.3.85 of this NPS;
 - Where the application is for hydrogen infrastructure not covered by sections 15-21 of the Planning Act 2008, the Secretary of State should give substantial weight to the need established at paragraphs 3.4.12 to 3.4.23 of this NPS;

- Where the application is for CCS infrastructure not covered by sections 15-21 of the Planning Act 2008, the Secretary of State should give substantial weight to the need established at paragraphs 3.5.1 to 3.5.8 of this NPS;
- Where the application is for natural gas production infrastructure, conventional or unconventional²⁵, not covered by sections 15-21 of the Planning Act, 2008 the Secretary of State should give substantial weight to the need established at paragraphs 3.4.1 – 3.4.9 of this NPS.

3.3 The need for new nationally significant electricity infrastructure

- 3.3.1 Electricity meets a significant proportion of our overall energy needs and our reliance on it will increase as we transition our energy system to deliver our Clean Power 2030 Mission and net zero targets. We need to ensure that there is sufficient electricity to always meet demand; with a margin to accommodate unexpectedly high demand and to mitigate risks such as unexpected plant closures and extreme weather events.
- 3.3.2 The larger the margin and the more flexible the system, the more resilient the system will be in dealing with unexpected events, and consequently the lower the risk of a supply interruption. This helps to protect businesses and consumers, including vulnerable households, from volatile prices and, eventually, from physical interruptions to supply that might impact on essential services.
- 3.3.3 To ensure that there is sufficient electricity to meet demand, new electricity infrastructure will have to be built to replace output from retiring plants and to ensure we can meet increased demand. Our analysis suggests that even with major improvements in overall energy efficiency, and increased flexibility in the energy system, demand for electricity is likely to increase significantly over the coming years and could more than double by 2050 as large parts of transport, heating and industry decarbonise by switching from fossil fuels to low carbon electricity. The Impact Assessment for CB6 shows an illustrative range of 465-515TWh in 2035 and 610-800TWh in 2050.

²⁵ This includes, but is not limited to, novel technologies or processes that may emerge during the life of this NPS.

The need for different types of electricity infrastructure

- 3.3.4 There are several different types of electricity infrastructure that are needed to deliver our energy objectives. Additional generating plants, electricity storage, interconnectors and electricity networks²⁶ all have a role, but none of them will enable us to meet these objectives in isolation.
- 3.3.5 New generating plants can deliver a low carbon and reliable system, but we need the increased flexibility provided by new storage and interconnectors (as well as consumer led flexibility, discussed below) to reduce costs in support of an affordable supply.
- 3.3.6 Storage and interconnection can provide flexibility, meaning that less of the output of plant is wasted as it can either be stored or exported when there is excess production. They can also supply electricity when domestic demand is higher than generation, supporting security of supply. This means that the total amount of generating plant capacity required to meet peak demand is reduced, bringing significant system savings alongside consumer led flexibility (up to £12bn per year by 2050). Storage can also reduce the need for new network infrastructure. However, neither of these technologies, as with consumer led flexibility, are sufficient to meet the anticipated increase in total demand, and so cannot fully replace the need for new generating capacity.
- 3.3.7 Electricity networks are needed to connect the output of other types of electricity infrastructure with consumers and each other. However, they are a means of transporting electricity rather than generating or storing it, so cannot replace those other types of electricity infrastructure in meeting the substantial increase in demand expected over the coming decades.

Alternatives to new electricity infrastructure

- 3.3.8 The government has considered alternatives to the need for new large-scale electricity infrastructure and concluded that these would be limited to reducing total demand for electricity through efficiency measures or through greater use of low carbon hydrogen in decarbonising the economy; reducing maximum demand through consumer led flexibility; and increasing the contribution of decentralised and smaller-scale electricity infrastructure. In addition,

²⁶ Throughout the suite of energy-NPS documents, electricity network(s) and grid are used interchangeably.

there are alternative ways of decarbonising heating and transportation, which are being developed alongside electrification of these sectors.

- 3.3.9 Reducing total demand for energy is a key element of the government's strategy for meeting its energy objectives and we expect that increased energy efficiency measures could lead to a reduction in final energy demand from around 1550 TWh in 2019 to around 1000 TWh in 2050. However, even with a reduction in final energy demand the share of electricity in the system is likely to increase, potentially more than doubling by 2050 (see paragraph 3.3.3).
- 3.3.10 The precise level of electricity demand during the transition to net zero is uncertain and could be affected by alternative means of decarbonising these sectors, such as the use of low carbon hydrogen, and the pace of that decarbonisation. However, it is prudent to plan on a conservative basis to ensure that there is sufficient supply of electricity to meet demand across a wide range of future scenarios, including where the use of hydrogen is limited.
- 3.3.11 Consumer led flexibility such as the use of thermal stores and smart charging of electric vehicles, can shift electricity demand, reducing the maximum amount of electricity required and therefore reduce the need for additional infrastructure. However, it cannot increase the total amount of electricity generated in the UK, or reduce the total amount of electricity consumed, and so cannot fully replace the need for new generating capacity to deliver our energy objectives.
- 3.3.12 Decentralised and community energy systems, including but not limited to micro-generation, contribute to our targets on reducing carbon emissions and increasing energy security. These technologies could also lead to some reduction in demand on the main generation and transmission system. However, the government does not believe they will replace the need for new large-scale electricity infrastructure to meet our energy objectives. This is because connection of large-scale electricity generating facilities via a high voltage transmission system enables the pooling of both generation and demand, which in turn offers a number of economic and other benefits, such as more efficient bulk transfer of power and enabling surplus generation capacity in one area to be used to cover shortfalls elsewhere.

Delivering affordable decarbonisation

- 3.3.13 The Clean Power Action Plan and the Net Zero Strategy²⁷ sets out the government's ambition for increasing the deployment of low carbon

²⁷ See <https://www.gov.uk/government/publications/net-zero-strategy>

energy infrastructure consistent with delivering our carbon budgets and the 2050 net zero target. This made clear the commitment that the cost of the transition to net zero should be fair and affordable.

- 3.3.14 Value for money assessments are not required on applications for development consent for energy infrastructure projects. However, government will work to ensure there are market frameworks which promote effective competition and deliver an affordable, secure and reliable energy system and government support for specific technologies and projects will be dependent on clear value for money for consumers and taxpayers.
- 3.3.15 Based on our whole-system modelling, by 2050, emissions associated with power could need to drop by 95-98 per cent compared to 2019, down to 1-3 MtCO₂e. In the interim, to meet our NDC and CB6 targets, we expect emissions could fall by 70-75 per cent by 2030 and 80-85 per cent by 2035, compared to 2019 levels. These figures are based on an indicative power sector pathway contributing to the whole-economy net zero and interim targets²⁸.
- 3.3.16 If demand for electricity doubles by 2050, we will need a fourfold increase in low carbon generation and significant expansion of the networks that transport power to where it is needed. In addition, we committed in the Clean Power 2030 Action Plan to clean sources producing at least 95% Great Britain's generation. This will set us well on the way to the commitment in the Net Zero Strategy to take action, whilst meeting a 40-60 per cent increase in electricity demand. This means that the majority of new generating capacity needs to be low carbon.
- 3.3.17 Unabated natural gas generating capacity is needed as it currently plays a critical role in keeping the electricity system secure and stable. It will continue to be needed during the transition to net zero while we develop and deploy the low carbon alternatives that can replicate its role in the electricity system.
- 3.3.18 Our understanding of what the electricity system will need to deliver during the transition to 2050 and the best way of delivering it will evolve over time. For example, the level of demand it will need to meet will depend on the approach and pace of decarbonisation in other sectors, and the mix of infrastructure and technology that can deliver this in line with our energy and climate objectives will be affected by

²⁸ 3i. Power of the Net Zero Strategy: Charts and Tables See https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1066450/nzs-charts-tables-v1.1.xlsx .

the different characteristics of existing and new technologies, their relative costs and deliverability. It will also be informed by the costs and availability of GGR technologies, such as Bioenergy with Carbon Capture and Storage (BECCS) and Direct Air Carbon Capture and Storage (DACCS).

3.3.19 The Clean Power 2030 Action Plan explains that in order to meet the Clean Power 2030 Mission target, Great Britain will need to generate enough clean power to meet our total annual electricity demand, backed up by unabated gas supply to be used only when essential. This means transitioning to an electricity system with the following characteristics in a typical weather year:

- Clean sources produce at least as much power as Great Britain consumes in total; and
- Clean sources produce at least 95% of Great Britain's generation.

3.3.20 We expect that delivering a clean power system with these characteristics will make Great Britain a net exporter of electricity and will reduce the carbon intensity of electricity generation from 171gCO₂e/kWh in 2023²⁹ to well below 50gCO₂e/kWh in 2030.

3.3.21 Given the changing nature of the energy landscape, we need a diverse mix of electricity infrastructure to come forward, so that we can deliver a secure, reliable, affordable, and net zero consistent system during the transition to 2030 and 2050 for a wide range of demand, decarbonisation, and technology scenarios.

3.3.22 The Clean Power 2030 Action Plan sets out a DESNZ 'Clean Power Capacity range' which is a range of possible installed capacities for each technology in 2030. The range reflects that there is no singular path to achieving clean power, but instead, that there are a range of scenarios that could get us there. Over time, there will be more clarity on which scenarios are more likely, depending on the outcomes of negotiations and other contract-awarding processes, and through monitoring delivery of assets with long-lead in times, such as the transmission network, offshore wind and nuclear. This new information will allow the pathway to 2030 to be refined over time, helping to determine the precise capacity mix required to deliver the Clean Power 2030 Mission.

²⁹ Digest of UK Energy Statistics (DUKES) 2024 - GOV.UK

The role of wind and solar

- 3.3.23 Wind and solar are the lowest cost ways of generating electricity, helping reduce costs and providing a clean and secure source of electricity supply (as they are not reliant on fuel for generation). Our analysis shows that a secure, reliable, affordable, net zero consistent system in 2050 is likely to be composed predominantly of wind and solar³⁰.
- 3.3.24 However, it is recognised that ensuring affordable system reliability, today and in the future, means wind and solar need to be complemented with technologies which supply electricity, or reduce demand, when the wind is not blowing, or the sun does not shine.

The role of electricity storage

- 3.3.25 Storage has a key role to play in meeting the Clean Power 2030 Mission, achieving net zero, and providing flexibility to the energy system, reducing the amount of generation and associated network that needs to be built to meet peak demand, helping Britain reach clean power in a cost-effective way and reducing delivery risk associated with other types of energy infrastructure.
- 3.3.26 Storage is needed to reduce the costs of the electricity system and increase reliability by storing surplus electricity in times of low demand to provide electricity when demand is higher.
- 3.3.27 Storage can provide various services, locally and at the national level. These include maximising the usable output from intermittent low carbon generation (e.g. solar and wind), reducing the total amount of generation capacity needed on the system; providing a range of balancing services to NESO and Distribution Network Operators (DNOs) to help operate the system; and reducing constraints on the networks, helping to defer or avoid the need for costly network upgrades as demand increases.
- 3.3.28 Whilst important in providing balancing services, many of the storage facilities currently being deployed provide storage over a period of hours but cannot cost effectively cover prolonged periods of low output from wind and solar. There are a range of storage technologies that may be able to provide storage over longer periods of low wind and solar output (e.g. days, weeks or months) but many of these technologies are not yet available at scale or have an upper limit on deployment due to geographical constraints.

³⁰ See <https://www.gov.uk/government/publications/modelling-2050-electricity-system-analysis>

- 3.3.29 The Infrastructure Planning (Electricity Storage Facilities) Order 2020 removed all forms of electricity storage, other than pumped hydroelectric storage, from the definition of nationally significant energy generating stations under the Planning Act 2008.
- 3.3.30 Applications for adding electricity storage to an existing generation station which has consent under the NSIP regime or under section 36 of the Electricity Act 1989 may also be consented outside of the Planning Act 2008 process, unless the Secretary of State directs otherwise under section 35 of the Planning Act 2008.
- 3.3.31 Applications for pumped hydro storage facilities below 50MW in England, or 350MW in Wales, will continue to be consented outside of the Planning Act 2008 process, unless the Secretary of State directs otherwise under section 35 of the Planning Act 2008. Those above 50MW in England, or 350MW in Wales, will continue to be defined as NSIPs, requiring consent from the Secretary of State.

The role of interconnectors

- 3.3.32 Interconnection across national borders has an essential role in delivering a secure, low carbon electricity system at low cost.
- 3.3.33 Interconnection provides access to a diverse pool of generation, enabling the import of cheaper electricity, while also providing a route for electricity export. Interconnectors provide the system with additional flexibility, which can reduce the curtailment of renewable energy³¹, and can also provide a range of ancillary services, such as voltage and black start services³².
- 3.3.34 In considering applications, applicants are expected to consider foreseeable future demand when considering the location and route of their investments. This may involve consenting offshore platforms, converter stations or substations which facilitate future coordination.

The role of combustion power stations

- 3.3.35 Combustion power stations use fuel for generation. This means that it is possible for them to provide dispatchable generation when the output from intermittent renewables is low, but they are dependent on the supply of fuel for generation. Most forms of combustion power also produce residual emissions of greenhouse gases, and where this is the case, their use will need to be limited over time unless they can decarbonise. Whilst we will continue to rely on unabated gas to ensure

³¹ BEIS (2020), Impact of interconnectors on decarbonisation
<https://www.gov.uk/government/publications/impact-of-interconnectors-on-decarbonisation>

³² <https://www.nationalgrideso.com/document/92386/download>

security of supply, we will be driving the deployment of low carbon technologies. All commercial scale (at or over 300 MW) combustion power stations fuelled by gas, coal, oil or biomass have to be constructed Carbon Capture Ready (CCR). More information on government policy on CCR requirements and plans to transition to a new regime, Decarbonisation Readiness, is set out in Section 4.9.

Energy from Waste

- 3.3.36 EfW plants operate at over 90 per cent availability but also produce residual carbon emissions, due to the presence of fossil-based carbon, i.e. plastics, which exists alongside the biodegradable materials in the waste.
- 3.3.37 The principal purpose of the combustion of waste, or other thermal processes used to treat waste (for example Advanced Conversion Technologies (ACTs) such as pyrolysis or gasification), is to reduce the amount of residual waste going to landfill in accordance with the waste hierarchy³³. The recovery of energy from that waste as electricity, heat, or fuel is a secondary benefit that should be maximised as far as possible. Only residual waste that cannot be prevented, prepared for re-use, or recycled with less environmental impact and would otherwise go to landfill should be used for energy recovery. This is to ensure that environmental impacts are minimised, and that the resource value extracted is maximised³⁴.
- 3.3.38 As the primary function of EfW plants, or similar processes, is to treat waste, applicants must demonstrate that proposed facilities meet the strict criteria set out by government³⁵, that their projects:
- Meet a clearly defined need to facilitate the diversion of non-recyclable waste away from landfill, or enable the replacement of older, less efficient waste incinerators;
 - Can be built Carbon Capture ready, in accordance with the government's 'Decarbonisation Readiness' requirements once they come into force; and
 - Demonstrate that making use of the heat they produce is viable and they can connect to a heat network within three years of the plant's operation.

³³ Waste hierarchy as set out in regulation 12 of the Waste (England and Wales) Regulations 2011.

³⁴ Our waste, our resources: a strategy for England See: Resources and waste strategy for England - GOV.UK

³⁵ Government to crack down on waste incinerators with stricter standards for new builds. See <https://www.gov.uk/government/news/government-to-crack-down-on-waste-incinerators-with-stricter-standards-for-new-builds>

- 3.3.39 Those considering EfW facilities should give regard to forecast changes to future capacity, demand, and the government's circular economy opportunities³⁶.
- 3.3.40 Energy recovery from residual waste usually has a lesser environmental impact than disposal in landfill or incineration without energy recovery. Equipping facilities with CCS also offers the possibility for reducing emissions. The amount of electricity that can be generated from EfW is constrained by the availability of its feedstock. The availability of feedstock will reduce over time in accordance with the statutory residual waste reduction target³⁷. Proposals must therefore be in accordance with meeting this statutory target.
- 3.3.41 EfW is only partially renewable due to the presence of fossil-based carbon in the waste. Only the energy contribution from the biogenic portion is eligible for renewable financial incentives. If the waste is pre-treated to separate out the biogenic fraction, then combustion of this biogenic fraction can be considered wholly renewable.

Bioenergy

- 3.3.42 Bioenergy could provide either baseload or dispatchable low carbon generation³⁸. The need for negative emissions to offset residual emissions through BECCS, might provide a case for baseload deployment. In addition, the amount of bioenergy for generating electricity will be constrained by the availability of sustainable biomass and the extent to which it may be more cost effective in decarbonising other sectors (such as heat and transport) over the long-term.

Natural gas-fired plants

- 3.3.43 Combined Cycle Gas Turbines (CCGTs) using natural gas can be equipped with CCS which is intended to reduce emissions compared to unabated gas-fired plants by 90 per cent or more. Although they can provide flexible generation that is able to ramp up or down to meet demand, they are unable to provide the quick start peaking capacity which is required in a low carbon system.

³⁶ Residual waste infrastructure capacity note. See: <https://www.gov.uk/government/publications/residual-waste-infrastructure-capacity-note/residual-waste-infrastructure-capacity-note>

³⁷ See: The Environmental Targets (Residual Waste) (England) Regulations 2023

³⁸ See Biomass Policy Statement available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1031057/biomass-policy-statement.pdf

- 3.3.44 Power CCUS has not been deployed in the UK to date and although the barriers to deployment are commercial rather than technical, it is reliant on the availability of infrastructure for the transportation and storage of CO₂. To realise the potential of power CCUS government will implement the Dispatchable Power Agreement. Power CCUS is important for Clean Power 2030 as it reduces the role for unabated gas generation and de-risks the delivery pressures on renewable deployment. Additionally, power CCUS will be vital to ensuring security of electricity supply in the 2030s, delivering a secure power system that meets the needs of the economy over the longer term.
- 3.3.45 CCS may be able to be applied to technologies such as Open Cycle Gas Turbines (OCGTs), or reciprocating engines using natural gas but would reduce their ability to provide quick start peaking capacity. Whilst this is currently the way we secure domestic quick start peaking capacity at scale, the emissions they produce means that their role will need to be reduced over time as they transition or are replaced by low-carbon options, such as turbines fuelled with low carbon hydrogen or long-duration storage.
- 3.3.46 Quick start peaking capacity is only used infrequently, i.e. when it is necessary for security of supply, but may need to produce large amounts of electricity for short periods. Therefore, whilst the annual output (and therefore any associated emissions) is expected to be small, there may be a requirement for significant amounts of capacity to ensure a secure, reliable, and affordable electricity system.
- 3.3.47 Although the expectation is that low carbon alternatives will be able to replicate the role of natural gas in the electricity system over time, some natural gas-fired generation without CCS, running very infrequently, may still be needed for affordable reliability even in 2050. This can still be net zero consistent if the emissions from their use are balanced by negative emissions from GGR technologies.

Hydrogen

- 3.3.48 Hydrogen to power can play a key role in our electricity system by providing low carbon dispatchable generation at a range of scales and a decarbonisation pathway for unabated gas generation. When connected to large-scale hydrogen storage, it can provide low carbon inter-seasonal storage. Our analysis indicates H₂P is economic at lower load factors (below 30%), enabling it to be cost effective in a

clean power system where flexible load factors are expected to fall as renewable generation increases³⁹.

- 3.3.49 Low carbon hydrogen is essential to achieve the government's Clean Energy Superpower and Growth Missions and will be a crucial part of our future energy system. The Impact Assessment for CB6 shows an illustrative range for low carbon hydrogen of 85-125TWh in 2035 and 250-460TWh in 2050.
- 3.3.50 Government is committed to provide more information on hydrogen to power, relevant to planning, including through guidance documents where appropriate. There is ongoing work from the government to address concerns about the planning processes for nationally significant hydrogen infrastructure and we will continue to monitor and assess the value of a hydrogen NPS as policy develops over time.

The role of nuclear power

- 3.3.51 Nuclear fission already provides the UK with continuous, reliable, safe low-carbon power. Nuclear plants produce no direct emissions during operation and have indirect life cycle GHG emissions comparable to offshore wind. Power stations with an estimated lifetime of 60 years provide large amounts of low carbon electrical power, using a relatively small amount of land⁴⁰. Nuclear, alongside other technologies, could also offer broader system benefits, such as low carbon hydrogen production through electrolysis, or low carbon heat. In addition, nuclear generation provides security of supply benefits by utilising an alternative fuel source to other thermal plants, with a supply chain independent from gas supplies.
- 3.3.52 Our analysis suggests additional nuclear beyond Hinkley Point C and Sizewell C will be needed to meet our energy and Net Zero objectives⁴¹. Nuclear technology is developing and opportunities for flexible use may grow as the energy landscape evolves. The role of nuclear power could be fulfilled by large-scale nuclear fission, Small Modular Reactors, Advanced Modular Reactors, and fusion power plants.
- 3.3.53 To support the drive towards meeting our Net Zero ambitions, the government has set out a number of nuclear ambitions, including developing a new nuclear NPS, EN-7, for the deployment of nuclear

³⁹ DESNZ (2023), The Need for Government Intervention to Support Hydrogen to Power. See <https://assets.publishing.service.gov.uk/media/657a2eeb095987001295e072/hydrogen-to-power-market-intervention-need-and-options-report.pdf>

⁴⁰ Missing Link to a Liveable Climate, Lucid Catalyst, 2020 See <https://www.lucidcatalyst.com/hydrogen-report>

⁴¹ Development Consent Order for Sizewell C was granted on 20 July 2022. See The Sizewell C Project - Project information

power stations beyond 2025, which alongside this NPS will set the planning framework for both GW-scale and advanced fission technologies.

The role of hydropower and marine technologies

- 3.3.54 Hydropower can provide relatively predictable and, in some cases, flexible low carbon generation but total capacity is limited by the topography of the UK. Wave and tidal can also provide relatively predictable low carbon power and could play a role in future if their costs can be reduced. However, total capacity is limited for tidal power and wave power is very closely correlated with wind.
- 3.3.55 These technologies, as with most other renewables, help provide security of supply as they are not reliant on fuel for generation and can improve reliability where they are not correlated with wind and solar.
- 3.3.56 However, due to limitations on the total capacity that could be installed, as they may not always be able to provide electricity when there is low output from wind and solar and their current costs, further additional forms of generating capacity will be required to meet our energy objectives.

The need for electricity generating capacity

- 3.3.57 Government has committed to reduce GHG emissions by 78 per cent by 2035 under Carbon Budget 6⁴². The 2030 Clean Power Action Plan requires that 95% of Great Britain's generation will come from clean sources by 2030.
- 3.3.58 Given the urgent need for new electricity infrastructure and the time it takes for electricity NSIPs to move from design conception to operation, there is an urgent need for new (and particularly low carbon) electricity NSIPs to be brought forward as soon as possible, given the crucial role of electricity as the UK decarbonises its economy.
- 3.3.59 All the generating technologies mentioned above are urgently needed to meet the government's energy objectives by:
- providing security of supply (by reducing reliance on imported oil and gas, avoiding concentration risk and not relying on one fuel or generation type)

⁴² <https://www.gov.uk/guidance/carbon-budgets#setting-of-the-sixth-carbon-budget-2033-2037>

- providing an affordable, reliable system (through the deployment of technologies with complementary characteristics)
 - ensuring the system is net zero consistent (by remaining in line with our carbon budgets and maintaining the options required to deliver for a wide range of demand, decarbonisation and technology scenarios, including where there are difficulties with delivering any technology)
- 3.3.60 Known generation technologies that are included within the scope of this NPS (and would be classed as an NSIP if above the relevant capacity thresholds set out under the Planning Act 2008) include:
- Offshore Wind (including floating wind);
 - Onshore 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.
- 3.3.61 The need for all these types of infrastructure is established by this NPS and a combination of many or all of them is urgently required for the Clean Power 2030 Mission, energy security, and Net Zero, as set out above.
- 3.3.62 Government has concluded that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure. Section 4.2 states which energy generating technologies are low carbon and are therefore CNP infrastructure.

- 3.3.63 Subject to any legal requirements, the urgent need for CNP infrastructure to achieving our energy objectives, together with the national security, economic, commercial, and net zero benefits, means that it is likely the need case will outweigh any other residual impacts not capable of being addressed by application of the mitigation hierarchy, in all but the most exceptional circumstances. Government strongly supports the delivery of CNP infrastructure and it should be progressed as quickly as possible.
- 3.3.64 Other novel technologies or processes may emerge during the life of this NPS, which are nationally significant and can help deliver our energy objectives. Where these deliver on our objectives, then such technologies or processes can be regarded as needed, and as such should be given substantial weight. See Section 3.2 above.

The need for new electricity networks

- 3.3.65 There is an urgent need for new electricity network infrastructure to be brought forward at pace to meet our energy objectives.
- 3.3.66 The security and reliability of the UK's current and future energy supply is highly dependent on having an electricity network which will enable new renewable electricity generation, storage, and interconnection infrastructure that our country needs to meet the rapid increase in electricity demand required to transition to net zero while maintaining energy security. The delivery of this important infrastructure also needs to balance cost to consumers, accelerated timelines for delivery and the minimisation of community and environmental impacts.
- 3.3.67 The need to connect to new sources of electricity generation and new sources of demand is not the only driver for new electricity network infrastructure. As the electricity system grows in scale, dispersion, variety, and complexity, work will be needed to protect against the risk of large-scale supply interruptions in the absence of sufficiently robust electricity networks. While existing transmission and distribution networks must adapt and evolve to cope with this reality, development of new lines of 132kV (and over 2km) and above will also be necessary to preserve and guarantee the robust and reliable operation of the whole electricity system.
- 3.3.68 The volume of onshore reinforcement works needed to meet decarbonisation targets is substantial. NESO forecasts that over the next decade the onshore and offshore transmission network, some of which is located offshore will require a doubling of north-south power

transfer capacity due to increased wind generation in Scotland; substantial reinforcement in the Midlands to accommodate increased power flows from Scotland and the North of England; substantial reinforcement in London and the South of England to allow for Europe-bound export of excess wind generation from Scotland and the North of England, as well as the importation of energy from Europe to increase resilience during any periods which may be affected by intermittent energy generation mix and as part of the country's transition to increased energy security; and substantial reinforcement in East Anglia to handle increased power flows from offshore wind generation⁴³ (this may also require additional offshore connections coming to land in England).

- 3.3.69 It is important to note that the crucial national benefits of increased system robustness through new electricity network infrastructure projects are shared by all users of the system.
- 3.3.70 As all new grid projects have a role in efficiently constructing, operating and connecting low carbon infrastructure to the National Electricity Grid, the scope of networks CNP infrastructure is not limited to those associated specifically with a particular project.
- 3.3.71 The historical approach to connecting offshore wind resulted in individual radial connections developed project-by-project. This may continue to be the most appropriate approach for some areas with single offshore wind projects that are not located in the vicinity of other offshore wind and / or offshore infrastructure that is planned or foreseen in the near future. For regions with multiple windfarms or offshore transmission projects it is expected that a more coordinated approach will be delivered. For these areas, this approach has the potential to reduce the network infrastructure costs as well as the cumulative environmental impacts and impacts on coastal communities by installing a smaller number of larger connections, each taking power from multiple windfarms instead of individual point-to-point connections for each windfarm.
- 3.3.72 Connecting the volume of offshore wind capacity targeted by the government will require not only new offshore transmission infrastructure but also reinforcement to the onshore transmission network, to accommodate the increased power flows to regional demand centres.
- 3.3.73 Due to the time required to plan, approve and construct the required new onshore transmission infrastructure, to date the completion of

⁴³ National Grid ESO, Electricity Ten Year Statement (October 2020).

these onshore reinforcements has often taken longer than the completion of the offshore wind farms for which they are being built. This could present a material barrier to the delivery of UK government ambition to accelerating the deployment of offshore wind to meet our Clean Power 2030 Mission.

- 3.3.74 The strategic approach to network planning, including the Holistic Network Design (HND) for onshore-offshore transmission, its follow-up exercises and the forthcoming Centralised Strategic Network Plans, allows for clearer identification of needs and includes upfront consideration of environmental and community impacts. Government recognises the work undertaken in these strategic network planning exercises and these should be an important and relevant consideration in the consenting process. This recognition of the network designs seeks to directly support progress of projects identified within the designs as they are brought forward for consent. Further details are provided in Section 2.8 and 2.13 of EN-5.
- 3.3.75 Given the crucial role of electricity in national decarbonisation and energy security, it is imperative to prioritise holistically planned energy infrastructure. The time required to advance strategically identified transmission projects from network design to delivery further underscores this necessity. The Centralised Strategic Network Plan (CSNP), including future iterations, will use the chosen SSEP pathway to enable the delivery of a long term, holistically designed network plan. The CSNP will be subject to a Strategic Environmental Assessment, however, the detailed designs of individual projects will be subject to public consultation and to relevant environmental assessments at the consenting stage. This NPS recognises the need for the infrastructure proposed in the forthcoming CSNP, including infrastructure covered by future CSNP publications adopted following a similar process. Therefore, where a project is assessed and justified through a CSNP, the Secretary of State will take the need for that project as having been established and not question the need for that project during the consenting process.
- 3.3.76 Where the CSNP endorses the need case for new transmission infrastructure, this NPS also endorses the work undertaken in the CSNP to assess a range of possible options to address network needs, and that these options have already been assessed on the grounds of environmental impacts, community impacts, economic cost, deliverability and operability criteria. This NPS therefore accepts the proposed strategic parameters for proposed network infrastructure outlined in the CSNP. Strategic parameters will cover, but are not limited to, details such as technology type, the choice of onshore

overhead High Voltage Alternating Current lines, or the use of offshore High Voltage Direct Current cabling. Where an option is proposed in the CSNP, the choice of strategic parameters does not need to be re-examined, and alternatives to that choice do not need to be considered again in the consenting process. The choice of strategic parameters should be consistent with applicable Sections of EN-1 and EN-5, for example with regards to undergrounding in certain designated areas⁴⁴.

- 3.3.77 Precise routing and siting decisions will need to be made as project design is refined and in accordance with appropriate surveys and consultations. Where indicative routes are shown in the CSNP, these are subject to change and should not be considered fixed or endorsed for planning purposes. However, we expect that the final proposed route would be contained within the strategic parameters defined in the CSNP.
- 3.3.78 Multi-purpose interconnectors (MPIs) – a type of OHA – also have the potential to deliver benefits by combining offshore GB wind transmission with point-to-point interconnectors – enabling reduced curtailment of offshore wind, and reduced landing points and capital expenditure. These benefits can be maximised if the planning of this infrastructure and the associated offshore wind farms are aligned, both domestically and with the connecting country's planning process.
- 3.3.79 Offshore wind and OHA projects may have several consenting links: offshore wind and MPI projects may be consented separately, and it is likely that development consent applications for offshore wind or OHA projects may not include an application for consent for the full chain of consents (including connection to the grid). However, development consent applications should include details of how connected infrastructure will be consented, how cumulative impacts will be assessed and whether any necessary consents, permits and licences have been obtained.
- 3.3.80 Further to the need case above, for projects not brought forward through a CSNP it is recognised that the case for a new connection or network reinforcement is demonstrated if the proposed development represents an efficient and economical means of:
- Connecting a new generating station or storage facility to the network;
 - Reinforcing the network to accommodate such connections; or

⁴⁴ Any inconsistencies should be interpreted in favour of the NPS policies.

- Reinforcing the network to ensure that it is sufficiently resilient and capacious (per any performance standards set by Ofgem) to reliably supply present and/or anticipated future levels of demand.

In considering the ‘economic and efficient’ approach the network project needs to follow good design, avoidance and mitigation principles (and / or biodiversity compensation where needed for transmission in the marine environment), as referenced in EN-5.

3.3.81 Moreover, given the crucial role of networks in connecting all of the other kinds of electricity infrastructure described above, it is especially important that the Secretary of State considers network projects as elements of a coherent and strategically necessary system, whether or not they are linked together in specific NSIPs. For instance, when evaluating applications for new electricity networks infrastructure the Secretary of State should have regard to the fact that given:

- i) The government’s strategic commitment to more interconnection capacity and offshore wind generation; and
- ii) The tightly interdependent infrastructure chain linking interconnection and offshore generation with onshore demand centres.

delays in the approval of associated new network developments could cause significant economic waste and set back the strategically vital goals of decarbonisation and energy security.

3.3.82 Related to the above and considering the potential for unwarranted and avoidable disruption, inefficiency, and visual impacts along the onshore - offshore boundary, coordination of onshore transmission, offshore transmission, and offshore generation and interconnector developments should be considered at both the strategic and more detailed project design levels. This coordinated approach is likely to provide the highest degree of consumer, environmental, and community benefits.

3.3.83 The importance of accelerating coordination does not, however, militate against the need for standalone electricity networks projects, and these projects are supported by this NPS and should continue to be assessed on their own merits.

3.3.84 Government has committed to reduce GHG emissions by 78 per cent by 2035 under CB6⁴⁵. According to the Net Zero Strategy⁴⁶ this means that by 2035, all our electricity will need to come from low carbon

⁴⁵ <https://www.gov.uk/guidance/carbon-budgets#setting-of-the-sixth-carbon-budget-2033-2037>

⁴⁶ See <https://www.gov.uk/government/publications/net-zero-strategy>

sources, subject to security of supply, whilst meeting a 40-60 per cent increase in demand.

- 3.3.85 Given the urgent need for new electricity infrastructure and the time it takes for electricity NSIPs to move from design conception to operation, there is an urgent need for new (and particularly low carbon) electricity NSIPs to be brought forward as soon as possible, given the crucial role of electricity as the UK decarbonises its economy.

3.4 The need for new nationally significant gas infrastructure

- 3.4.1 Gaseous fuels have a key role in the UK energy landscape, accounting for around 33 per cent of UK energy production in 2023, and 36 per cent of total energy demand⁴⁷.
- 3.4.2 Natural gas, in particular, is currently used in the domestic sector for heating and cooking, in the industrial sector, as a source of energy and as a feedstock, and in the power generation sector, as a reliable source of flexible generating capacity.
- 3.4.3 In this section gas, unless otherwise specified, includes natural gas, biomethane and hydrogen.
- 3.4.4 We need a diverse mix of gas supply infrastructure including pipelines, storage and reception facilities in order to meet our energy objectives. Our gas infrastructure must, amongst other things, be sufficient to:
- Meet 'peak' demand for gas. Gas market participants may aim to have some 'redundancy' in their supply arrangements, above the minimum amount to meet peaks, to manage the risk that other capacity may not be available (for example, where undergoing maintenance);
 - Allow for a sustained delivery of large volumes of gas, for example, demand over a particularly cold winter;
 - Provide access to the most competitive gas supplies, because the price of gas sources will vary over time, this leads to some redundancy in gas supply infrastructure. Market participants may therefore see distinct value in having access to gas from different sources.).

⁴⁷ Digest of UK Energy Statistics: Chapter 4 – Natural Gas See <https://www.gov.uk/government/statistics/digest-of-uk-energy-statistics-dukes-2024>

Meeting ongoing demand for natural gas

- 3.4.5 The Energy White Paper⁴⁸ signals a decisive shift away from unabated natural gas to clean energy. This transformation, as reiterated in the British Energy Security Strategy⁴⁹, cannot be instantaneous without jeopardising a secure, reliable, and affordable energy system. The Clean Power 2030 Action plan recognises that unabated gas is an important backup to help maintain security of supply.
- 3.4.6 Security of supply is a top priority as the UK moves to decarbonise gas supply. The gas system is expected to continue to function well, as it has done to date, with a highly diverse range of supply sources and sufficient delivery capacity to more than meet demand. As we decarbonise gas, the UK will consider all options to help us achieve the most climate impact at least cost, while maintaining a secure system.
- 3.4.7 Building on commitments in the North Sea Transition Deal⁵⁰, we will significantly reduce emissions from domestic oil and gas fuel supplies, whilst scaling-up the production of low carbon alternatives such as hydrogen and biofuels. Gas price spikes seen in recent years underline the need to move away from hydrocarbons as quickly as possible, but we will manage the transition in a way that protects jobs and investment, uses existing infrastructure, maintains security of supply, and minimises environmental impacts.
- 3.4.8 Assumed energy demand in our pathway is based on government's central assumptions about required technology uptake, with a variation to reflect the outstanding strategic decision on the potential role of hydrogen to heat buildings. We expect demand for oil and natural gas to decline while overall, energy demand reduces significantly through increased efficiency and fossil fuels are replaced by new sources of energy.
- 3.4.9 We continue to work with the gas industry to seek views which will inform future policies on the future of the gas system, with a focus on infrastructure and markets. This will enable us to determine how the gas market will need to evolve to ensure the right market and regulatory signals are in place to offer the necessary level of investment and maintenance throughout the transition. Gathering evidence on the amount of natural gas, biomethane, and hydrogen

⁴⁸ See <https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future>

⁴⁹ See <https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy>

⁵⁰ See <https://www.gov.uk/government/publications/north-sea-transition-deal>

available and the ongoing role for gas will inform what action we must take.

Delivering affordable decarbonisation

- 3.4.10 Where low carbon alternatives can replace unabated natural gas, we will still need new gas infrastructure. Given the changing nature of the energy landscape, we cannot be certain on the precise role of natural gas, or gas infrastructure, in the future.
- 3.4.11 This means retaining the capability for using natural gas for low carbon dispatchable output in power stations equipped with CCS and as a feedstock for low carbon hydrogen production. Natural gas infrastructure might also be repurposed in the future for use by other gases required to deliver a net zero economy, such as low carbon hydrogen or for transportation of carbon dioxide to storage. Therefore, there is an ongoing need for retaining and developing the infrastructure for importing, storing and transporting gas.

The need for low carbon hydrogen infrastructure

- 3.4.12 There is an urgent need for all types of low carbon hydrogen infrastructure to allow hydrogen to play its role in the transition to net zero.
- 3.4.13 As set out in the UK Hydrogen Strategy⁵¹, the government is committed to developing low carbon hydrogen, which will be critical for meeting the UK's legally binding commitment to achieve net zero by 2050, with the potential to help decarbonise vital UK industry sectors and provide flexible deployment across heat, power and transport.
- 3.4.14 The British Energy Security Strategy⁵² doubles the ambition set out by the Hydrogen Strategy for up to 10GW of low carbon hydrogen production capacity by 2030, subject to affordability and value for money, at least half of which will come from electrolytic hydrogen, working with industry to develop a strong and enduring UK hydrogen economy. The Impact Assessment for CB6 shows an illustrative range for low carbon hydrogen of 85-125TWh in 2035 and 250-460TWh in 2050. This demand for hydrogen will need the infrastructure that supports it, including pipelines and storage.
- 3.4.15 Hydrogen can be produced through water electrolysis with low carbon power ('green' hydrogen) or through methane reformation with CCS

⁵¹ See <https://www.gov.uk/government/publications/uk-hydrogen-strategy>

⁵² See <https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy>

(‘blue’ hydrogen). The government’s view is that a twin track approach of developing both green and blue hydrogen production will be needed to achieve the scale of low carbon hydrogen production required for net zero.

- 3.4.16 In December 2023 government set out that we see potential strategic and economic value in supporting the blending of up to 20% hydrogen by volume into the GB gas distribution networks in certain circumstances that align with the strategic role of blending. When deciding whether to enable blending in the GB gas distribution networks, the government will consider safety evidence from industry trials and tests, as well as any implications on the economic case. We do not anticipate blending at a commercial scale before 2026-27 at the earliest, due in part to timescales for the necessary measures for implementation.
- 3.4.17 If the decision to proceed with blending is positive, the government will then look to start the legislative and regulatory process for enabling blending, as well as the process to make any physical changes to the distribution networks that are required.
- 3.4.18 The government recognises the potential market building role of blending to help manage volume risk to hydrogen producers facing volatile or temporarily unavailable demand, as well as to bridge any potential gap whilst hydrogen transport and storage infrastructure develops. However as set out in our Hydrogen Strategy⁵³, use of hydrogen is most valuable where other routes to decarbonisation do not exist or are limited, particularly where direct electrification is not an option. Therefore, we will be looking to ensure that blending does not displace the supply of hydrogen to those end users who require it to decarbonise. This is likely to be reflected in the design of any potential financial support that is available for hydrogen producers for blended volumes. More work is also required to prove the safety and feasibility case, and to better understand the costs and benefits, of repurposing the gas grid to 100 per cent low carbon hydrogen. DESNZ is currently working with industry stakeholders to ensure that all necessary research and development, testing and trialling work required is carried out. The Hydrogen Strategy also provides further information on our approach.
- 3.4.19 In the future, low carbon hydrogen may also become an internationally traded energy vector, piped or shipped from areas of low-cost production to areas of demand. While the development of this market is uncertain, the UK could become both an exporter and importer of

⁵³ See <https://www.gov.uk/government/publications/uk-hydrogen-strategy>

low carbon hydrogen, potentially necessitating current gas infrastructure to be reconfigured or for new infrastructure to be put in place. As was previously set out in the British Energy Security Strategy⁵⁴, there is a commitment to develop a certification scheme to support the international trade in low carbon hydrogen.

- 3.4.20 The Hydrogen Strategy recognises the critical enabling role that hydrogen transportation and storage (T&S) infrastructure will need to play in connecting hydrogen producers with consumers and balance misalignment in supply and demand. It committed government to undertaking a review of T&S requirements to support its ambitions, including the need for financial and regulatory support. Following feedback sought at the start of this review, the British Energy Security Strategy sets out a commitment to design new business models for hydrogen T&S infrastructure which will be essential to grow the hydrogen economy.
- 3.4.21 New hydrogen pipelines and underground storage for hydrogen (in both cases whether or not blended with natural gas) will require consent from the Secretary of State where they meet the definitions in sections 15-21 of the Planning Act 2008.
- 3.4.22 In considering applications, the Secretary of State will expect applicants to consider foreseeable future demand when considering the size and route of their investments. Applicants may therefore propose pipelines with a greater capacity than demand might suggest at the time of consenting. Existing legislation (The Offshore Petroleum Production and Pipe-lines (Assessment of Environmental Effects) Regulations 1999) already provides powers to require modification of pipelines where this would reduce the need for additional pipelines to be constructed in the future.
- 3.4.23 To support the urgent need for low carbon hydrogen infrastructure, hydrogen distribution, pipelines and storage, are considered to be CNP Infrastructure.

The role of biomethane

- 3.4.24 Biomethane is a domestically produced low carbon gas which can play an increasingly important role in reducing our reliance on natural gas and increasing our energy security. Biomethane can be injected to the gas grid as a direct replacement for natural gas. It is a flexible fuel which can contribute to decarbonising hard-to-abate sectors including heavy transport and machinery and industrial processes. It is also

⁵⁴ See <https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy>

expected to be used for peaking power generation and hydrogen production.

- 3.4.25 Biomethane is produced by anaerobic digestion using organic wastes and materials, such as food waste and sustainable crops. It reduces methane emissions from wastes that would otherwise be emitted. It also has the potential to deliver negative emissions, through carbon capture technology both at the point of production and point of combustion. Digestate is the nutrient rich by-product of the anaerobic digestion process and can be used to recover nutrients for use as a crop fertiliser, avoiding GHG emissions associated with fertiliser manufacture. However, digestate needs to be stored, processed and managed in ways that maximise nutrient recovery and minimise potential negative impacts to the environment.
- 3.4.26 As of March 2024, there were 120 biomethane plants in the UK injecting into the gas grid⁵⁵. These are predominantly plants supported by the Non-Domestic Renewable Heat Incentive (NDRHI) which has now closed to new applications. New biomethane production in Great Britain is supported by the Green Gas Support Scheme (GGSS) which provides tariff-support for biomethane produced via anaerobic digestion and injected into the gas grid. The NDRHI and GGSS are expected to generate 8TWh of biomethane by 2028. The 2023 Biomass Strategy showed that 30-40TWh of biomethane production across the illustrative scenarios in 2050 would help the UK achieve net zero cost effectively⁵⁶. The government is currently considering policy options to support biomethane production following the closure of the GGSS to new applications in March 2028.

Alternatives to new gas infrastructure

Heat networks

- 3.4.27 Heat networks are systems of insulated pipes that take heat from a central source and supply it, as hot water, to residential, commercial, industrial and public sector buildings to provide hot water, space heating and/or cooling.
- 3.4.28 Heat networks are a crucial technology for decarbonising the UK's heating, particularly in dense urban areas. They are uniquely able to unlock otherwise inaccessible sources of larger scale renewable and recovered heat such as waste heat and heat from waterways and

⁵⁵ Anaerobic Digestion Deployment in the United Kingdom: Eleventh Annual Report See <https://www.biogas-info.co.uk/resources/biogas-map/#:~:text=map%C2%A0now%20can%20be%20downloaded%20by%20clicking%C2%A0here>

⁵⁶ Biomass Strategy 2023 See <https://www.gov.uk/government/publications/biomass-strategy>

mines. By using recovered heat from industry, geothermal energy and power generation, and accessing sources of ambient heat, heat networks can reduce overall production requirements for gas, as well as offering a way of storing and balancing energy needs overall. In parts of the UK, heat networks will represent a lower cost route to decarbonisation than alternatives such as repurposing the gas network for low carbon hydrogen.

- 3.4.29 However, although heat networks can play a key role in decarbonising heating, they cannot fully replace the need for new gas infrastructure to supply areas without heat networks or to transport gas for the other purposes set out in this section. Heat networks currently supply around 2 per cent of the UK's heat supply.

Electrification and Energy Efficiency Measures

- 3.4.30 As discussed in paragraph 3.3.3, increased electrification of heat, combined with energy efficiency measures, could reduce the need for gas infrastructure but such infrastructure will still be required during the transition to net zero to ensure security of our energy supplies. It is prudent to plan on a conservative basis to ensure that there is sufficient supply of energy to meet demand across a wide range of future scenarios.

Consumer Led Flexibility

- 3.4.31 Consumer led flexibility allows large gas consumers to reduce the amount of gas they use during times of system stress in exchange for a payment. However, it cannot increase the total amount of gas available in the UK, or significantly reduce the total amount of gas consumed, and so cannot fully replace the need for new gas infrastructure to deliver our energy objectives.

3.5 The need for new nationally significant carbon capture and storage infrastructure

- 3.5.1 There is an urgent need for new carbon capture and storage (CCS) infrastructure to support the transition to a net zero economy.
- 3.5.2 The Climate Change Committee states that CCS is a necessity not an option⁵⁷. As well as its role in reducing emissions associated with generating electricity from natural gas (see paragraph 3.3.45), CCS infrastructure will also be needed to capture and store carbon dioxide

⁵⁷ *Net Zero: The UK's contribution to stopping global warming*, p.23. See <https://www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-The-UKs-contribution-to-stopping-global-warming.pdf>

from hydrogen production from natural gas, industrial processes, the use of BECCS and DACCS. CCS infrastructure could be new or repurposed infrastructure.

- 3.5.3 The Clean Power 2030 Action Plan describes how power CCUS, which is natural gas fuelled generation equipped with carbon capture technology, can provide non-weather-dependent, dispatchable low carbon generation that will support a renewables-based 2030 system. The UK's Net Zero Strategy⁵⁸ and Industrial Decarbonisation Strategy⁵⁹ reaffirm the importance of CCS in decarbonising energy intensive sectors such as chemicals, oil refining, and cement. The International Energy Agency⁶⁰ further reinforce the need for CCS in the clean energy transition.
- 3.5.4 On 10th December 2024 government signed contracts for the first UK's CCUS projects, the East Coast Cluster in Teesside. This followed the government's £21.7bn funding commitment over 25 years. The UK has one of the largest potential CO₂ storage capacities in Europe, with an estimated 78 billion tonnes of CO₂ storage capacity under the seabed of the UKCS.
- 3.5.5 The deployment of new onshore CO₂ pipelines over 16.093 kilometres in length can expand CCS networks and are within scope of this NPS.
- 3.5.6 The CCUS investor roadmap⁶¹ and CCUS supply chains roadmap⁶² set out how government and industry can work together to harness the power of a strong, industrialised UK CCUS supply chain, while ensuring that the CCUS sector as a whole remains investible, cost effective and focused on delivery.
- 3.5.7 To support the urgent need for new CCS infrastructure, CCS technologies, pipelines and storage infrastructure are considered to be CNP infrastructure.

Alternatives to new CCS infrastructure

- 3.5.8 The alternatives to new CCS infrastructure for delivering net zero by 2050 are limited. Producing hydrogen through water electrolysis with low carbon power ('green' hydrogen) does not rely on CCS but the government's view is that this method alone will not achieve the scale

⁵⁸ See <https://www.gov.uk/government/publications/net-zero-strategy>

⁵⁹ See <https://www.gov.uk/government/publications/industrial-decarbonisation-strategy>

⁶⁰ See <https://www.iea.org/reports/ccus-in-clean-energy-transitions/a-new-era-for-ccus>

⁶¹ See <https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-investor-roadmap>

⁶² See <https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-supply-chains-a-roadmap-to-maximise-the-uks-potential>

of low carbon hydrogen production required for net zero. Alternative methods of decarbonising industry include improving energy efficiency, electrification of heat, and fuel switching to hydrogen or biomass as fuel or feedstock. However, these alternatives are limited as many emissions are process emissions. CCS therefore has an essential role to play, either on its own or in combination with measures such as electrification and fuel switching.

3.6 The need for new nationally significant oil / liquid fuels infrastructure

- 3.6.1 Liquid fuel products play an important role in the UK economy, providing around one third of the primary energy used. We currently rely on oil for over 90 per cent of our motorised transport needs⁶³. Transport accounted for 80 per cent of final consumption of oil products in the UK in 2023, amounting to 44.3 million tonnes of oil products⁶⁴. Demand as of 2023, which was depressed by the impacts of Covid-19, has rebounded since 2020 but remains below 2019 levels.
- 3.6.2 As we take steps to decarbonise and transition to net zero there will be an increase in the use of a diverse range of liquid fuels, including bio and low carbon fuels. We need to reduce our dependence on oil by improving vehicle efficiency and using new alternative fuelled vehicles. From 2030 we will end the sale of new petrol and diesel cars, and all new cars and vans will be 100% zero emission by 2035. The Sustainable Aviation Fuel (SAF) Mandate, implemented in January 2025, will help secure demand for SAF, delivering GHG emission savings in the aviation industry.
- 3.6.3 Transport is the largest share of demand for fuel but there are other uses which are important to the UK economy and life, including non-energy uses and the use of oils and liquefied petroleum gas for heating.
- 3.6.4 Over time technology changes, including electric vehicles and the generation of more heat from low carbon sources, together with

⁶³ From table 1.1 of Digest of United Kingdom Energy Statistics (DUKES) 2023: aggregate energy balances: gross calorific values, available at: <https://www.gov.uk/government/publications/digest-of-uk-energy-statistics-dukes-table-of-tables>

⁶⁴ From table 3.2 of Digest of United Kingdom Energy Statistics (DUKES) 2023: petroleum products: commodity balances, available at: <https://www.gov.uk/government/publications/digest-of-uk-energy-statistics-dukes-table-of-tables>

energy efficiency policies such as seeking to encourage greater use of public transport will reduce demand for oil.

- 3.6.5 The technology to decarbonise light road transport is now being rolled out but the way forward for heavier road transport, shipping and aviation is not yet clear with several options, including electricity, low carbon hydrogen and low carbon fuels, still being developed.
- 3.6.6 Although CCC scenarios for meeting the Seventh Carbon Budget see demand for petroleum reduce by over 80 per cent by 2050⁶⁵, there will be ongoing demand for oil-based fuels throughout the transition as the penetration of low carbon alternatives takes time to increase (e.g. for heavier transport, shipping and aviation).
- 3.6.7 The UK needs to ensure it has safe and secure supplies of the liquid fuel products it requires. Sufficient fuel and infrastructure capacity are necessary to avoid socially unacceptable levels of interruption to physical supply and excessive costs to the economy from unexpectedly high or volatile prices. These requirements can be met by sufficient, diverse and reliable supplies of fuel, with adequate capacity to import, produce, store and distribute these supplies to customers. This in turn highlights the need for reliable infrastructure including refineries, pipelines and import terminals and the need for flexibility in the supply chain to accommodate the inevitable risk of physical outages.
- 3.6.8 The UK has been a net importer of petroleum products since 2013⁶⁶, driven by continued rationalisation of the UK's refining capacity. However, the balance of import and export varies by product and region, and this will continue to evolve as demand and supply adjust during the transition to a net zero carbon economy over forthcoming decades.

Petroleum product distribution

- 3.6.9 The Secretary of State should expect to receive a small number of significant applications for pipelines. The drivers for new downstream oil infrastructure such as pipelines and associated facilities include:
- Meeting demand by end users, particularly for aviation fuel;

⁶⁵ From Figure 10.4 of The Seventh Carbon Budget, available at <https://www.theccc.org.uk/wp-content/uploads/2025/02/The-Seventh-Carbon-Budget.pdf>

⁶⁶ From table 3.2 of Digest of United Kingdom Energy Statistics (DUKES) 2023: petroleum products: commodity balances, available at: <https://www.gov.uk/government/publications/digest-of-uk-energy-statistics-dukes-table-of-tables>

- Compliance with International Energy Agency obligations for compulsory oil stocking, which are set to increase as North Sea resources decline;
 - Meeting requirements for lower emission fuels blended with biofuels (including ethanol) and other low carbon fuels, which are set to increase;
 - Increasing imports of refined products (due to changing demand and supply patterns);
 - Replacing end of life assets and adjusting their design to meet new, safety, environmental or efficiency objectives;
 - Emerging planning, safety and environmental protection requirements;
 - Market requirements to improve supply resilience in order to meet demand in full, in a timely fashion, under credible emergency scenarios.
- 3.6.10 New pipeline infrastructure could require associated works including liquid fuel processing plant to pump or filter blend products, storage tanks for bulk storage and product settling, road handling facilities for discharge into road tankers and jetties for loading and offloading sea tankers.

4 Assessment Principles

4.1 General Policies and Considerations

- 4.1.1 This part of EN-1, Assessment Principles, sets out the general policies for the submission and assessment of applications relating to energy infrastructure.
- 4.1.2 The Clean Power 2030 Action Plan, Energy White Paper⁶⁷ and British Energy Security Strategy⁶⁸ all emphasise the importance of the government's net zero commitment and efforts to fight climate change, as well as the need to maintain a secure and reliable energy system. The Levelling Up White Paper⁶⁹ calls on the government to ensure investment in the transition to Net Zero benefits less well-performing parts of the UK, reducing emissions, facilitating economic development and the creation of jobs⁷⁰.
- 4.1.3 Given the level and urgency of need for infrastructure of the types covered by the energy NPSs set out in Part 3 of this NPS, the Secretary of State will start with a presumption in favour of granting consent to applications for energy NSIPs. That presumption applies unless any more specific and relevant policies set out in the relevant NPSs clearly indicate that consent should be refused.
- 4.1.4 The presumption is also subject to the provisions of the Planning Act 2008 referred to at paragraph 1.1.4 of this NPS.

Weighing impacts and benefits

- 4.1.5 In considering any proposed development, in particular when weighing its adverse impacts against its benefits, the Secretary of State should take into account:
 - Its potential benefits including its contribution to meeting the need for the Clean Power 2030 Mission and net zero, energy infrastructure, job creation, reduction of geographical disparities, environmental enhancements, and any long-term or wider benefits;

⁶⁷See <https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future>

⁶⁸ See <https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy>

⁶⁹ See <https://www.gov.uk/government/publications/levelling-up-the-united-kingdom>

⁷⁰ For infrastructure in Wales, see <https://www.gov.wales/future-wales-national-plan-2040-0>

<https://www.gov.wales/net-zero-wales>

<https://www.gov.wales/prosperity-all-climate-conscious-wales>

- Its potential adverse impacts, including on the environment, and including any long-term and cumulative adverse impacts, as well as any measures to avoid, reduce, mitigate or compensate for any adverse impacts, following the mitigation hierarchy.
- 4.1.6 In this context, the Secretary of State should take into account environmental, social and economic benefits and adverse impacts, at national, regional and local levels. These may be identified in this NPS, the relevant technology specific NPS, in the application or elsewhere (including in local impact reports, marine plans⁷¹, and other material considerations as outlined in Section 1.1).
- 4.1.7 Where this NPS or the relevant technology specific NPSs require an applicant to mitigate a particular impact as far as possible, but the Secretary of State considers that there would still be residual adverse effects after the implementation of such mitigation measures, the Secretary of State should weigh those residual effects against the benefits of the proposed development. For projects which qualify as CNP Infrastructure, it is likely that the need case will outweigh the residual effects not capable of being addressed by application of the mitigation hierarchy, in all but the most exceptional cases. This presumption, however, does not apply to residual impacts which present an unacceptable risk to, or interference with, human health and public safety, defence, or irreplaceable habitats. Further, the same exception applies to this presumption for residual impacts which present an unacceptable risk to, or unacceptable interference offshore to navigation, or onshore to flood and coastal erosion risk. See paragraph 4.2.28 of this NPS for further detail.

Land rights

- 4.1.8 Where the use of land at a specific location is required to facilitate the development by providing for mitigation and landscape enhancement, an applicant may, as part of its application to the Secretary of State, seek the compulsory acquisition of that land, or rights over that land.
- 4.1.9 The Secretary of State will consider any such application under the usual compulsory acquisition principles, taking into account the content of the NPSs.

⁷¹ In Wales, the Welsh National Marine Plan sets out Welsh Ministers' expectations that nationally significant infrastructure projects contribute to the wellbeing of Welsh communities and the sustainable management of natural resources and should seek to deliver lasting legacy benefits for the local community, the economy and the environment.

Other documents

- 4.1.10 The policy set out in this NPS and the technology specific energy NPSs is intended to provide greater clarity around existing policy and practice of the Secretary of State in considering applications for nationally significant energy infrastructure, (or therefore the “benchmark” for what is, or is not, an acceptable nationally significant energy development).
- 4.1.11 The energy NPSs have taken account of the National Planning Policy Framework (NPPF), the Planning Practice Guidance for England, and Planning Policy Wales and Technical Advice Notes (TANs) for Wales, where appropriate⁷².
- 4.1.12 Other matters that the Secretary of State may consider both important and relevant to their decision-making may include Development Plan documents or other documents in the Local Development Framework.
- 4.1.13 Where the project conflicts with a proposal in a draft Development Plan, the Secretary of State should take account of the stage which the Development Plan document in England or Local Development Plan in Wales has reached in deciding what weight to give to the plan for the purposes of determining the planning significance of what is replaced, prevented, or precluded.
- 4.1.14 The closer the Development Plan document in England or Local Development Plan in Wales is to being adopted by the LPA, the greater the weight which can be attached to it.
- 4.1.15 The Secretary of State should also consider spatial plans, such as the Strategic Spatial Energy Plan upon endorsement by all relevant governments.
- 4.1.16 In the event of a conflict between these documents and an NPS, the NPS prevails for the purpose of Secretary of State decision making given the national significance of the infrastructure.

Development consent

- 4.1.17 The Secretary of State should only impose requirements⁷³ in relation to a development consent that are necessary, relevant to planning,

⁷² NPPF: See <https://www.gov.uk/government/collections/planning-practice-guidance>; Planning Practice Guidance: Use of Planning Conditions: See <https://www.gov.uk/guidance/use-of-planning-conditions>; TANs: See <https://gov.wales/technical-advice-notes>

⁷³ As defined in section 120 of the Planning Act 2008.

relevant to the development to be consented, enforceable, precise, and reasonable in all other respects.

- 4.1.18 The Secretary of State should consider the guidance in the NPPF, the Planning Practice Guidance: Use of Planning Conditions, and TANs, or any successor documents, where appropriate.
- 4.1.19 The Secretary of State may consider any development consent obligations⁷⁴ that an applicant agrees with local authorities. These must be relevant to planning, necessary to make the proposed development acceptable in planning terms, directly related to the proposed development, fairly and reasonably related in scale and kind to the proposed development, and reasonable in all other respects.

Early engagement

- 4.1.20 Early engagement both before and at the formal pre-application stage between the applicant and key stakeholders, including public regulators, Statutory Consultees (including Statutory Nature Conservation Bodies (SNCBs)), and those likely to have an interest in a proposed energy infrastructure application, is strongly encouraged in line with the government's pre-application guidance⁷⁵. This means that only applications which are fully prepared and comprehensive can be accepted for examination, enabling them to be properly assessed by the Examining Authority and leading to a clear recommendation report to the Secretary of State.
- 4.1.21 This is particularly so in the case of HRA matters covered in paragraphs 5.4.26 to 5.4.32 below, which explain the onus is on the applicant to submit sufficient information to enable the Secretary of State to conduct an Appropriate Assessment if required.

Financial and technical viability

- 4.1.22 In deciding to bring forward a proposal for infrastructure development, the applicant will have made a judgement on the financial and technical viability of the proposed development, within the market framework and taking account of government interventions.
- 4.1.23 Where the Secretary of State considers that the financial viability and technical feasibility of the proposal has been properly assessed by the applicant, it is unlikely to be of relevance in Secretary of State decision

⁷⁴ Where the words "planning obligations" are used in this NPS they refer to "development consent obligations" under section 106 of the Town & Country Planning Act 1990 as amended by section 174 of the Planning Act 2008.

⁷⁵ Planning Act 2008: guidance on the Pre-application process available at: See Planning Act 2008: Pre-application stage for Nationally Significant Infrastructure Projects - GOV.UK

making (any exceptions to this principle are dealt with where they arise in this, or other energy NPSs, and the reasons why financial viability or technical feasibility is likely to be of relevance explained).

4.2 The critical national priority for low carbon infrastructure

- 4.2.1 Government has committed to the Clean Power 2030 Mission, subject to security of supply, to underpin its 2050 net zero ambitions. More than half of final energy demand in 2050 could be met by electricity, as transport and heating in particular shift from fossil fuel to electrical technology.
- 4.2.2 Ensuring the UK is more energy independent, resilient and secure requires the smooth transition to abundant, low-carbon energy. The UK's strategy to increase supply of low carbon energy is dependent on deployment of renewable and nuclear power generation, alongside hydrogen and CCUS. Our energy security and net zero ambitions will only be delivered if we can enable the development of new low carbon sources of energy at speed and scale.
- 4.2.3 With smart and strategic planning, the UK can maintain high environmental standards and minimise impacts while increasing the levels of deployment at the scale and pace needed to meet our energy security and net zero ambitions.

Rising to the Clean Power 2030 Mission

- 4.2.4 As set out in NESO's advice to the Secretary of State and the Secretary of State's Clean Power Action Plan, the pace of planning delivery needs to significantly increase to allow the government to meet its Clean Energy targets. Many more development consent applications will have to enter the system, and be examined and decided within the statutory timescales. These decisions must be made in accordance with this NPS, relevant technology specific NPSs, and all relevant legal requirements, and applications must continue to meet the high standards expected.
- 4.2.5 Government is proposing amendments to infrastructure planning, including to the Planning Act 2008 process. Even with these changes, it will require a significant and sustained effort from applicants, planners, LPAs, statutory advisors, Examining Authorities and decision makers to meet this challenge, while listening to host communities. It is a challenge we must meet, and to do that each part of the system needs to work together efficiently to avoid unnecessary delays.

Proportionality and focus at all stages of the project preparation, examination and decision making are vital.

Pre-application

- 4.2.6 Before applications are made applicants are required to carry out pre-application consultation on their proposals. The Planning Act 2008 requires only one such consultation, and proposals can change after that consultation without the need to reconsult, unless the project is so altered as to become a different project altogether. There is then further publicity, consultation and engagement within the formal Planning Act process.
- 4.2.7 We recommend that applicants consider additional consents, licences and permit requirements at the earliest possible stage. Applicants should consider parallel tracking of the environmental permitting and planning applications, and engaging with the Environment Agency's (EA) permitting pre-application service to help ensure that project design considers the requirements of the environmental permitting regime at the earliest opportunity.
- 4.2.8 Where it is required by law at the pre-application consultation stage, preliminary environmental information should be provided. This information should be enough for statutory advisors to develop an informed view of the likely significant environmental effects of the development. It is not expected to be the full, finalised Environmental Statement.
- 4.2.9 While applicants may carry out further non-statutory consultation, these should serve a clear purpose and be focused and targeted at ensuring the project is ready for the statutory consultation. Applicants should avoid using these repeated consultations to test the minimum level of mitigation and compensation for impacts. Instead, mitigations should be built in from the start. For this reason, early engagement with relevant statutory consultees is recommended and applicants should maintain this engagement throughout pre-application. This ensures that issues are identified and addressed as early as possible.
- 4.2.10 Objections to the adequacy of pre-application consultation must be fair, accurate and not based on the objector's view of the underlying scheme. So long as an applicant has acted reasonably and met the statutory requirements there should be no objections to the adequacy of the consultation process.

- 4.2.11 MHCLG publish clear guidance⁷⁶ on the pre-application stage and PINS offer a pre-application advice service. To meet the Clean Energy challenge applicants must engage with and take note of this guidance and advice.

Applications

- 4.2.12 Applicants must ensure that applications are ready to be examined before an application is made. The Planning Act 2008 system is designed to be frontloaded and applications should not enter the statutory system if they are not ready to be consented. Examining Authorities, and indeed Secretaries of State, should be focused on considering the planning merits of an application, and not using time during the examination and decision-making stages seeking to address deficiencies in an application. Applicants and affected parties should ensure that protective provisions have been agreed ahead of statutory deadlines.

Environmental Statements

- 4.2.13 Applicants and their consultants and advisors must ensure that their applications are clear and accessible to both the public and decision makers. Applications should be proportional, clear and focussed in order to ensure the planning process can move at the pace required to meet the Clean Power 2030 Mission. Applicants must ensure their applications are concise whilst still containing the necessary, high quality, information the Examining Authority, statutory consultees and the Secretary of State expect to see in order to make an informed decision. The ES should therefore be proportionate and focused, with just the sufficient detail required to clearly identify the likely significant effects from the proposal.

Working together

- 4.2.14 With the increasing number of development consent applications coming forward, this will put pressure on existing systems within the NSIP regime. It's therefore important that all parts of the system work together cohesively to ensure that the impacts of projects are properly assessed and mitigated so that good quality schemes are consented. LPAs and statutory advisors need the best and most assessable information from applicants so that they can easily identify all the relevant issues, agree the majority of those early and focus their attention on any controversial issues. Applicants providing tracked

⁷⁶ See <https://www.gov.uk/guidance/planning-act-2008-pre-application-stage-for-nationally-significant-infrastructure-projects>

change versions of amended documents alongside the clean versions is encouraged. Applicants should view their relationships with LPAs and statutory advisors as a valuable collaborative one.

- 4.2.15 Similarly, applicants, consultees, examiners and decision makers, and all their legal teams must work together to streamline the formal DCO itself. Applicants should seek to take a standard approach to issues like compulsory purchase powers, the discharge of requirements and arbitration. Applicants should not introduce subtle changes to make a development easier to carry out and standard articles, such as those on human remains and mineral rights should only be used where there is a known burial ground or mineral rights holder.

The critical national priority

- 4.2.16 Government has concluded that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure to meet the Clean Power 2030 Mission and net zero. Paragraphs 4.2.17 and 4.2.18 below set out the projects to be prioritised for the Clean Power 2030 Mission and net zero. The CNP policy below applies to these projects. This does not extend the definition of what counts as nationally significant infrastructure: the scope remains as set out in the Planning Act 2008.
- 4.2.17 Low carbon infrastructure for the purposes of this policy means, for electricity generation, all onshore and offshore generation that does not involve fossil fuel combustion (that is, renewable generation, including anaerobic digestion plants provided they meet existing definitions of low carbon; and nuclear energy generation), as well as natural gas fired generation which is carbon capture ready. EfW developments are not critical to meeting the Clean Power 2030 Mission⁷⁷ and therefore CNP policy does not apply to applications for EfW projects. 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 generation technology, as all new grid projects will contribute towards greater efficiency in constructing, operating and connecting low carbon infrastructure to the National Electricity Transmission System. Other energy infrastructure, fuels, pipelines and storage infrastructure, which fits within the normal definition of “low carbon”, such as hydrogen distribution, and carbon dioxide distribution are also classed as low carbon infrastructure for the purposes of this policy.

⁷⁷ See <https://www.gov.uk/government/publications/clean-power-2030-action-plan>

- 4.2.18 Low carbon infrastructure for the purposes of this policy also means energy infrastructure which is directed into the NSIP regime under section 35 of the Planning Act 2008, and fit within the normal definition of “low carbon”, such as interconnectors, Offshore Hybrid Assets, or ‘bootstraps’ to support the onshore network which are routed offshore. In addition to lifetime extensions of nationally significant low carbon infrastructure, and repowering of projects.
- 4.2.19 The overarching need case for each type of energy infrastructure and the substantial weight which should be given to this need in assessing applications, as set out in paragraphs 3.2.8 to 3.2.10 of EN-1, is the starting point for all assessments of energy infrastructure applications.
- 4.2.20 The CNP policy **does not** create an additional or cumulative need case or weighting to that which is already outlined for each type of energy infrastructure. The policy applies following the normal consideration of the need case, the impacts of the project, and the application of the mitigation hierarchy. As such, it is relevant during Secretary of State decision making and specifically in reference to any residual impacts that have been identified. It should therefore also be given consideration by the Examining Authority when it is making its recommendation to the Secretary of State.
- 4.2.21 During decision making, the CNP policy will influence how non-HRA and non-Marine Conservation Zone (MCZ) residual impacts are considered in the planning balance. The policy will therefore also influence how the Secretary of State considers whether tests requiring clear outweighing of harm, exceptionality, or very special circumstances have been met by a CNP Infrastructure application. Further detail is provided in paragraphs 4.2.28 to 4.2.30, and Figure 2.
- 4.2.22 During decision making, the CNP policy also explains the Secretary of State’s approach to HRA derogations and MCZ assessments. Specifically, the policy explains how the alternative solutions and IROPI tests are considered by the Secretary of State. Further detail is provided in paragraphs 4.2.31 to 4.2.35, and Figure 3. Further detail on wider HRA and MCZ policy are provided in Section 5.4 of this NPS.

Applicant’s assessment

- 4.2.23 Applicants for CNP infrastructure must continue to show how their application meets the requirements in this NPS and the relevant

technology specific NPS, applying the mitigation hierarchy, as well as any other legal⁷⁸ and regulatory requirements.

- 4.2.24 Applicants must apply the mitigation hierarchy and demonstrate that it has been applied. They should also seek the advice of the appropriate SNCB or other relevant statutory body when undertaking this process. Applicants should demonstrate that all residual impacts are those that cannot be avoided, reduced or mitigated⁷⁹. Measures that result in a significant reduction in generation capacity for CNP infrastructure are unlikely to be considered to be appropriate as mitigation. There may be exceptional circumstances where the mitigation could have a significant benefit and warrant a small reduction in generation capacity and function. In these circumstances, the Secretary of State may decide that the benefits of the mitigation to reduce the effects outweigh the marginal loss of function.
- 4.2.25 Compensation, by definition, does not reduce an adverse effect resulting from a development. However, applicants should set out how residual impacts will be compensated for as far as possible. Applicants should also set out how any mitigation or compensation measures will be monitored and reporting agreed to ensure success and that action is taken. Changes to measures may be needed e.g. adaptive management. The cumulative impacts of multiple developments with residual impacts should also be considered.
- 4.2.26 Where residual impacts relate to HRA or MCZ sites then the applicant must provide a derogation case, if required, in the normal way in compliance with the relevant legislation and guidance.

Secretary of State decision making

- 4.2.27 The Secretary of State will continue to consider the impacts and benefits of all CNP Infrastructure applications on a case-by-case basis. The Secretary of State must be satisfied that the applicant's assessment demonstrates that the requirements set out above have been met. Where the Secretary of State is satisfied that they have been met, the CNP presumptions set out below apply.

⁷⁸ The Secretary of State will continue to comply with any legislative requirements, such as those contained in regulations 3 and 7 of the Infrastructure Planning (Decisions) Regulations 2010, section 40 of the Natural Environment and Rural Communities Act 2006 and section 6 of the Environment (Wales) Act 2016 and section 126 of the Marine and Coastal Access Act 2009.

⁷⁹ As set out in Section 4.6 of this NPS, developers should seek opportunities to contribute to and enhance the natural environment by providing net gains for biodiversity, and the wider environment where possible.

Non-HRA and non-MCZ residual impacts of CNP Infrastructure

- 4.2.28 Where residual non-HRA or non-MCZ impacts remain after the mitigation hierarchy has been applied, these residual impacts are unlikely to outweigh the urgent need for this type of infrastructure. Therefore, in all but the most exceptional circumstances, it is unlikely that consent will be refused on the basis of these residual impacts. The exception to this presumption of consent are residual impacts onshore and offshore which present an unacceptable risk to, or unacceptable interference with, human health and public safety, defence, or irreplaceable habitats. Further, the same exception applies to this presumption for residual impacts which present an unacceptable risk to, or unacceptable interference offshore to navigation, or onshore to flood and coastal erosion risk.
- 4.2.29 As a result, the Secretary of State will take as the starting point for decision-making that such infrastructure is to be treated as if it has met any tests which are set out within the NPSs, or any other planning policy, which requires a clear outweighing of harm, exceptionality or very special circumstances.
- 4.2.30 This means that the Secretary of State will take as a starting point that CNP Infrastructure will meet the following, non-exhaustive, list of tests:
- Where development within a Green Belt requires very special circumstances to justify development;
 - Where development within or outside a Site of Special Scientific Interest (SSSI) requires the benefits (including need) of the development in the location proposed to clearly outweigh both the likely impact on features of the site that make it a SSSI, and any broader impacts on the national network of SSSIs;
 - Where development in nationally designated landscapes requires exceptional circumstances to be demonstrated; and
 - Where substantial harm to or loss of significance to heritage assets should be exceptional or wholly exceptional.

Overarching National Policy Statement for Energy (EN-1)

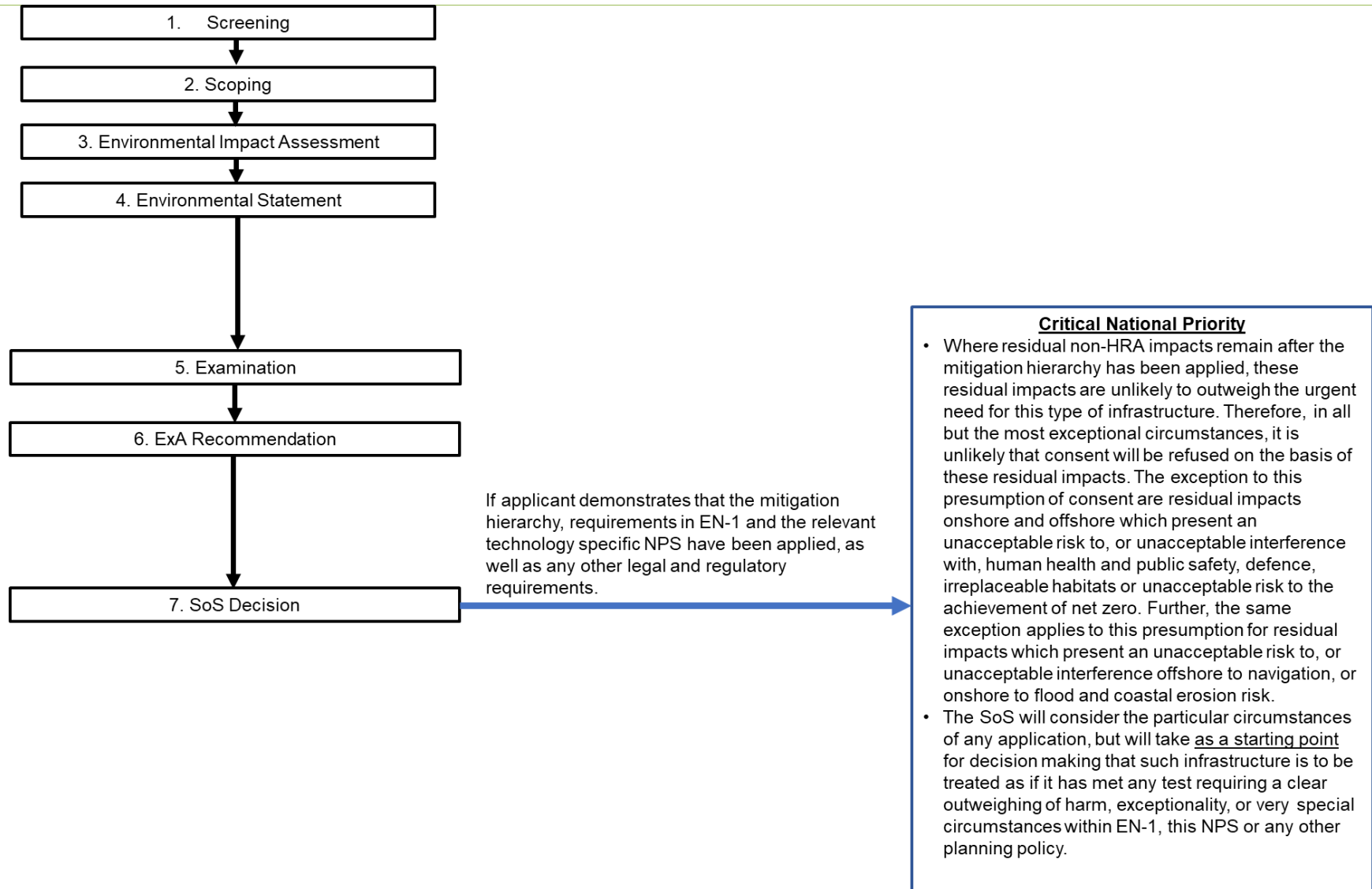


Figure 2: Application of CNP in decisions relating to Environmental Impact Assessments

HRA derogations and MCZ assessments for CNP Infrastructure

- 4.2.31 Any HRA or MCZ residual impacts will continue to be considered under the framework set out in the Habitats Regulations and the Marine and Coastal Access Act 2009 respectively.
- 4.2.32 Where, following Appropriate Assessment, CNP Infrastructure has residual adverse impacts on the integrity of sites forming part of the UK national site network, either alone or in combination with other plans or projects, the Secretary of State will consider making a derogation under the Habitats Regulations⁸⁰.
- 4.2.33 Similarly, if during an MCZ assessment, CNP Infrastructure has residual impacts which significantly risk hindering the achievement of the stated conservation objectives for the MCZ, the Secretary of State will consider making a derogation under section 126(7) of the Marine and Coastal Access Act 2009.
- 4.2.34 For both derogations, the Secretary of State will consider the particular circumstances of any plan or project, but starting from the position that energy security and decarbonising the power sector to combat climate change:
- Requires a significant number of deliverable locations for CNP Infrastructure and for each location to maximise its capacity. This NPS imposes no limit on the number of CNP infrastructure projects that may be consented. Therefore, the fact that there are other potential plans or projects deliverable in different locations to meet the need for CNP Infrastructure is unlikely to be treated as an alternative solution. Further, the existence of another way of developing the proposed plan or project which results in a significantly lower generation capacity is unlikely to meet the objectives and therefore be treated as an alternative solution; and
 - Are capable of amounting to imperative reasons of overriding public interest (IROPI) for HRAs, and, for MCZ assessments, the benefit to the public is capable of outweighing the risk of environmental damage, for CNP Infrastructure.
- 4.2.35 For HRAs, where an applicant has shown there are no deliverable alternative solutions, and that there are IROPI, compensatory measures must be secured⁸¹ by the Secretary of State as the

⁸⁰ A derogation under Regulations 64 and 68 of The Conservation of Habitats and Species Regulations 2017 or Regulations 29 and 36 of The Conservation of Offshore Marine Habitats and Species Regulations 2017.

⁸¹ Further guidance on the principles of carrying out a Habitats Regulations Assessment, including what constitutes a suitable alternative solution: <https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site#derogation>

competent authority, to offset the adverse effects to site integrity as part of a derogation. For MCZs, where an applicant has shown there are no other means of proceeding which would create a substantially lower risk, and the benefit to the public outweighs the risk of damage to the environment, the Secretary of State must be satisfied that measures of equivalent environmental benefit will be undertaken.

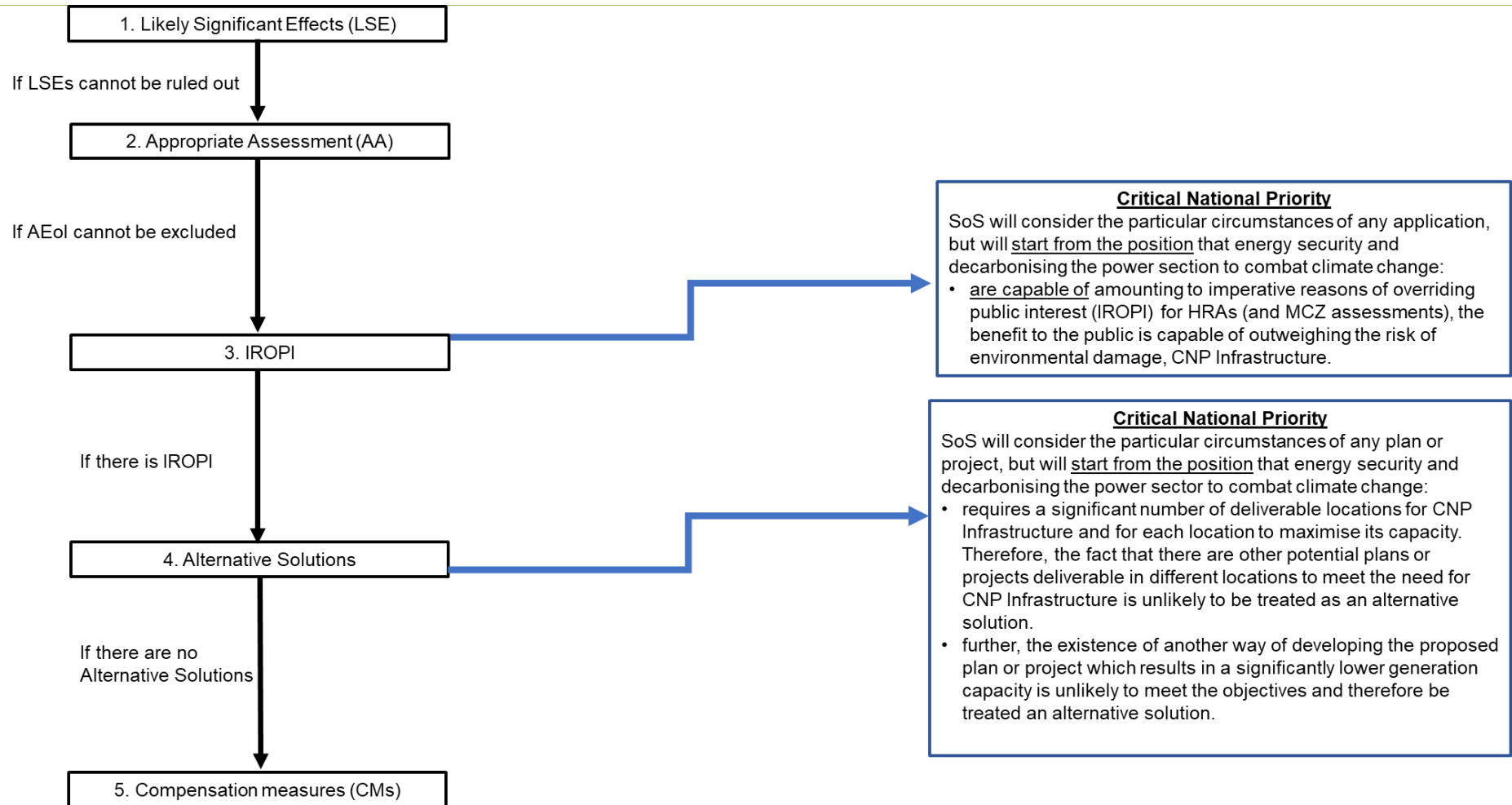


Figure 3: Application of CNP in decisions relating to Habitats Regulations Assessments

4.3 Environmental Effects/Considerations

- 4.3.1 All proposals for projects that are subject to the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations)⁸² must be accompanied by an Environmental Statement (ES) describing the aspects of the environment likely to be significantly affected by the project⁸³.
- 4.3.2 The EIA Regulations specifically refer to effects on population, human health, biodiversity, land, soil, water, air, climate, the landscape, material assets and historic environment, and the interaction between them.
- 4.3.3 The EIA Regulations 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 effects⁸⁴.
- 4.3.4 To consider the potential effects, including benefits, of a proposal for a project, the applicant must set out information on the likely significant environmental, social and economic effects of the development, and show how any likely significant negative effects would be avoided, reduced, mitigated or compensated for, following the mitigation hierarchy. This information could include matters such as employment, equality, biodiversity net gain, community cohesion, health and well-being.
- 4.3.5 For the purposes of this NPS and the technology specific NPSs the ES should cover the environmental, social and economic effects arising from pre-construction, construction, operation and decommissioning of the project.
- 4.3.6 Where the NPSs use the term 'environment' they are referring to both the natural and historic environments.

⁸² The government has announced plans to bring forward legislation to replace the existing EU-generated systems of Environmental Impact Assessment and Strategic Environmental Assessment with a new system of Environmental Outcomes Reports. The new system will be brought forward through subsequent regulations following further consultation. Environmental assessment will still be required and, when introduced, relevant plans and projects will have to comply with such regulations. Until the new system is implemented, current legislation on environmental assessment continues to apply.

⁸³ The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

⁸⁴ For guidance on the assessment of cumulative effects, See: Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment - GOV.UK

- 4.3.7 In the absence of any additional information on additional assessments, the principles set out in this Section will apply to all assessments.
- 4.3.8 In this NPS and the technology specific NPSs, when used in relation to environmental matters the terms 'effects', 'impacts' or 'benefits' should be understood to mean likely significant effects, likely significant impacts, or likely significant benefits.
- 4.3.9 As in any planning case, the relevance or otherwise to the decision making process of the existence (or alleged existence) of alternatives to the proposed development is, in the first instance, a matter of law. This NPS does not contain any general requirement to consider alternatives or to establish whether the proposed project represents the best option from a policy perspective. Although there are specific requirements in relation to compulsory acquisition and habitats sites, the NPS does not change requirements in relation to compulsory acquisition and habitats sites.

Applicant assessment

- 4.3.10 The applicant must provide information proportionate to the scale of the project, ensuring the information is sufficient to meet the requirements of the EIA Regulations⁸⁵.
- 4.3.11 In some instances, it may not be possible at the time of the application for development consent for all aspects of the proposal to have been settled in precise detail. Where this is the case, the applicant should explain in its application which elements of the proposal have yet to be finalised, and the reasons why this is the case.
- 4.3.12 Where some details are still to be finalised, the ES should, to the best of the applicant's knowledge, assess the likely worst-case environmental, social and economic effects of the proposed development to ensure that the impacts of the project as it may be constructed have been properly assessed⁸⁶.
- 4.3.13 To help the Secretary of State consider thoroughly the potential effects of a proposed project in cases where the EIA Regulations do not apply and an ES is not therefore required, the applicant should instead

⁸⁵ See <https://www.gov.uk/guidance/environmental-impact-assessment>

⁸⁶ Case law, beginning with *R v Rochdale MBC Ex p. Tew* [2000] Env.L.R.1 establishes that while it is not necessary or possible in every case to specify the precise details of development, the information contained in the ES should be sufficient to fully assess the project's impact on the environment and establish clearly defined worst case parameters for the assessment. This is sometimes known as 'the Rochdale Envelope'.

provide information proportionate to the scale of the project on the likely significant environmental, social, and economic effects.

- 4.3.14 References to an ES in this NPS and the technology specific NPSs should be taken as including a statement which provides this information, even if the EIA Regulations do not apply. Where the NPSs require specific information to be provided in the ES, such information should still be provided in this statement.
- 4.3.15 Applicants are obliged to include information about the reasonable alternatives they have studied in their ES. This should include an indication of the main reasons for the applicant's choice, taking into account the environmental, social and economic effects and including, where relevant, technical and commercial feasibility.
- 4.3.16 In some circumstances, the NPSs may impose a policy requirement to consider alternatives.
- 4.3.17 Where there is a policy or legal requirement to consider alternatives, the applicant should describe the alternatives considered in compliance with these requirements.

Secretary of State decision making

- 4.3.18 The Secretary of State should consider the worst-case impacts in its consideration of the application and consent, providing some flexibility in the consent to account for uncertainties in specific project details.
- 4.3.19 The Secretary of State should consider how the accumulation of, and interrelationship between, effects might affect the environment, economy, or community as a whole, even though they may be acceptable when considered on an individual basis with mitigation measures in place.
- 4.3.20 Thirteen legally binding targets have been set for England under the Environment Act 2021, covering the areas of: biodiversity; air quality; water; resource efficiency and waste reduction; tree and woodland cover; and Marine Protected Areas (MPAs). Meeting the legally binding targets will be a shared endeavour that will require a whole of government approach to delivery. The Secretary of State should have regard to the ambitions, goals and targets set out in the government's Environmental Improvement Plan for improving the natural environment and enjoyment of nature. This includes having regard to the achievement of statutory targets set under the Environment Act.
- 4.3.21 In addition, in exercising functions in relation to Wales, the Secretary of State should consider section 6 of the Environment (Wales) Act

2016 and seek to maintain and enhance biodiversity, and in so doing promote the resilience of ecosystems, so far as consistent with the proper exercise of the Secretary of State's functions.

- 4.3.22 Given the level and urgency of need for new energy infrastructure, the Secretary of State should, subject to any relevant legal requirements (e.g. under the Habitats Regulations) which indicate otherwise, be guided by the following principles when deciding what weight should be given to alternatives:
- The consideration of alternatives in order to comply with policy requirements should be carried out in a proportionate manner; and
 - Only alternatives that can meet the objectives of the proposed development need to be considered.
- 4.3.23 The Secretary of State should be guided in considering alternative proposals by whether there is a realistic prospect of the alternative delivering the same infrastructure capacity (including energy security, climate change, and other environmental benefits) in the same timescale as the proposed development.
- 4.3.24 The Secretary of State should not refuse an application for development on one site simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site, and should have regard as appropriate to the possibility that all suitable sites for energy infrastructure of the type proposed may be needed for future proposals.
- 4.3.25 Alternatives not among the main alternatives studied by the applicant (as reflected in the ES) should only be considered to the extent that the Secretary of State thinks they are both important and relevant to the decision.
- 4.3.26 As the Secretary of State must assess an application in accordance with the relevant NPS (subject to the exceptions set out in section 104 of the Planning Act 2008), if the Secretary of State concludes that a decision to grant consent to a hypothetical alternative proposal would not be in accordance with the policies set out in the relevant NPS, the existence of that alternative is unlikely to be important and relevant to the Secretary of State's decision.
- 4.3.27 Alternative proposals which mean the necessary development could not proceed, for example because the alternative proposals are not commercially viable or alternative proposals for sites would not be physically suitable, can be excluded on the grounds that they are not important and relevant to the Secretary of State's decision.

- 4.3.28 Alternative proposals which are vague or immature can be excluded on the grounds that they are not important and relevant to the Secretary of State's decision.
- 4.3.29 It is intended that potential alternatives to a proposed development should, wherever possible, be identified before an application is made to the Secretary of State (so as to allow appropriate consultation and the development of a suitable evidence base in relation to any alternatives which are particularly relevant). Therefore, where an alternative is first put forward by a third party after an application has been made, the Secretary of State may place the onus on the person proposing the alternative to provide the evidence for its suitability as such and the Secretary of State should not necessarily expect the applicant to have assessed it.

4.4 Health

- 4.4.1 Energy infrastructure has the potential to impact on the health and wellbeing ("health") of the population. Access to energy is clearly beneficial to society and to our health as a whole. However, the construction of energy infrastructure and the production, distribution and use of energy may have negative impacts on some people's health.
- 4.4.2 The direct impacts on health may include
- Increased traffic;
 - Air or water pollution;
 - Dust;
 - Odour;
 - Hazardous waste and substances;
 - Noise;
 - Exposure to radiation; and
 - Increases in pests.
- 4.4.3 New energy infrastructure may also affect the composition and size of the local population, and in doing so have indirect health impacts, for example if it in some way affects access to key public services, transport, or the use of open space for recreation and physical activity.

Applicant assessment

- 4.4.4 As described in the relevant sections of this NPS and in the technology specific NPSs, where the proposed project has an effect on humans, the ES should assess these effects for each element of the project, identifying any potential adverse health impacts, and identifying measures to avoid, reduce or compensate for these impacts as appropriate.
- 4.4.5 The impacts of more than one development may affect people simultaneously, so the applicant should consider the cumulative impact on health in the ES where appropriate.
- 4.4.6 Opportunities should be taken to mitigate indirect impacts by promoting local improvements to encourage health and wellbeing⁸⁷. 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.

Secretary of State decision making

- 4.4.7 Generally, those aspects of energy infrastructure which are most likely to have a significantly detrimental impact on health are subject to separate regulation (for example for air pollution) which will constitute effective mitigation of them, so that it is unlikely that health concerns will either by themselves constitute a reason to refuse consent or require specific mitigation under the Planning Act 2008.
- 4.4.8 However, not all potential sources of health impacts will be mitigated in this way and the Secretary of State may want to take account of health concerns when setting requirements relating to a range of impacts such as noise.

4.5 Marine Considerations

- 4.5.1 The UK Marine Policy Statement is the framework for preparing Marine Plans and taking decisions affecting the marine environment, as per section 44 of the Marine and Coastal Access Act 2009. Marine plans apply in the 'marine area', which is defined in section 42 of the Marine and Coastal Access Act 2009.

⁸⁷ For infrastructure in Wales, please see The Well-being of Future Generations (Wales) Acts 2015.

- 4.5.2 Marine plans set out marine specific aspects of many of the assessment principles in Part 4 and 5 of this NPS⁸⁸. Under section 104(2) of the Planning Act 2008, any public authority taking a decision that relates to the exercise of any function capable of affecting the whole or any part of the UK marine area has to take account of relevant Marine Plans. Individual Marine Plans⁸⁹ must be consulted to understand marine relevant specific considerations.
- 4.5.3 The cross-Government Marine Spatial Prioritisation programme continues to develop a more strategic way of considering the use of the seabed, and is also supporting the de-risking of future offshore wind.
- 4.5.4 In Wales, the Welsh National Marine Plan⁹⁰ sets out Welsh Ministers' expectations that nationally significant infrastructure projects contribute to the wellbeing of Welsh communities and the sustainable management of natural resources and should seek to deliver lasting legacy benefits for the local community, the economy and the environment.
- 4.5.5 The government is producing guidance to help applicants and regulators understand how to consider environmental impacts on MPAs, including applying the mitigation hierarchy and using strategic approaches⁹¹. The guidance will not extend to waters where the devolved administrations have competence for managing MPAs.
- 4.5.6 A deemed marine licence can be granted as part of the Development Consent Order and is developed in consultation with regulators and statutory advisors. A Marine Licence is concerned with enabling sustainable development, which means considering the environment, human health and other legitimate uses of the sea. Marine Licences may be required for the marine elements of proposed developments (up to Mean High Water Springs), including associated development and activity such as cabling, dredging and offshore substations. Applicants should consult Part 4 section 66 of the Marine and Coastal Access Act 2009 when considering what activities will require a Marine Licence. A Marine Licence cannot be deemed under the Planning Act 2008 in waters adjacent to Wales up to the 12nm seaward limits of the

⁸⁸ For example, criteria for good design for energy infrastructure (Section 4.7) and climate change adaptation (Section 4.10). Plan policies cover a wide range of topics in Part 5 of this NPS, including landscape and visual (Section 5.10), noise and vibration (Section 5.12) and water quality (Section 5.16).

⁸⁹ The Welsh National Marine Plan and/or any applicable English regional marine plans.

⁹⁰ See <https://gov.wales/marine-planning>

⁹¹ See glossary for mitigation hierarchy definition.

territorial sea. Further information on marine licencing is provided in Section 1.2 of this NPS and paragraphs 2.3.17 to 2.3.25 of EN-3.

- 4.5.7 Applicants are encouraged to approach the marine licensing regulator (MMO in England and Natural Resources Wales in Wales) in pre-application, to ensure that they are aware of any needs for additional marine licences alongside their Development Consent Order application.

Applicant assessment

- 4.5.8 Applicants for a Development Consent Order must take account of any relevant Marine Plans and are expected to complete a Marine Plan assessment as part of their project development, using this information to support an application for development consent.
- 4.5.9 Applicants are encouraged to refer to Marine Plans at an early stage, such as in pre-application, to inform project planning, for example to avoid less favourable locations as a result of other uses or environmental constraints.

Secretary of State decision making

- 4.5.10 Section 104(2)(aa) of the Planning Act 2008 requires the Secretary of State to have regard to any appropriate marine policy documents when making a decision on an application for a Development Consent Order where an NPS has effect⁹². This will include any Marine Plan which is in effect for the relevant area, or areas where the project crosses the boundary between plan areas.
- 4.5.11 In making a decision, the Secretary of State is responsible for determining how the Marine Plan informs the decision-making process. For example, the Secretary of State will determine if and how proposals meet the high-level marine objectives, plan vision, and all relevant policies.
- 4.5.12 In the event of a conflict between an NPS and any marine planning documents, the NPS prevails for purposes of decision making.

4.6 Environmental and Biodiversity Net Gain

- 4.6.1 Environmental net gain is an approach to development that aims to leave the natural environment in a measurably better state than

⁹² Where a decision is made under section 105 of the Planning Act 2008, section 58(3) of the Marine and Coastal Access Act 2009 will similarly require the Secretary of State to have regard to the marine plan.

beforehand. Projects should therefore not only avoid, mitigate and compensate harms, following the mitigation hierarchy, but also consider whether there are opportunities for enhancements.

- 4.6.2 Biodiversity net gain is an essential component of environmental net gain. Projects in England should consider and seek to incorporate improvements in natural capital, ecosystem services and the benefits they deliver when planning how to deliver biodiversity net gain.
- 4.6.3 Currently biodiversity net gain policy in England only applies to terrestrial and intertidal components of projects. Marine Net Gain (MNG) is currently being developed by government, who will provide guidance in due course. MNG may be delivered through a fund mechanism and will take a strategic approach to delivering the greatest environmental benefit. Primary legislation is being explored to enable Marine Net Gain to be a mandatory obligation for developers in future.
- 4.6.4 In Wales, Net Benefit for Biodiversity is based on the concept that development should leave biodiversity and the resilience of ecosystems in a better state than before, through securing long-term, measurable and demonstrable benefit, primarily on or immediately adjacent to the site⁹³.
- 4.6.5 The Welsh National Marine Plan includes policy to ensure that biological and geological components of ecosystems are maintained, restored where needed and enhanced where possible, to increase the resilience of marine ecosystems and the benefits they provide. It encourages consideration of the inclusion of restoration and enhancement in a development project at sea and at the coast. However, there is currently no obligation upon proposers of projects in the marine environment to provide enhancement within their proposals⁹⁴.

Applicant assessment

- 4.6.6 Energy NSIP proposals, whether onshore or offshore, should seek opportunities to contribute to and enhance the natural environment by providing net gains for biodiversity, and the wider environment where possible.

⁹³ See <https://www.gov.wales/planning-policy-wales>

⁹⁴ See <https://www.gov.wales/welsh-national-marine-plan>

- 4.6.7 In England, applicants for onshore elements of any development are encouraged to use the latest version of the biodiversity metric⁹⁵ to calculate their biodiversity baseline and present planned biodiversity net gain outcomes. This calculation data should be presented in full as part of their application⁹⁶.
- 4.6.8 Where possible, this data should be shared, alongside a completed biodiversity metric calculation, with the Local Authority, Natural England and, where relevant, the EA, for discussion at the pre-application stage as it can help to highlight biodiversity and wider environmental issues which may later cause delays if not addressed.
- 4.6.9 In Wales, applicants should consider the guidance set out in Section 6.4 of Planning Policy Wales and the relevant policies in the Wales National Marine Plan⁹⁷.
- 4.6.10 Biodiversity net gain should be applied after compliance with the mitigation hierarchy and does not change or replace existing environmental obligations.
- 4.6.11 Biodiversity net gain can be delivered onsite or wholly or partially off-site. We encourage details of any off-site delivery of biodiversity net gain to be set out within the application for development consent.
- 4.6.12 When delivering biodiversity net gain off-site, developments should do this in a manner that best contributes to the achievement of relevant wider strategic outcomes, for example by increasing habitat connectivity, enhancing other ecosystem service outcomes, or considering use of green infrastructure strategies. Reference should be made to relevant national or local plans and strategies, to inform off-site biodiversity net gain delivery. If published, the relevant strategy is the Local Nature Recovery Strategy (LNRS). If an LNRS has not been published, the relevant consenting body or planning authority may specify alternative plans, policies or strategies to use.
- 4.6.13 In addition to delivering biodiversity net gain, developments may also deliver wider environmental gains and benefits to communities relevant to the local area, and to national policy priorities, such as:
- reductions in GHG emissions
 - reduced flood risk

⁹⁵ See <https://www.gov.uk/guidance/biodiversity-metric-calculate-the-biodiversity-net-gain-of-a-project-or-development>

⁹⁶ See <https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides>

⁹⁷ See <https://gov.wales/welsh-national-marine-plan>

- improvements to air, water or soil quality
- climate adaptation
- landscape enhancement
- increased access to natural greenspace, and/or
- the enhancement, expansion or provision of trees and woodlands

The scope of potential gains will be dependent on the type, scale, and location of specific projects. Applicants should look for a holistic approach to delivering wider environmental gains and benefits through the use of nature-based solutions and Green Infrastructure.

- 4.6.14 The Environment Act 2021 mandated the preparation of LNRs across England. They are a new system of spatial strategies for nature recovery and will play a major role in providing detail on the best locations to create, enhance and restore nature and deliver wider environmental benefits. LNRs will also agree priorities for nature recovery and map the most valuable existing areas for nature. They will be critical in delivering government targets for species abundance and habitat creation commitments, as well as other pressing environmental outcomes for water and flood risk, carbon and tree planting and woodland creations. LNRs will also drive the creation of a Nature Recovery Network (NRN), a major commitment in the government's Environmental Improvement Plan.
- 4.6.15 Applications for development consent should be accompanied by a statement demonstrating how opportunities for delivering wider environmental net gains have been considered, and where appropriate, incorporated into proposals as part of good design (including any relevant operational aspects) of the project.
- 4.6.16 Applicants should make use of available guidance and tools for measuring natural capital assets and ecosystem services, such as the Natural Capital Committee's How to Do it: natural capital workbook⁹⁸, the government's guidance on Enabling a Natural Capital Approach (ENCA)⁹⁹, and other tools that aim to enable wider benefits for people and nature¹⁰⁰.

⁹⁸ See <https://www.gov.uk/government/publications/natural-capital-committee-natural-capital-workbook>

⁹⁹ See <https://www.gov.uk/guidance/enabling-a-natural-capital-approach-enca>

¹⁰⁰ For instance, Natural England has developed the Environmental Benefits from Nature tool, which is designed to work alongside Biodiversity metric 3.0 to provide developers, planners and other interested parties with a means of enabling wider benefits for people and nature from biodiversity net gain. This tool can be applied to locations in England and Wales, but some datasets may have limited coverage outside of England.

- 4.6.17 Where environmental net gain considerations have featured as part of the strategic options appraisal process to select a project, applicants should reference that information to supplement the site-specific details.
- 4.6.18 Opportunities for environmental, social, and economic enhancements, protection and mitigation measures are identified in a number of sections in Part 5 of this NPS, which provides guidance on the impacts of new energy infrastructure.

Secretary of State decision making

- 4.6.19 Although achieving biodiversity net gain is not currently an obligation on applicants, Schedule 15 to the Environment Act 2021 contains provisions which, when commenced, mean the Secretary of State may not grant an application for a Development Consent Order unless satisfied that a biodiversity gain objective is met in relation to the onshore¹⁰¹ development in England to which the application relates.
- 4.6.20 The biodiversity gain objective will be set out in a biodiversity gain statement (as defined under the Environment Act 2021). Normally these statements would be included within an NPS, but the Act allows for the statement to be published separately where a review of an NPS has begun before the provisions are commenced, as is the case with these energy NPSs. Under the provision of the Environment Act 2021, any such separate biodiversity gain statement will be regarded as being contained within these NPSs.
- 4.6.21 The Secretary of State should give appropriate weight to environmental and biodiversity net gain, although any weight given to gains provided to meet a legal requirement (for example under the Environment Act 2021) is likely to be limited.

4.7 Criteria for good design for Energy Infrastructure

- 4.7.1 The visual appearance of a building, structure, or piece of infrastructure, and how it relates to the landscape it sits within, is sometimes considered to be the most important factor in good design. But high quality and inclusive design goes far beyond aesthetic considerations. The functionality of an object – be it a building or other type of infrastructure – including fitness for purpose and sustainability, is equally important.

¹⁰¹ The Environment Act 2021 also allows for an extension to offshore development in the future.

- 4.7.2 Applying good design to energy projects should produce sustainable infrastructure sensitive to place, including impacts on heritage, efficient in the use of natural resources, including land-use, and energy used in their construction and operation, matched by an appearance that demonstrates good aesthetic as far as possible. It is acknowledged, however that the nature of energy infrastructure development will often limit the extent to which it can contribute to the enhancement of the quality of the area.
- 4.7.3 Good design is also a means by which many policy objectives in the NPSs can be met, for example the impact sections show how good design, in terms of siting and use of appropriate technologies, can help mitigate adverse impacts such as noise. Projects should look to use modern methods of construction and sustainable design practices such as use of sustainable timber and low carbon concrete. Where possible, projects should include the reuse of material.
- 4.7.4 Given the benefits of good design in mitigating the adverse impacts of a project, applicants should consider how good design can be applied to a project during the early stages of the project lifecycle.

Applicant assessment

- 4.7.5 To ensure good design is embedded within the project development, a project board-level design champion could be appointed, and a representative design panel used to maximise the value provided by the infrastructure. Design principles¹⁰² should be established from the outset of the project to guide the development from conception to operation. Applicants should consider how their design principles can be applied post-consent.
- 4.7.6 Whilst the applicant may not have any or very limited choice in the physical appearance of some energy infrastructure, there may be opportunities for the applicant to demonstrate good design in terms of siting relative to existing landscape character, landform and vegetation. Furthermore, the design and sensitive use of materials in any associated development such as electricity substations will assist

¹⁰² Design principles should take into account any national guidance on infrastructure design, this could include for example the Design Principles for National Infrastructure published by the National Infrastructure Commission, the National Design Guide and National Model Design Code, as well as any local design policies and standards. See <https://nic.org.uk/studies-reports/design-principles-for-national-infrastructure>; See <https://www.gov.uk/government/publications/national-design-guide>; and See <https://www.gov.uk/government/publications/national-model-design-code>
In Wales, Future Wales, Planning Policy Wales and Technical Advice Notes set out the national planning policy to achieve good design in Wales; See <https://www.gov.wales/future-wales-national-plan-2040>
<https://www.gov.wales/planning-policy-wales>
<https://www.gov.wales/technical-advice-notes>

in ensuring that such development contributes to the quality of the area. Applicants should also, so far as is possible, seek to embed opportunities for nature inclusive design within the design process.

- 4.7.7 Applicants must demonstrate in their application documents how the design process was conducted and how the proposed design evolved. Where a number of different designs were considered, applicants should set out the reasons why the favoured choice has been selected.
- 4.7.8 Applicants should consider taking independent professional advice on the design aspects of a proposal. In particular, the Design Council¹⁰³ can be asked to provide design review for nationally significant infrastructure projects and applicants are encouraged to use this service¹⁰⁴. Applicants should also consider any design guidance developed by the LPA.
- 4.7.9 Further advice on what applicants should demonstrate by way of good design is provided in the technology specific NPSs where relevant.

Secretary of State decision making

- 4.7.10 In the light of the above and given the importance which the Planning Act 2008 places on good design and sustainability, the Secretary of State needs to be satisfied that energy infrastructure developments are sustainable and, having regard to regulatory and other constraints, are as attractive, durable, and adaptable (including taking account of natural hazards such as flooding) as they can be.
- 4.7.11 In doing so, the Secretary of State should be satisfied that the applicant has considered both functionality (including fitness for purpose and sustainability) and aesthetics (including its contribution to the quality of the area in which it would be located, any potential amenity benefits, and visual impacts on the landscape or seascape) as far as possible.
- 4.7.12 In considering applications, the Secretary of State should take into account the ultimate purpose of the infrastructure and bear in mind the operational, safety and security requirements which the design has to satisfy. Many of the wider impacts of a development, such as

¹⁰³ For infrastructure in Wales, this is the Design Commission for Wales.

¹⁰⁴ The Chief Planner's 2011 Letter about design and planning can be found here: See https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/8009/110520-Letter_to_Chief_Planning_Officers-_Design_and_Planning.pdf Further information on the Design Council can be found here: See <https://www.designcouncil.org.uk/>

landscape and environmental impacts, will be important factors in the design process.

- 4.7.13 The Secretary of State should consider such impacts under the relevant policies in this NPS. Assessment of impacts must be for the stated design life of the scheme rather than a shorter time period.
- 4.7.14 The Secretary of State should consider taking independent professional advice on the design aspects of a proposal. In particular, the Design Council can be asked to provide design review for nationally significant infrastructure projects.
- 4.7.15 Further advice on what the Secretary of State should expect applicants to demonstrate by way of good design is provided in the technology specific NPSs where relevant.

4.8 Consideration of Combined Heat and Power (CHP)

- 4.8.1 Combined Heat and Power (CHP) is the generation of usable heat and electricity in a single process. A CHP station may either supply steam direct to customers or capture waste heat for low-pressure steam, hot water, or space heating purposes after it has been used to drive electricity generating turbines. The heat can also be used to drive absorption chillers, thereby providing cooling.
- 4.8.2 In conventional thermal generating stations, the heat that is raised to drive electricity generation is subsequently emitted to the environment as waste. Supplying steam direct to industrial customers or using lower grade heat, such as in district heating networks, can reduce the amount of fuel otherwise needed to generate the same amount of heat and power separately.
- 4.8.3 CHP is technically feasible for many types of thermal generating stations, including nuclear, EfW, BECCS and hydrogen, although the majority of CHP plants in the UK are fuelled by gas.
- 4.8.4 Using less fuel to generate the same amount of heat and power, reduces emissions, particularly CO₂. The government has therefore committed to promoting Good Quality CHP, which denotes CHP that has been certified as highly efficient under the CHP Quality Assurance programme¹⁰⁵. Schemes need to achieve a specified quality index and

¹⁰⁵ See <https://www.gov.uk/guidance/combined-heat-power-quality-assurance-programme>

power efficiency in order to qualify for government support associated with the programme.

- 4.8.5 In 2020, there was 6.1GW of Good Quality CHP¹⁰⁶ in the UK, providing 7.7 per cent of electricity¹⁰⁷ and saving an estimated 9.66 Megatonnes CO₂ per annum¹⁰⁸. There is a recognised cost-effective potential for Good Quality CHP to continue to provide benefits due to efficiencies inherent in cogeneration.
- 4.8.6 To be economically viable as a CHP plant, a generating station needs to be located sufficiently close to industrial, non-domestic or domestic customers with heat demands. The distance will vary according to the size and type of the generating station and the nature of the heat demand.
- 4.8.7 For industrial purposes, customers are likely to be intensive heat users such as chemical plants, refineries, or paper mills. CHP can also be used to provide lower grade heat for light industrial users such as commercial greenhouses, or more commonly for hot water and space heating, including supply through district heating networks.

Applicant assessment

- 4.8.8 Guidance issued by the then Department for Trade and Industry (DTI) in 2006¹⁰⁹ will apply to any application to develop a thermal generating station under the Planning Act 2008. Applications for thermal stations must either include CHP proposals or contain evidence demonstrating that the possibilities for CHP have been fully explored to inform the Secretary of State's consideration of the application.
- 4.8.9 In developing proposals for new thermal generating stations, applicants should consider both the current and future opportunities for CHP from the start, and it should be adopted as a criterion when considering locations for a project.

¹⁰⁶ Such ratings are achieved by examining data for fuel used, power generated, heat supplied, and hours run. To be confirmed as Good Quality CHP: Existing systems must achieve a QI of 100, and a power efficiency of 20%. New systems must achieve a QI of 105.

¹⁰⁷ Good quality CHP capacity and total generation from CHP: from table 5.15 of Digest of United Kingdom Energy Statistics (DUKES) 2021: Combined Heat and Power (CHP) generation and capacity overview, available at. Total electricity generated: from table 5.6 of Digest of United Kingdom Energy Statistics (DUKES) 2021: Electricity fuel use, generation and supply, available at.

¹⁰⁸ From table 7.11 of Digest of United Kingdom Energy Statistics (DUKES) 2021: CHP - savings of carbon dioxide emissions, available at.

¹⁰⁹ See

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/43594/Power_station_proposals_-_guidance_2006.pdf

- 4.8.10 Given how important liaison with potential customers for heat is, applicants should not only consult those potential customers they have identified themselves but also Local Authorities, obtaining their advice on opportunities. Further advice is contained in the 2006 DTI guidance and applicants should also consider relevant information in regional and local energy planning and heat demand mapping.
- 4.8.11 Where the applicant is not able to reach an agreement with a potential customer, they should provide evidence demonstrating the reasons for this, and why it will not be reasonably possible to reach an agreement during the lifetime of the thermal station. If the application is related to an EfW plant, paragraph 4.8.12 of this NPS applies instead.
- 4.8.12 If the application is related to biomass and waste combustion as part of an EfW plant, the application must detail how the plant will maximise the amount of heat available and provide heat to a heat network within three years of entering operation.
- 4.8.13 Utilisation of useful heat that displaces conventional heat generation from fossil fuel sources is to be encouraged and substantial weight will be given to applications incorporating CHP. If an applicant is putting forward a proposal for thermal generation without CHP they should:
- explain why CHP is not economically or practically feasible
 - provide details of any potential future heat requirements in the area that have been considered and the reasons the station could not meet them
 - detail the provisions in the proposed scheme for ensuring any potential heat demand in the future can be exploited, and
 - provide an audit trail of dialogue between the applicant, prospective customers, the local area energy teams in local government and district heating energy supply companies
- 4.8.14 CHP may require additional space than for a non-CHP generating station. It is possible that this might conflict with space required for a generating station to be CCR, as set out in Section 4.9. The material provided by applicants should therefore explain how the development can both be ready to provide CHP in the future, and also be CCR, or set out any constraints (for example space restrictions) which would prevent this.

Secretary of State decision making

- 4.8.15 Secretary of State should have regard to the DTI 2006 guidance, or any successor to it, when considering the CHP aspects of applications for thermal generating stations.

- 4.8.16 Given the importance which government attaches to CHP, if an application does not demonstrate that CHP has been adequately considered, the Examining Authority should seek further information from the applicant.
- 4.8.17 The Secretary of State should not give development consent unless satisfied that the applicant has provided appropriate evidence that CHP is included or that the opportunities for CHP have been fully explored.
- 4.8.18 If the Secretary of State (or the Examining Authority during the examination stage) is not satisfied with the evidence that has been provided, the Secretary of State (or the Examining Authority during the examination stage) may wish to investigate this with one or more of the bodies such as Local Authorities.
- 4.8.19 Furthermore, if the Secretary of State (or the Examining Authority during the examination stage), when considering an application for a thermal generating station, identifies a potential heat customer that is not explored in the application (for instance, on the advice of the Local Authorities), the Secretary of State (or the Examining Authority during the examination stage) should request that the applicant pursues this.
- 4.8.20 The Secretary of State may also be aware of potential developments (for example from the applicant or a third party) which could utilise heat from the plant in the future, for example planned housing, and which is due to be built within a timeframe that would make the supply of heat cost-effective. Where it may be reasonably possible for the applicant to reach agreement with a potential heat customer during the lifetime of the station, the Secretary of State may wish to impose requirements to ensure that the generating station is CHP-ready and designed in order to allow heat supply at a later date.
- 4.8.21 If satisfied that the applicant has demonstrated that the need to comply with the requirement to be CCR will preclude any provision for CHP, the Secretary of State will not impose requirements to ensure that the generating station is CHP-ready.

4.9 Carbon Capture and Storage (CCS)

- 4.9.1 CCS is a technology that enables carbon dioxide that would otherwise be released to the atmosphere to be captured and permanently stored. It can be applied to any large point source of carbon dioxide, such as fossil fuel-powered thermal generating power stations or other industrial processes that are high emitters.

4.9.2 Examples of three types of capture technology are:

- Pre-combustion capture: this method involves reacting fuel with oxygen or air, and in some cases steam, to produce a gas consisting mainly of carbon monoxide and hydrogen. The carbon monoxide is reacted with more steam in a catalytic shift converter to produce more hydrogen and CO₂. The CO₂ is then separated, and the hydrogen is used as fuel in a combined cycle gas turbine generating station.
- Post-combustion capture: this uses solvents or other methods to scrub CO₂ out of flue gases. The CO₂ is then released as a concentrated gas stream by a regeneration process.
- Oxy-fuel combustion: in this process, fuel is burnt in an oxygen/CO₂ mixture rather than air to produce a flue gas that is predominantly CO₂. For gas-fired plants the technology could be used with a combined cycle system. Other oxy-fuel combustion power CCS plants are being developed using novel non-combined cycle systems.

4.9.3 Carbon capture rates achieved will depend on the application and a minimum capture rate may be required.

4.9.4 Carbon capture technologies offer the opportunity to decarbonise the electricity system whilst maintaining security of supply, providing reliable low carbon generation capacity.

4.9.5 The government has made its ambitions for CCS clear – on the 4th October 2024 the government announced it reached commercial agreement with the private sector and announced up to £21.7bn of available funding over 25 years. This initial funding is for five projects. In the Hynet Cluster (North West and Wales) it is for the Eni Transport and Storage Network, the Protos EfW Facility, and EET Hydrogen's Hydrogen Production Plant 1. In the East Coast Cluster (Teesside) it is for the Northern Endurance Partnership's Transport and Storage Network and the first ever at scale gas power CCUS plant, Net Zero Teesside.

4.9.6 On the 10th December 2024, government reached financial close for the East Coast Cluster site projects (in Teesside), signing the first CCUS contracts in the UK. The East Coast Cluster is set to start construction from mid-2025 with one of the first projects, Net Zero Teesside Power, estimating to deliver secure low-carbon energy capable of powering up to one million homes from 2028.

- 4.9.7 The barriers to CCS deployment to date have been commercial rather than technical, and the business models, which may evolve over time, aim to support the deployment of the technology.
- 4.9.8 Part 3 of this NPS sets out the need for CCS and the role power CCS could play in our electricity system in more detail.
- 4.9.9 CO₂ can be permanently stored in deep geological formations, such as depleted oil and gas fields and saline aquifers. In the UK, the majority of locations thought to be best suited to storage of CO₂ are located offshore. The UK has an estimated offshore CO₂ storage capacity of 78Gt/CO₂, enough to store the equivalent of current total UK annual emissions for over 200 years.
- 4.9.10 The development of an offshore CO₂ storage industry will play a key role in helping to ensure the transition to a net zero economy. Establishing an offshore storage industry could also make the UK a global leader in storage services as countries eager to meet emissions targets pursue carbon capture. Efficiently maximising our offshore CO₂ storage capacity offers the best opportunity to realise our ambitions for CO₂ storage. Government do not currently envisage an onshore CO₂ storage industry developing against this backdrop.
- 4.9.11 Offshore CO₂ transport and storage infrastructure is not covered by this NPS. It is subject to a separate permitting and licensing regime, including the requirement for an applicant to secure a Carbon Dioxide Appraisal and Storage Licence and a Storage Permit; a Carbon Storage Lease and a Seabed Lease; offshore pipelines require a Pipeline Works Authorisation and notification in accordance with Pipelines Safety Regulations. Offshore CO₂ transport and storage proposals will need to be supported by an EIA. A suite of environmental approvals will also be required for the construction, development, and operational phases.

Applicant assessment

- 4.9.12 The carbon capture plant required for a new build power CCS plant can be included as associated development¹¹⁰ in the application for development consent for the relevant thermal generating station and will then be considered as part of that application.
- 4.9.13 The environmental impacts of a gas-fired power CCS station should be similar to an unabated gas-fired power station, and so the

¹¹⁰ It is for the Secretary of State to decide on a case-by-case basis whether or not development should be treated as associated development.

assessment principles for the generating station covered in EN-2 should be similarly applied.

- 4.9.14 Carbon capture facilities could be significant in size – they may require additional space to the generating facility which will need to be included within the design and EIA. For example, the main direct contact cooler, CO₂ absorber column and regenerator towers in post-combustion plants can be tall, but the overall size will be dependent on the technology and design.
- 4.9.15 The carbon capture plant will have noise and vibration impacts. Applications for development consent for generating stations with CCS should provide evidence that shows:
- technically feasible plans for the CO₂ capture plant, and
 - an ES that addresses impacts arising from the project and documentation to ensure compliance with all other existing policy, including that any of the plant's capacity which is not to be fitted with carbon capture at the outset meets the requirements for Carbon Capture Readiness (CCR)
- 4.9.16 An Environmental Permit will also be required from the EA or Natural Resources Wales (NRW) which incorporates conditions for operation of the carbon capture and storage installation, including limits on pollutant emissions. Section 4.12 provides guidance on the Environmental Permitting regime.
- 4.9.17 There are several different capture techniques which might have slightly different environmental impacts and considerations, which should be set out in the application. For example, some capture technologies may require hazardous substances consent for solvents required during the capture process, such as nitrosamines, and fall under Control of Major Accident Hazards (COMAH)¹¹¹ solvents such as nitrosamines. For example, the use of amine-based solvents in some types of post-combustion carbon capture can create degradation products such as nitrosamines which may have impacts on human health and the environment. Best Available Techniques (BAT) guidance¹¹², assessment tool Horizontal 1¹¹³ and Environmental Assessment Levels¹¹⁴ should be used when understanding impacts from capture solvents. The ES should also reflect the latest research

¹¹¹ See <https://www.hse.gov.uk/comah/>

¹¹² Post-combustion carbon dioxide capture: best available techniques (BAT), 2021. See <https://www.gov.uk/guidance/post-combustion-carbon-dioxide-capture-best-available-techniques-bat>

¹¹³ See <https://www.gov.uk/government/collections/risk-assessments-for-specific-activities-environmental-permits>

¹¹⁴ See <https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit#environmental-standards-for-air-emissions>

in areas such as amine degradation where understanding is still developing.

- 4.9.18 The chain of CCS has three links: capture of carbon, transport, and storage. Due to the approach of deploying CCS in clusters in the UK with shared transport and storage infrastructure, it is likely that development consent applications for power CCS projects may not include an application for consent for the full CCS chain (including the onward transportation and storage of CO₂).
- 4.9.19 However, development consent applications for power CCS projects should include details of how the captured CO₂ is intended to be transported and stored, how cumulative impacts will be assessed and whether any necessary consents, permits and licences have been obtained.
- 4.9.20 Applicants gaining consent for CCS infrastructure will need a range of consents from different bodies. One method for transporting captured carbon dioxide is through pipelines located both onshore and offshore. Onshore pipelines over 16.093 kilometres in length classify as NSIPs and require a Development Consent Order.
- 4.9.21 Applicants are expected to take into account foreseeable future demand when considering the size and route of their investments. Applicants may therefore propose pipelines with a greater capacity than demand at the time of consenting might suggest.
- 4.9.22 Another method for transporting carbon dioxide is by ship. Ports would enable the transfer of carbon dioxide from onshore infrastructure onto ships. Ports and associated infrastructure that process at least 5Mt of material (including CO₂) per year would qualify as NSIP Projects and require a Development Consent Order from the Department for Transport. Such applications would be considered under the National Policy Statement for Ports¹¹⁵, but the need for CCS infrastructure set out in this NPS is likely to be a relevant consideration. Port development falling outside of NSIP Projects would likely require a marine licence (see paragraph 4.5.6) and local planning consent.

Secretary of State decision making

- 4.9.23 CCS infrastructure will need a range of consents from different bodies. The Secretary of State should have regard to advice from these bodies and consider specifically advice from the EA or NRW as to the technical feasibility of the proposed carbon capture technology.

¹¹⁵ See <https://www.gov.uk/government/publications/national-policy-statement-for-ports>

- 4.9.24 A number of considerations relevant for gas-fired power CCS stations should be similar to an unabated gas-fired power station. The Secretary of State should apply the assessment principles for the generating station covered in EN-2.

Carbon Capture Readiness

- 4.9.25 To ensure that no foreseeable barriers exist to retrofitting CCS equipment on combustion generating stations, all applications for new combustion plants which are of generating capacity at or over 300MW and of a type covered by The Carbon Capture Readiness (Electricity Generating Stations) Regulations 2013¹¹⁶ should demonstrate that the plant is CCR before consent may be given.
- 4.9.26 Following a December 2020 Energy White Paper commitment, a consultation on an expansion to CCR requirements was held early in 2023. This would see Carbon Capture Readiness renamed to Decarbonisation Readiness (DR). A government response to the consultation was published in October 2024¹¹⁷ which set out feedback received in response to the consultation and the changes being made to the CCR requirements as a result.
- 4.9.27 The changes being brought forward by DR will come into force from 28th February 2026 and will supersede the existing CCR requirements in England only. In the meantime, CCR policy remains as set out in this section and will continue to do so in Wales and Scotland.

Applicant assessment

- 4.9.28 In order to assure the Secretary of State that a proposed development is CCR, applicants must demonstrate that their proposal complies with guidance issued by the Secretary of State in November 2009¹¹⁸ or any successor to it. The guidance requires:
- that sufficient space is available on or near the site to accommodate carbon capture equipment in the future;
 - the technical feasibility of retrofitting their chosen carbon capture technology;

¹¹⁶ For infrastructure in Wales, the Carbon Capture Readiness (Electricity Generating Stations) Regulations 2013 have been amended by the Carbon Capture Readiness (Electricity Generating Stations) (Amendment) (Wales) Regulations 2019.

¹¹⁷ See <https://assets.publishing.service.gov.uk/media/670d4cdd92bb81fcdbe7b7db/decarbonisation-readiness-consultation-government-response.pdf>

¹¹⁸ Carbon Capture Readiness. A guidance note for Section 36 Applications: See <https://www.gov.uk/government/publications/carbon-capture-readiness-ccr-a-guide-on-consent-applications>

- that a suitable area of deep geological storage offshore exists for the storage of captured CO₂ from the proposed combustion station;
 - the technical feasibility of transporting the captured CO₂ to the proposed storage area; and
 - the economic feasibility within the combustion station's lifetime of the full CCS chain, covering retrofitting, transport and storage.
- 4.9.29 Government envisages that the technical feasibility study for retrofitting CCS equipment will take the form of a written report and accompanying plant designs which:
- make clear which capture technology is currently considered most appropriate for retrofit in the future to the power station
 - provide sufficient detail to enable the EA or NRW to advise the Secretary of State on whether the applicant has sufficiently demonstrated there are no currently known technical barriers to subsequent retrofit of the declared capture technology.
- 4.9.30 The assessment of technological feasibility could be against either:
- an appropriate reference document; or
 - by the provision of sufficient technical detail by the applicant in their submitted plans and discussions with the advisory body.
- 4.9.31 Applicants should conduct a single economic assessment which encompasses retrofitting of capture equipment, CO₂ transport and the storage of CO₂. Applicants should provide evidence of reasonable scenarios, taking into account the cost of the capture technology and transport option chosen for the technical CCR assessments and the estimated costs of CO₂ storage, which make operational CCS economically feasible for the proposed development.
- 4.9.32 The preparation of an economic assessment will involve a wide range of assumptions on each of a number of factors, and government recognises the inherent uncertainties about each of these factors. There can be no guarantee that an assessment which is carried out now will predict with complete accuracy either in what circumstances it will be feasible to fit CCS to a proposed power station or when those circumstances will arise, but it can indicate the circumstances which would need to be the case to allow operational CCS to be economically feasible during the lifetime of the proposed new station.

- 4.9.33 A model assessment structure is suggested in CCR guidance¹¹⁹, although this is not the only way which the assessment could be addressed. Applicants must justify the capture, transport and storage options chosen for their proposed development.
- 4.9.34 If granted consent, operators of the power station will be required to:
- retain control over sufficient additional space on or near the site on which to install the carbon capture equipment and the ability to use it for that purpose.
 - submit update reports on the technical aspects of its CCR status to the Secretary of State for DESNZ. These reports will be required within three months of the commercial operation date of the power station (so avoiding any burden on the operator with an unimplemented consent) and every two years thereafter. Should CCS equipment be retrofitted to the full capacity of the plant, the obligation to provide such reports will lapse.

Secretary of State decision making

- 4.9.35 In considering CCR, the Secretary of State should consult the EA or NRW on the applicants technical and economic feasibility assessments.
- 4.9.36 The Secretary of State should also have regard to advice from the EA or NRW as to the suitability of the space set aside on or near the site for CCS equipment.
- 4.9.37 If the Secretary of State, having considered these assessments and other available information including comments by EA or NRW, concludes that it will not be technically and economically feasible to retrofit CCS to a proposed plant during its expected lifetime, then the proposed development cannot be judged to be CCR and therefore cannot receive consent.

4.10 Climate Change Adaptation and Resilience

- 4.10.1 Whilst we must continue to accelerate efforts to end our contribution to climate change by reaching Net Zero greenhouse gas emissions, adaptation is also necessary to manage the impacts of current and future climate change. If new energy infrastructure is not sufficiently

¹¹⁹ Carbon Capture Readiness. A guidance note for Section 36 Applications: See <https://www.gov.uk/government/publications/carbon-capture-readiness-ccr-a-guide-on-consent-applications>

resilient against the possible impacts of climate change, it will not be able to satisfy the energy needs as outlined in Part 3 of this NPS.

- 4.10.2 Climate change is already altering the UK's weather patterns and this will continue to accelerate depending on global carbon emissions. This means it is likely there will be more extreme weather events. As well as climatic and seasonal changes such as hotter, drier summers and warmer, wetter winters, there is also a likelihood of increased flooding, drought, heatwaves, and intense rainfall events, as well as rising sea levels, increased storms and coastal change. Adaptation is therefore necessary to deal with the potential impacts of these changes that are already happening.
- 4.10.3 To support planning decisions, the government produces a set of UK Climate Projections¹²⁰ as well as hazard-specific tools and guidance like the EA's climate change allowances for flood risk assessments. In addition, the government's National Adaptation Programme and Adaptation Reporting Power¹²¹ will ensure that reporting authorities (a defined list of public bodies and statutory undertakers, including energy utilities) assess the risks to their organisation presented by climate change.
- 4.10.4 The generic impacts advice in this NPS and the technology specific advice on impacts in the other energy NPSs provide additional information on climate change adaptation and should be read alongside this section (Section 5.3 on greenhouse gas emissions, Section 5.6 on coastal change and Section 5.8 on flood risk in particular provide relevant guidance for consideration).

Applicant assessment

- 4.10.5 In certain circumstances, measures implemented to ensure a scheme can adapt to climate change may give rise to additional impacts, for example as a result of protecting against flood risk, there may be consequential impacts on coastal change. In preparing measures to support climate change adaptation, applicants should take reasonable steps to maximise the use of nature-based solutions alongside other conventional techniques.
- 4.10.6 Integrated approaches, such as looking across the water cycle, considering coordinated management of water storage, supply, demand, wastewater, and flood risk can provide further benefits to

¹²⁰ The UKCP18 key results can be found here: See <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/key-results>

¹²¹ section 62 of the Climate Change Act 2008; See <https://www.gov.uk/government/publications/climate-change-second-national-adaptation-programme-2018-to-2023>

address multiple infrastructure needs, as well as carbon sequestration benefits.

- 4.10.7 In addition to avoiding further GHG emissions when compared with more traditional adaptation approaches, nature-based solutions can also result in biodiversity benefits and net gain, as well as increasing absorption of carbon dioxide from the atmosphere.
- 4.10.8 New energy infrastructure will typically need to remain operational over many decades, in the face of a changing climate. Consequently, applicants must consider the direct (e.g. site flooding, limited water availability, storms, heatwave and wildfire threats to infrastructure and operations) and indirect (e.g. access roads or other critical dependencies impacted by flooding, storms, heatwaves or wildfires) impacts of climate change when planning the location, design, build, operation and, where appropriate, decommissioning of new energy infrastructure.
- 4.10.9 The ES should set out how the proposal will take account of the projected impacts of climate change, using government guidance and industry standard benchmarks such as the Climate Change Allowances for Flood Risk Assessments¹²², Climate Impacts Tool¹²³, and British Standards for climate change adaptation¹²⁴, in accordance with the EIA Regulations.
- 4.10.10 Applicants should assess the impacts on and from their proposed energy project across a range of climate change scenarios, in line with appropriate expert advice and guidance available at the time.
- 4.10.11 Applicants should demonstrate that proposals have a high level of climate resilience built-in from the outset and should also demonstrate how proposals can be adapted over their predicted lifetimes to remain resilient to a credible maximum climate change scenario. These results should be considered alongside relevant research which is based on the climate change projections.
- 4.10.12 Where energy infrastructure has safety critical elements, the applicant should apply a credible maximum climate change scenario. It is appropriate to take a risk-averse approach with elements of infrastructure which are critical to the safety of its operation.

¹²² See <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances> or See <https://gov.wales/climate-change-allowances-and-flood-consequence-assessments-cl-03-16>

¹²³ See <https://www.gov.uk/government/publications/climate-impacts-tool>

¹²⁴ See <https://www.iso.org/standard/68507.html>

Secretary of State decision making

- 4.10.13 The Secretary of State should be satisfied that applicants for new energy infrastructure have taken into account the potential impacts of climate change using the latest UK Climate Projections¹²⁵ and associated research and expert guidance (such as the EA's Climate Change Allowances for Flood Risk Assessments¹²⁶ or the Welsh Government's Climate change allowances and flood consequence assessments¹²⁷) available at the time the ES was prepared to ensure they have identified appropriate mitigation or adaptation measures. This should cover the estimated lifetime of the new infrastructure, including any decommissioning period.
- 4.10.14 Should a new set of UK Climate Projections or associated research become available after the preparation of the ES, the Secretary of State (or the Examining Authority during the examination stage) should consider whether they need to request further information from the applicant.
- 4.10.15 The Secretary of State should be satisfied that there are not features of the design of new energy infrastructure critical to its operation which may be seriously affected by more radical changes to the climate beyond that projected in the latest set of UK climate projections, taking account of the latest credible scientific evidence on, for example, sea level rise (for example by referring to additional maximum credible scenarios – i.e. from the Intergovernmental Panel on Climate Change or EA) and that necessary action can be taken to ensure the operation of the infrastructure over its estimated lifetime.
- 4.10.16 If any adaptation measures give rise to consequential impacts (for example on flooding, water resources or coastal change) the Secretary of State should consider the impact of the latter in relation to the application as a whole and the impacts guidance set out in Part 5 of this NPS.
- 4.10.17 Any adaptation measures should be based on the latest set of UK Climate Projections¹²⁸, the government's latest UK Climate Change Risk Assessment¹²⁹, when available¹³⁰, and in consultation with the

¹²⁵ See <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp>

¹²⁶ See

<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

¹²⁷ See <https://gov.wales/climate-change-allowances-and-flood-consequence-assessments>

¹²⁸ See <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp>

¹²⁹ See <https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-2022>

¹³⁰ Section 56 of the Climate Change Act 2008.

EA's Climate Change Allowances for Flood Risk Assessments¹³¹ or the Welsh Government's Climate change allowances and flood consequence assessments¹³².

- 4.10.18 The Secretary of State may take into account reporting authorities' reports (see paragraph 4.10.3 above) to the Secretary of State when considering adaptation measures proposed by an applicant for new energy infrastructure.
- 4.10.19 Adaptation measures should be required to be implemented at the time of construction where necessary and appropriate to do so. However, where they are necessary to deal with the more extreme impacts of climate change, including credible maximum climate change scenarios, and that measure would have an adverse effect on other aspects of the project and/or surrounding environment (for example coastal processes), the Secretary of State may consider requiring the applicant to keep the need for the adaptation measure under review, and ensure that the measure could be implemented should the need arise, rather than at the outset of the development (for example increasing height of existing, or requiring new, sea walls).

4.11 Network Connection

- 4.11.1 The connection of a proposed electricity generation plant to the electricity network is an important consideration for applicants wanting to construct or extend a generation plant.
- 4.11.2 In the market system and in the past, it has been for the applicant to ensure that there will be necessary infrastructure and capacity within an existing or planned transmission or distribution network to accommodate the electricity generated.
- 4.11.3 To support the achievement of the transition to net zero, government is accelerating the co-ordination of the development of the grid network to facilitate the UK's net zero energy generation development and transmission.
- 4.11.4 Transmission network infrastructure, and related network reinforcement and upgrade works, associated with nationally significant low carbon infrastructure is considered as CNP

¹³¹ See

<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

¹³² See <https://gov.wales/climate-change-allowances-and-flood-consequence-assessments>

Infrastructure. Further guidance can be found in Section 4.2 of this NPS and EN-5.

Applicant assessment

- 4.11.5 The applicant must liaise with National Grid who own and manage the transmission network in England and Wales or the relevant regional DNO or TSO to secure a grid connection.
- 4.11.6 Applicants may wish to take a commercial risk where they have not received or accepted a formal offer of a grid connection from the relevant network operator at the time of the application¹³³. In this situation applicants should provide information as part of their application confirming that there is no obvious reason why a network connection would not be possible.
- 4.11.7 The Planning Act 2008 aims to create a holistic planning regime so that the cumulative effect of different elements of the same project can be considered together. Co-ordinated applications typically bring economic efficiencies and reduced environmental impact. The government therefore envisages that wherever reasonably possible, applications for new generating stations and related infrastructure should be contained in a single application to the Secretary of State or in separate applications submitted in tandem which have been prepared in an integrated way, as outlined in EN-5. This is particularly encouraged to ensure development of more co-ordinated transmission overall.
- 4.11.8 On some occasions it may not be possible to coordinate applications. For example, different elements of a project may have different lead-in times and be undertaken by different legal entities subject to different commercial and regulatory frameworks (for example grid companies operate within OFGEM controls) making it inefficient from a delivery perspective to submit one application. Applicants may therefore decide to submit separate applications for each element. Where this is the case, the applicant should include information on the other elements¹³⁴ and explain the reasons for the separate application confirming that there are no obvious reasons for why other elements are likely to be refused.
- 4.11.9 If this option is pursued, the applicant accepts the implicit risks involved in doing so and must ensure they provide sufficient information to comply with the EIA Regulations including the indirect,

¹³³ Although it is likely to have applied for one and discussed it with them.

¹³⁴ It is acknowledged that different levels of information may be available at different times and as such applicants should take a proportionate approach to what information should be included.

secondary, and cumulative effects, which will encompass information on grid connections.

- 4.11.10 It is recognised that this may be the situation for some new offshore transmission projects, where applications for consent may be brought forward separate to (though planned with) the applications for associated wind farms as outlined in EN-3 and EN-5.

Secretary of State decision making

- 4.11.11 The Secretary of State should consider guidance contained within EN-3 and EN-5.
- 4.11.12 The Secretary of State should be satisfied that appropriate network connection arrangements are/will be in place for a given project regardless of whether one or multiple (linked) applications are submitted.
- 4.11.13 Where the Secretary of State has decided to grant consent for one project this should not in any way fetter the Secretary of State's ability to take subsequent decisions on any related projects.

4.12 Pollution Control and Other Environmental Regulatory Regimes

- 4.12.1 Issues relating to discharges or emissions from a proposed project, and which lead to other direct or indirect impacts on terrestrial, freshwater, marine, onshore, and offshore environments, or which include noise and vibration may be subject to separate regulation under the pollution control framework or other consenting and licensing regimes, for example local planning consent or marine licences (see paragraph 4.5.6 for more information).
- 4.12.2 The planning and pollution control systems are separate but complementary. The planning system controls the development and use of land in the public interest. It plays a key role in protecting and improving the natural environment, public health and safety, and amenity, for example by attaching conditions to allow developments which would otherwise not be environmentally acceptable to proceed and preventing harmful development which cannot be made acceptable even through conditions. Pollution control is concerned with preventing pollution through the use of measures to prohibit or limit the releases of substances to the environment from different sources to the lowest practicable level. It also ensures that ambient

air, water, and land quality meet standards that guard against impacts to the environment or human health.

- 4.12.3 Pollution from industrial sources in England and Wales is controlled through the Environmental Permitting (England and Wales) Regulations 2016. The Environmental Permitting Regulations require industrial facilities to have an Environmental Permit and meet limits on allowable emissions to operate.
- 4.12.4 Larger industrial facilities undertaking specific types of activity are required to use BAT to reduce emissions to air, water, and land. Sector-specific BAT standards are determined through the UKBAT process¹³⁵.

Applicant assessment

- 4.12.5 Applicants should consult the MMO (or NRW in Wales) on energy NSIP projects which would affect, or would be likely to affect, any relevant marine areas as defined in the Planning Act 2008 (as amended by section 23 of the Marine and Coastal Access Act 2009). Applicants are encouraged to consider the relevant marine plans in advance of consulting the MMO for England or the relevant policy teams at the Welsh government.
- 4.12.6 Many projects covered by this NPS will be subject to the Environmental Permitting Regulations, which also incorporates operational waste management requirements for certain activities. When an applicant applies for an Environmental Permit, the relevant regulator (usually the EA or NRW but sometimes the local authority) requires that the application demonstrates that processes are in place to meet all relevant Environmental Permitting Regulations requirements¹³⁶.
- 4.12.7 Applicants should understand what non-planning permits / consents the development will require and consider the timings for gaining these permissions alongside the timing for gaining the DCO. They should make early contact with relevant regulators, including EA or NRW and the MMO, to discuss their requirements for Environmental Permits and other consents, such as marine licences. Applicants can access enhanced (paid for) pre-application support before applying for an environmental permit¹³⁷. Enhanced pre-application advice is recommended for complex or significant developments to ensure

¹³⁵ See <https://www.gov.uk/government/publications/integrated-pollution-prevention-and-control-developing-and-setting-of-best-available-techniques-bat-provisional-common-framework>

¹³⁶ See <https://www.gov.uk/government/publications/environmental-permitting-guidance-core-guidance--2>

¹³⁷ See <https://www.gov.uk/guidance/get-advice-before-you-apply-for-an-environmental-permit>

applications contain the necessary assessments to address the risks associated with the proposed activity. Applicants can also explore options, such as submitting their application in stages through this route if the application is complex or uses novel technologies. Early engagement on the permissions required for the development is strongly advised and helps the management of these within the timescale for development. This is particularly advisable in circumstances where applicants have a number of permissions to obtain from the EA for their development.

- 4.12.8 Wherever appropriate, applicants should submit applications for Environmental Permits and other necessary consents at the same time as applying to the Secretary of State for development consent.

Secretary of State decision making

- 4.12.9 In considering an application for development consent the Secretary of State should focus on whether the development itself is an acceptable use of the land or sea, and the impact of that use, rather than the control of processes, emissions or discharges themselves¹³⁸.
- 4.12.10 The Secretary of State should work on the assumption that the relevant pollution control regime and other environmental regulatory regimes, including those on land drainage, water abstraction and biodiversity, will be properly applied and enforced by the relevant regulator. The Secretary of State should act to complement but not seek to duplicate those regulatory regimes, but without prejudice to the Secretary of State's duty to 'secure' compliance with the relevant regulatory requirements.
- 4.12.11 The Secretary of State's consent may include a deemed marine licence and the MMO, or NRW, will advise on what conditions should apply to the deemed marine licence.
- 4.12.12 The Secretary of State and the MMO, or NRW, should cooperate closely to ensure that energy NSIPs are licensed in accordance with environmental legislation.
- 4.12.13 In considering the impacts of the project, the Secretary of State may wish to consult the regulator on matters relevant to the grant of, or conditions which would otherwise be included in, an environmental permit. The Secretary of State should be satisfied that development consent can be granted taking full account of environmental impacts.

¹³⁸ See paragraph 201 of section 15 of the NPPF.

4.12.14 Working in close cooperation with the EA or NRW and/or the pollution control authority, and other relevant bodies, such as the MMO, the SNCB, Drainage Boards, and water and sewerage undertakers, the Secretary of State should be satisfied, before consenting any potentially polluting developments, that:

- the relevant pollution control authority is satisfied that potential releases can be adequately regulated under the pollution control framework
- the effects of existing sources of pollution in and around the site are not such that the cumulative effects of pollution when the proposed development is added would make that development unacceptable, particularly in relation to statutory environmental quality limits

4.12.15 The Secretary of State should not refuse consent on the basis of pollution impacts unless there is good reason to believe that any relevant necessary operational pollution control permits or licences or other consents will not subsequently be granted. On this basis, it is reasonable for the Secretary of State to consider residual amenity issues only when considering whether the development itself is an acceptable use of the land or sea, and on the impacts of that use.

4.13 Safety

- 4.13.1 In addition to its role in the planning system, the HSE is the independent regulator for workplace health and safety and is responsible for enforcing a range of health and safety legislation, some of which is relevant to the construction, operation and decommissioning of energy infrastructure.
- 4.13.2 Some technologies, for example major accident hazard pipelines, will be regulated by specific health and safety legislation. The application of these regulations is set out in the technology specific NPSs where relevant.
- 4.13.3 Some energy infrastructure will be subject to the Control of Major Accident Hazards (COMAH) Regulations 2015¹³⁹. These Regulations aim to prevent major accidents involving dangerous substances and limit the consequences to people and the environment of any that do occur. COMAH regulations apply throughout the life cycle of the facility, i.e. from the design and build stage through to decommissioning. They are enforced by the Competent Authority

¹³⁹ See <https://www.hse.gov.uk/comah/background/comah15.htm#main>

comprising HSE or ONR (Office for Nuclear Regulation, for nuclear) and the EA acting jointly in England and by the HSE and NRW acting jointly in Wales, and the HSE and Scottish Environment Protection Agency (SEPA) acting jointly in Scotland.

- 4.13.4 The same principles apply here as for those set out in the previous section on pollution control and other environmental permitting regimes.

Applicant assessment

- 4.13.5 Applicants should consult with the HSE on matters relating to safety.
- 4.13.6 Applicants seeking to develop infrastructure subject to the COMAH regulations should make early contact with the Competent Authority.
- 4.13.7 If a safety report is required it is important to discuss with the Competent Authority the type of information that should be provided at the design and development stage, and what form this should take. This will enable the Competent Authority to review as much information as possible before construction begins, in order to assess whether the inherent features of the design are sufficient to prevent, control and mitigate major accidents.

Secretary of State decision making

- 4.13.8 The Secretary of State should be satisfied that a safety assessment has been prepared, where required, and that the Competent Authority has raised no safety objections.

4.14 Hazardous Substances

- 4.14.1 All establishments wishing to hold stocks of certain hazardous substances above a threshold need Hazardous Substances Consent¹⁴⁰.
- 4.14.2 The Hazardous Substances Authority (HSA) has responsibility for deciding whether the risk of storing hazardous substances is tolerable for the community. The HSA will usually be the LPA. In some circumstances, the county council are the HSA.
- 4.14.3 HSE is a statutory consultee on applications for hazardous substances consent. HSE is required to undertake detailed assessment work

¹⁴⁰ Further information is available at the HSE's website: HSE: Land use planning - Hazardous substances consent.

before producing its public safety statutory advice and the supporting consultation distances. This involves HSE considering the compatibility of the proposal outlined in the application (e.g. to store defined quantities of each hazardous substance in specific locations on site) against the risks to the offsite population. HSE advice takes into account existing and potential developments in the area. The aim of HSE's advice is to mitigate the effects of a major accident on the populations around a major hazard site or pipeline.

- 4.14.4 Where HSE does not advise against the Secretary of State granting the consent, it will also recommend whether the consent should be granted subject to any requirements.

Applicant assessment

- 4.14.5 Applicants must consult the HSA and HSE at pre-application stage if the project is likely to need hazardous substances consent. Hazardous substances consents are a part of the planning regime which contributes to public safety.
- 4.14.6 HSE sets a consultation distance around every site with hazardous substances consent and notifies the relevant LPAs. The applicant should therefore consult the LPA at pre-application stage to identify whether its proposed site is within the consultation distance of any site with hazardous substances consent and, if so, should consult the HSE for its advice on locating the particular development on that site. Where a hazardous substance consent has been deemed to be granted, the developer is required to send the relevant HSA any information required by them for the purposes of a register.

Secretary of State decision making

- 4.14.7 Where hazardous substances consent is applied for, the Secretary of State will consider whether to make an order directing that hazardous substances consent shall be deemed to be granted alongside making an order granting development consent¹⁴¹. The Secretary of State should consult HSE about this.

¹⁴¹ Hazardous substances consent can also be applied for subsequent to a Development Consent Order application. However, the guidance in 4.13.1 still applies i.e. the applicant should consult with HSE at the pre-application stage and include details in their Development Consent Order application.

4.15 Common Law Nuisance and Statutory Nuisance

- 4.15.1 Section 158 of the Planning Act 2008 confers statutory authority for carrying out development consented to by, or doing anything else authorised by, a Development Consent Order.
- 4.15.2 Such authority is conferred only for the purpose of providing a defence in civil or criminal proceedings for nuisance. This would include a defence in proceedings for nuisance under Part III of the Environmental Protection Act 1990 (EPA) (statutory nuisances and clean air).
- 4.15.3 The defence does not extinguish the local authority's duties under Part III of the EPA 1990 to inspect its area and take reasonably practical steps to investigate complaints of statutory nuisance made to it by a person living within its area and to serve an abatement notice where satisfied of the existence, likely occurrence or recurrence of a statutory nuisance.
- 4.15.4 The defence is not intended to extend to proceedings where the matter is "prejudicial to health" and not a nuisance.

Applicant Assessment

- 4.15.5 At the application stage of an energy NSIP, possible sources of nuisance under section 79(1) of the EPA 1990 and how they may be mitigated or limited should be identified by the applicant so that appropriate requirements can be included in any subsequent order granting development consent (see Section 5.7 on dust, odour, artificial light etc. and Section 5.12 on noise and vibration).

Secretary of State decision making

- 4.15.6 At the application stage of an energy NSIP, possible sources of nuisance under section 79(1) of the EPA 1990 and how they may be mitigated or limited should be considered by the Secretary of State so that appropriate requirements can be included in any subsequent order granting development consent (see Section 5.7 on dust, odour, artificial light etc. and Section 5.12 on noise and vibration).
- 4.15.7 The Secretary of State should note that the defence of statutory authority is subject to any contrary provision made by the Secretary of State in any particular case in a Development Consent Order (section 158(3) of the Planning Act 2008). Therefore, subject to Section 5.7 and Section 5.12, the Secretary of State can disapply the defence of statutory authority, in whole or in part, in any particular case, but in so

doing should have regard to whether any particular nuisance is an inevitable consequence of the development.

4.16 Security Considerations

- 4.16.1 National security considerations apply across all national infrastructure sectors.
- 4.16.2 DESNZ works closely with government security agencies including the National Protective Security Authority (NPSA) and the National Cyber Security Centre (NCSC) to provide advice to the most critical infrastructure assets on terrorism and other national security threats, as well as on risk mitigation.
- 4.16.3 In the UK's civil nuclear industry, security is also independently regulated by the Office for Nuclear Regulation (ONR).
- 4.16.4 Government policy is to ensure that, where possible, proportionate protective security measures are designed into new infrastructure projects at an early stage in the project development. Where applications for development consent for infrastructure covered by this NPS relate to potentially 'critical' infrastructure, there may be national security considerations.
- 4.16.5 DESNZ will be notified at pre-application stage about every likely future application for energy NSIPs, so that any national security implications can be identified.

Applicant assessment

- 4.16.6 Where national security implications have been identified, the applicant should consult with relevant security experts from NPSA, ONR (for civil nuclear) and/or DESNZ to ensure security measures have been adequately considered in the design process and that adequate consideration has been given to the management of security risks.
- 4.16.7 The applicant should only include sufficient information in the application as is necessary to enable the Secretary of State to examine the development consent issues and make a properly informed decision on the application.

Secretary of State decision making

- 4.16.8 If NPSA, ONR (for civil nuclear) and/or DESNZ are satisfied that security issues have been adequately addressed in the project when

the application is submitted to the Secretary of State, it will provide confirmation of this to the Secretary of State. The Secretary of State should not need to give any further consideration to the details of the security measures in its examination.

- 4.16.9 In exceptional cases, where examination of an application would involve public disclosure of information about defence or national security which would not be in the national interest, the examination of that evidence may take place in a closed session as set out under Examination Procedure Rules.
- 4.16.10 The Secretary of State must also consider duties under other legislation including duties under the Environment Act 2021 in relation to environmental targets and the government's Environmental Improvement Plan.

5 Generic Impacts

5.1 Introduction

- 5.1.1 This Part considers generic impacts that arise from the development of all of the types of energy infrastructure covered by the energy NPSs (such as landscape and visual impacts) or arise in similar ways from the development of energy infrastructure covered in at least two of the energy NPSs. In some cases, the technology specific NPSs provide detail on the way these impacts arise, or are to be considered, in the context of applications specific to the technology in question. Impacts which are limited to one particular technology are only covered in the relevant technology specific NPS.
- 5.1.2 The list of impacts (generic and technology specific) and the relevant policy in this Part and in the impact section of the technology specific NPSs is not exhaustive. The NPSs address those impacts and means of mitigation that are anticipated to arise most frequently. They are not intended to provide a list of all possible effects or ways to mitigate such effects. The Secretary of State should therefore consider other impacts and means of mitigation where they determine that the impact is relevant and important to its decision.
- 5.1.3 The technology specific NPSs may state that certain impacts should be given a particular weight. Where they do not, the Secretary of State should follow any policy on the level of weight to be given to such impact set out in this NPS. Applicants should identify the impacts of their proposals in the ES in terms of those covered in this NPS and any others that may be relevant to their application.
- 5.1.4 Some of the impact sections in this NPS and the technology specific NPSs refer to development consent requirements or obligations, or conditions of a deemed marine licence, as means of securing appropriate mitigation. The fact that the possible use of requirements, obligations or conditions are not mentioned in relation to other impacts does not mean that they may not be relevant.
- 5.1.5 Some of the impact sections in this NPS and the technology specific NPSs also refer to bodies whom the applicant or the Secretary of State should consult. The references to specific bodies are not intended to be exhaustive. The fact that in other impact sections no mention is made of such consultation does not mean that the applicant or the Secretary of State should not, where appropriate, engage in

it¹⁴². Applicants must also ensure they consult the relevant bodies about their proposed applications in accordance with sections 42 to 44 of the Planning Act 2008 and the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009.

- 5.1.6 Sufficient relevant information is crucial to good decision making, particularly where formal assessments are required. To avoid delay, if in any doubt applicants should discuss what information is needed with the Planning Inspectorate, statutory bodies, and other relevant organisations as early as possible. Any assessment should be based on the most up to date data and guidance.

5.2 Air Quality and Emissions

- 5.2.1 Energy infrastructure development can have adverse effects on air quality. The construction, operation and decommissioning phases can involve emissions to air which could lead to adverse impacts on health, on protected species and habitats¹⁴³, or on the wider countryside and species. Air emissions include particulate matter (for example dust) up to a diameter of ten microns (PM10) and up to a diameter of 2.5 microns (PM2.5) as well as gases such as sulphur dioxide, carbon monoxide and nitrogen oxides (NOx).
- 5.2.2 Legal limits for pollutants in ambient air are set out in the Air Quality Standards Regulations 2010 and for England, national objectives set out in the Air Quality (England) Regulations 2000 reiterated in the Air Quality Strategy¹⁴⁴, or for Wales, the Air Quality (Wales) Regulations 2000 and the Clean Air Plan for Wales¹⁴⁵. In addition, two fine particulate matter (PM2.5) targets were set under the Environment Act 2021 for England – an annual mean concentration target and a population exposure target. Internationally agreed emissions commitments are set in the National Emission Ceilings Regulations 2018 and establish limits for total UK emissions of key pollutants.
- 5.2.3 For many air pollutants there is not a threshold below which there is no health impact so it is important that energy infrastructure schemes consider not just how a scheme may impact statutory air quality limits, objectives or targets but also measures to mitigate all emissions in

¹⁴² The Secretary of State may choose to consult in certain circumstances following the close of the examination but in most cases will be under no obligation to do so.

¹⁴³ Impacts on protected species and habitats are covered in Section 5.4.

¹⁴⁴ See <https://www.gov.uk/government/publications/the-air-quality-strategy-for-england>

¹⁴⁵ See <https://www.gov.wales/clean-air-plan-wales-healthy-air-healthy-wales>

order to minimise human exposure to air pollution, especially for those who are more susceptible to the impacts of poor air quality.

- 5.2.4 In addition, a particular effect of air emissions from some energy infrastructure may be eutrophication, which is the excessive enrichment of nutrients in the environment. Eutrophication from air pollution results mainly from emissions of NO_x and ammonia. The main emissions from energy infrastructure are from generating stations. Eutrophication can affect plant growth and functioning, altering the competitive balance of species and thereby damaging biodiversity. In aquatic ecosystems it can cause changes to algal composition and lead to algal blooms, which remove oxygen from the water, adversely affecting plants and fish. The effects on ecosystems can be short term or irreversible and can have a large impact on ecosystem services such as pollination, aesthetic services and water supply.
- 5.2.5 Operational emissions from combustion plant are controlled through Environmental Permits. The relationship between environmental permitting and planning systems is set out in Section 4.12. Emissions from combustion plants are generally released through exhaust stacks. Design of exhaust stacks, particularly height, is the primary driver for the delivery of optimal dispersion of emissions and is often determined by statutory requirements. The optimal stack height is dependent upon the local terrain and meteorological conditions, in combination with the emission characteristics of the plant. The EA or NRW will require the exhaust stack height of a thermal combustion generating plant, including fossil fuel generating stations and waste or biomass plant, to be optimised in relation to impact on air quality. The Secretary of State need not, therefore, be concerned with the exhaust stack height optimisation process in relation to air emissions, though the impact of stack heights on landscape and visual amenity will be a consideration (see Section 5.10).
- 5.2.6 Impacts of thermal combustion generating stations with respect to air emissions are set out in the technology specific NPSs.
- 5.2.7 Proximity to emission sources can have significant impacts on sensitive receptor sites for air quality, such as education or healthcare sites, residential use or sensitive or protected ecosystems. Projects near a sensitive receptor site for air quality should only be proposed in exceptional circumstances if no viable alternative site is available. In these instances, substantial mitigation of any expected emissions will be required (see paragraph 5.2.12 below).

Applicant assessment

- 5.2.8 Where the project is likely to have adverse effects on air quality the applicant should undertake an assessment of the impacts of the proposed project as part of the ES.
- 5.2.9 The ES should describe:
- existing air quality concentrations and the relative change in air quality from existing levels;
 - any significant air quality effects, mitigation action taken and any residual effects, distinguishing between the project stages and taking account of any significant emissions from any road traffic generated by the project;
 - the predicted absolute emissions, concentration change and absolute concentrations as a result of the proposed project, after mitigation methods have been applied; and
 - any potential eutrophication impacts.
- 5.2.10 In addition, applicants should consider the Environment Targets (Fine Particulate Matter) (England) Regulations 2023 and associated Defra guidance.
- 5.2.11 Defra publishes future national projections of air quality based on estimates of future levels of emissions, traffic, and vehicle fleet. Projections are updated as the evidence base changes and the applicant should ensure these are current at the point of an application. The applicant's assessment should be consistent with this but may include more detailed modelling and evaluation to demonstrate local and national impacts. If an applicant believes they have robust additional supporting evidence, to the extent they could affect the conclusions of the assessment, they should include this in their representations to the Examining Authority along with the source.
- 5.2.12 Where a proposed development is likely to lead to a breach of any relevant statutory air quality limits, objectives or targets, or affect the ability of a non-compliant area to achieve compliance within the timescales set out in the most recent relevant air quality plan/strategy at the time of the decision, the applicant should work with the relevant authorities to secure appropriate mitigation measures to ensure that those statutory limits, objectives or targets are not breached.
- 5.2.13 The Secretary of State should consider whether mitigation measures are needed both for operational and construction emissions over and above any which may form part of the project application. A construction management plan may help codify mitigation at this

stage. In doing so the Secretary of State should have regard to the Air Quality Strategy¹⁴⁶ in England, or the Clean Air Plan for Wales in Wales¹⁴⁷, or any successors to these and should consider relevant advice within Local Air Quality Management guidance and PM2.5 targets guidance¹⁴⁸.

- 5.2.14 The mitigations identified in Section 5.14 on traffic and transport impacts will help mitigate the effects of air emissions from transport.

Secretary of State decision making

- 5.2.15 Many activities involving air emissions are subject to pollution control. The considerations set out in Section 4.12 on the interface between planning and pollution control therefore apply. The Secretary of State must also consider duties under other legislation including duties under the Environment Act 2021 in relation to environmental targets and have regard to policies set out in the government's Environmental Improvement Plan.
- 5.2.16 The Secretary of State should give air quality considerations substantial weight where a project would lead to a deterioration in air quality. This could for example include where an area breaches any national air quality limits or statutory air quality objectives. However, air quality considerations will also be important where substantial changes in air quality levels are expected, even if this does not lead to any breaches of statutory limits, objectives or targets.
- 5.2.17 The Secretary of State should give air quality considerations substantial weight where a project is proposed near a sensitive receptor site, such as an education or healthcare facility, residential use or a sensitive or protected habitat.
- 5.2.18 Where a project is proposed near to a sensitive receptor site for air quality, if the applicant cannot provide justification for this location, and a suitable mitigation plan, the Secretary of State should refuse consent.
- 5.2.19 In all cases, the Secretary of State must take account of any relevant statutory air quality limits, objectives and targets. If a project will lead to non-compliance with a statutory limit, objective or target the Secretary of State should refuse consent.

¹⁴⁶ See <https://www.gov.uk/government/publications/the-air-quality-strategy-for-england>

¹⁴⁷ See <https://www.gov.wales/clean-air-plan-wales-healthy-air-healthy-wales>

¹⁴⁸ See <https://laqm.defra.gov.uk/supporting-guidance.html> and <https://www.gov.uk/government/publications/fine-particulate-air-pollution-pm25-setting-targets>

5.3 Greenhouse Gas Emissions

- 5.3.1 Significant levels of energy infrastructure development are vital to ensure the decarbonisation of the UK economy. The construction, operation and decommissioning of that energy infrastructure will in itself lead to GHG emissions.
- 5.3.2 In considering this section, applicants should also have regard to Part 2 of this NPS, which explains the current policy on climate change and how this NPS interacts with that policy, and Section 4.10 of this NPS, which deals with climate change adaptation.
- 5.3.3 As discussed in Part 2, energy infrastructure plays a vital role in decarbonisation. All steps should be taken to reduce and mitigate climate change impacts, including by improving resource and energy efficiency in the construction, operation, and decommissioning of energy infrastructure where possible. However, it is accepted that there will be some residual emissions from energy infrastructure, particularly during the economy wide transition to net zero, and potentially beyond.

Applicant assessment

- 5.3.4 All proposals for energy infrastructure projects should include a GHG assessment as part of their ES (See Section 4.3). This should include:
- A whole life GHG assessment showing construction, operational and decommissioning GHG impacts, including impacts from change of land use.
 - An explanation of the steps that have been taken to drive down the climate change impacts at each of those stages.
 - Measurement of embodied GHG impact from the construction stage.
 - How reduction in energy demand and consumption during operation has been prioritised in comparison with other measures.
 - How operational emissions have been reduced as much as possible through the application of BAT for that type of technology.
 - Calculation of operational energy consumption and associated carbon emissions.
 - Whether and how any residual GHG emissions will be (voluntarily) offset or removed using a recognised framework.
 - Where there are residual emissions, the level of emissions and the impact of those on national and international efforts to limit climate

change, both alone and where relevant in combination with other developments at a regional or national level, or sector level, if sectoral targets are developed.

Mitigation

- 5.3.5 A GHG assessment should be used to drive down GHG emissions at every stage of the proposed development and ensure that emissions are minimised as far as possible for the type of technology, taking into account the overall objectives of ensuring our supply of energy always remains secure, reliable and affordable, as we transition to net zero.
- 5.3.6 Applicants should look for opportunities within the proposed development to embed nature-based or technological solutions to mitigate or offset the emissions of construction and decommissioning.
- 5.3.7 Steps taken to minimise and offset emissions should be set out in a GHG Reduction Strategy, secured under the Development Consent Order. The GHG Reduction Strategy should consider the creation and preservation of carbon stores and sinks including through woodland creation, hedgerow creation and restoration, peatland restoration and through other natural habitats.

Secretary of State decision making

- 5.3.8 The Secretary of State must be satisfied that the applicant has as far as possible assessed the GHG emissions of all stages of the development.
- 5.3.9 The Secretary of State should be content that the applicant has taken all reasonable steps to reduce the GHG emissions of the construction and decommissioning stage of the development.
- 5.3.10 The Secretary of State should give appropriate weight to projects that embed nature-based or technological processes to mitigate or offset the emissions of construction and decommissioning within the proposed development. However, in light of the vital role energy infrastructure plays in the process of economy wide decarbonisation, the Secretary of State must accept that there are likely to be some residual emissions from construction and decommissioning of energy infrastructure.
- 5.3.11 Operational GHG emissions are a significant adverse impact from some types of energy infrastructure which cannot be totally avoided (even with full deployment of CCS technology). Given the characteristics of these and other technologies, as noted in Part 3 of this NPS, and the range of non-planning policies that can be used to

decarbonise electricity generation, such as the UK ETS (see Section 2.4), government has determined that operational GHG emissions are not reasons to prohibit the consenting of energy projects or to impose more restrictions on them in the planning policy framework than are set out in the energy NPSs (e.g. the CCR requirements). Any carbon assessment will include an assessment of operational GHG emissions, but the policies set out in Part 2, including the UK ETS, can be applied to these emissions.

- 5.3.12 Operational emissions will be addressed in a managed, economy-wide manner, to ensure consistency with carbon budgets, net zero and our international climate commitments. The Secretary of State does not, therefore need to assess individual applications for planning consent against operational carbon emissions and their contribution to carbon budgets, net zero and our international climate commitments.

5.4 Biodiversity and Geological Conservation

- 5.4.1 Biodiversity is the variety of life in all its forms and encompasses all species of plants, animals and fungi, the genetic diversity they contain and the complex ecosystems of which they are a part. Geological conservation relates to the sites that are designated for their geology and/or their geomorphological importance¹⁴⁹.
- 5.4.2 The Environmental Improvement Plan sets out the government's vision to help the natural world regain and retain good health. The plan is reviewed and can be revised every 5 years, as set out in the Environment Act 2021. The current Environmental Improvement Plan was published in 2023 and is currently being reviewed. The government's policy for biodiversity in England is set out in the Environmental Improvement Plan¹⁵⁰, the National Pollinator Strategy¹⁵¹ and the UK Marine Strategy¹⁵². The aim is to halt overall biodiversity loss in England by 2030 and then reverse loss by 2042, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people. This aim needs to be viewed in the context of the challenge presented by climate change. Healthy, naturally functioning ecosystems and coherent ecological networks will

¹⁴⁹ A list of designated sites (including marine sites) is included in the Geological Conservation Review held by the Joint Nature Conservation Committee (JNCC).

¹⁵⁰ See <https://www.gov.uk/government/publications/environmental-improvement-plan>

¹⁵¹ See <https://www.gov.uk/government/publications/national-pollinator-strategy-for-bees-and-other-pollinators-in-england>

¹⁵² See <https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status>

be more resilient and adaptable to climate change effects. Failure to address this challenge will result in significant adverse impact on biodiversity and the ecosystem services it provides.

- 5.4.3 The wide range of legislative provisions at the international and national level that can impact on planning decisions affecting biodiversity and geological conservation issues are set out in a Government Circular¹⁵³. The NPPF sets out planning policies for England in relation to planning for biodiversity and geological conservation and the Natural Environment Planning Practice Guidance provides advice on the implementation of these policies¹⁵⁴. In Wales, TAN 5: Nature Conservation and Planning sets out how the land use planning system should contribute to biodiversity and geological conservation¹⁵⁵.

Habitats Regulations

- 5.4.4 The highest level of biodiversity protection is afforded to sites identified through international conventions. The Habitats Regulations set out sites for which an HRA will assess the implications of a plan or project, including Special Areas of Conservation and Special Protection Areas.
- 5.4.5 As a matter of policy, the following should be given the same protection as sites covered by the Habitats Regulations and an HRA will also be required:
- Potential Special Protection Areas and possible Special Areas of Conservation;
 - Listed or proposed Ramsar sites; and
 - Sites identified, or required, as compensatory measures for adverse effects on Special Protection Areas, Special Areas of Conservation, and any of the other sites covered by this paragraph.
- 5.4.6 The Offshore Wind Environmental Improvement Package (OWEIP) contains a commitment to introduce strategic compensatory measures for offshore renewables NSIPs, to offset environmental effects but also to reduce delays for individual projects. See paragraphs 3.8.245 – 3.8.252 of EN-3 for further information.

¹⁵³ Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System (ODPM 06/2005, Defra 01/2005) available via TSO website www.tso.co.uk/bookshop. It should be noted that this document does not cover more recent legislative requirements, such as the Marine Strategy Regulations 2010.

¹⁵⁴ See <https://www.gov.uk/guidance/natural-environment>

¹⁵⁵ See <https://www.gov.wales/technical-advice-note-tan-5-nature-conservation-and-planning>

Sites of Special Scientific Interest (SSSIs)

- 5.4.7 Many SSSIs are also designated as sites of international importance and will be protected accordingly. Those that are not, or those features of SSSIs not covered by an international designation, should be given a high degree of protection. Most National Nature Reserves are notified as SSSIs.
- 5.4.8 Development on land within or outside a SSSI, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits (including need) of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of SSSIs.

Marine Conservation Zones

- 5.4.9 MCZs (Marine Protected Areas in Scotland), introduced under the Marine and Coastal Access Act 2009, are areas that have been designated for the purpose of conserving marine flora or fauna, marine habitats or types of marine habitat or features of geological or geomorphological interest. The protected feature or features and the conservation objectives for the MCZ are stated in the designation order for the MCZ. If a proposal is likely to have significant impacts on an MCZ, an MCZ Assessment should be undertaken as per the requirements under section 126 of the Marine and Coastal Access Act 2009. Government has recently designated the first three Highly Protected Marine Areas in England. These are designated as MCZs but with a higher conservation objective and with a single feature of the whole ecosystem within the site boundaries.
- 5.4.10 As a matter of policy, the following should be given the same protection as sites covered by the Marine and Coastal Access Act 2009 and a MCZ assessment will also be required in respect of:
- proposed MCZs; and
 - sites identified, or required, as measures of equivalent environmental benefit for damage to MCZs and sites covered above.

Marine Protected Areas

- 5.4.11 MPA is a term used to describe the network of habitat sites, SSSIs, MCZs, and Highly Protected Marine Areas (HPMAs) in the English and Welsh marine environment.

- 5.4.12 It is important that relevant guidance on managing environmental impacts of infrastructure in MPAs is followed, and that equal consideration of the effect of proposals should be given to all MPAs regardless of the legislation they were designated under. This is because all sites contribute to the network of MPAs and therefore to overall network integrity. In England, the government has established a MPA condition target under the Environment Act.

Regional and Local Sites

- 5.4.13 Sites of regional and local biodiversity and geological interest, which include Regionally Important Geological Sites, Local Nature Reserves and Local Wildlife Sites, are areas of substantive nature conservation value and make an important contribution to ecological networks and nature's recovery. They can also provide wider benefits including public access (where agreed), climate mitigation and helping to tackle air pollution.
- 5.4.14 National planning policy expects plans to identify and map Local Wildlife Sites, and to include policies that not only secure their protection from harm or loss but also help to enhance them and their connection to wider ecological networks.

Ancient woodland, ancient trees, veteran trees and other irreplaceable habitats

- 5.4.15 Irreplaceable habitats are habitats which would be technically very difficult (or take a very significant time) to restore, recreate or replace once destroyed, taking into account their age, uniqueness, species diversity or rarity.
- 5.4.16 Ancient woodland is a valuable biodiversity resource both for its diversity of species and for its longevity as woodland. Keepers of Time, the government's policy for ancient and native trees and woodlands in England sets out the government's commitment to maintain and enhance the existing area of ancient woodland, maintain and enhance the existing resource of known ancient and veteran trees, excluding natural losses from disease and death, and to increase the percentage of ancient woodland in active management. Ancient and veteran trees found outside ancient woodland are also particularly valuable. Other types of irreplaceable habitats include blanket bog, limestone pavement, coastal sand dunes, spartina salt marsh swards, mediterranean saltmarsh scrub, and lowland fen.

Protection and enhancement of habitats and species

- 5.4.17 Many individual species receive statutory protection under a range of legislative provisions¹⁵⁶. Other species and habitats have been identified as being of principal importance for the conservation of biodiversity in England and Wales, as well as for their continued benefit for climate mitigation and adaptation and thereby requiring conservation action¹⁵⁷.

Applicant assessment

- 5.4.18 Where the development is subject to EIA, the applicant should ensure that the ES clearly sets out any effects on internationally, nationally, and locally designated sites of ecological or geological conservation importance (including those outside England and Wales), on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity, including irreplaceable habitats.
- 5.4.19 The applicant should provide environmental information proportionate to the infrastructure where EIA is not required to help the Secretary of State consider thoroughly the potential effects of a proposed project.
- 5.4.20 The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests¹⁵⁸.
- 5.4.21 Applicants should consider wider ecosystem services and benefits of natural capital when designing enhancement measures.
- 5.4.22 As set out in Section 4.7, the design process should embed opportunities for nature inclusive design. Energy infrastructure projects have the potential to deliver significant benefits and enhancements beyond Biodiversity Net Gain, which result in wider environmental gains (see Section 4.6 on Environmental and Biodiversity Net Gain). The scope of potential gains will be dependent on the type, scale, and location of each project.

¹⁵⁶ Certain plant and animal species, including all wild birds, are protected under the Wildlife and Countryside Act 1981. Certain plant and animal species are also protected under the Conservation of Habitats and Species Regulations 2017. Some other animals are protected under their own legislation, for example Protection of Badgers Act 1992.

¹⁵⁷ Lists of habitats and species of principal importance for the conservation of biological diversity in England published in response to section 41 of the Natural Environment and Rural Communities Act 2006 are available from the Biodiversity Action Reporting System website. See section 7 of the Environment (Wales) Act 2016 for a list of habitats and species of principle importance in Wales.

¹⁵⁸ See, for example, the biodiversity planning toolkit created by the Association of Local Government Ecologists in partnership with NGOs, Defra, SNCB and the EA.

- 5.4.23 The design of energy NSIP proposals will need to consider the movement of mobile/migratory species such as birds, fish and marine and terrestrial mammals and their potential to interact with infrastructure. As energy infrastructure could occur anywhere within England and Wales, both inland and onshore and offshore, the potential to affect mobile and migratory species across the UK and more widely across Europe (transboundary effects) requires consideration, depending on the location of development. Applicants should consider relevant plan policies in marine plans in England.
- 5.4.24 Energy projects will need to ensure vessels used by the project follow existing regulations and guidelines to manage ballast water¹⁵⁹.
- 5.4.25 In Wales, applicants should consider the guidance set out in Section 6.4 of Planning Policy Wales and the relevant policies in the Wales National Marine Plan¹⁶⁰.

Applicant assessment – Habitats Regulations

- 5.4.26 The applicant should seek the advice of the appropriate SNCB and provide the Secretary of State with such information as the Secretary of State may reasonably require, to determine whether an HRA Appropriate Assessment is required. Applicants can request and agree 'Evidence Plans' with SNCBs, which is a way to record upfront the information the applicant needs to supply with its application, so that the HRA can be efficiently carried out. If an AA is required, the applicant must provide the Secretary of State with such information as may reasonably be required to enable the Secretary of State to conduct the AA. This should include information on any mitigation measures that are proposed to minimise or avoid likely significant effects.
- 5.4.27 If, during the pre-application stage, the SNCB indicate that the proposed development is likely to adversely impact the integrity of habitat sites, the applicant must include with their application such information as may reasonably be required to assess a potential derogation under the Habitats Regulations.
- 5.4.28 If the SNCB gives such an indication at a later stage in the development consent process, the applicant must provide this

¹⁵⁹ The UK regulations on Ballast Water Management can be found here: <https://www.legislation.gov.uk/ukxi/2022/737/contents/made> Guidance has been published in MSN 1908: <https://www.gov.uk/government/publications/msn-1908-mf-the-merchant-shipping-control-and-management-of-ships-ballast-water-and-sediments-regulations-2022> and MGN 675: <https://www.gov.uk/government/publications/mgn-675-mf-the-merchant-shipping-control-and-management-of-ships-ballast-water-and-sediments-regulations-2022>

¹⁶⁰ See <https://gov.wales/marine-planning>

information as soon as is reasonably possible and before the close of the examination. This information must include assessment of alternative solutions, a case for IROPI and appropriate environmental compensation.

- 5.4.29 Provision of such information will not be taken as an acceptance of adverse impacts and if an applicant disputes the likelihood of adverse impacts, it can provide this information as part of its application 'without prejudice' to the Secretary of State's final decision on the impacts of the potential development. If, in these circumstances, an applicant does not supply information required for the assessment of a potential derogation, there will be no expectation that the Secretary of State will allow the applicant the opportunity to provide such information following the examination.
- 5.4.30 It is vital that applicants consider the need for compensation as early as possible in the design process as 'retrofitting' compensatory measures will introduce delays and uncertainty to the consenting process.
- 5.4.31 Applicants should work closely at an early stage in the pre-application process with SNCB and Defra/Welsh Government to develop a compensation plan for all protected sites adversely affected by the development. Applicants should engage with the relevant LPA at an early stage regarding the proposed location of compensatory measures. Applicants should also take account of any strategic plan level compensation plans in developing project level compensation plans.
- 5.4.32 Before submitting an application, applicants should seek the views of the SNCB and Defra/Welsh Government as to the suitability, securability and effectiveness of the compensation plan to ensure the development will not hinder the achievement of the conservation objectives for the protected site. In cases where such views are provided, the applicant should include a copy of this information with the compensation plan in their application for further consideration by the Examining Authority.

Applicant assessment – Ancient woodland, ancient trees, veteran trees and other irreplaceable habitats

- 5.4.33 Applicants should include measures to mitigate fully the direct and indirect effects of development on ancient woodland, ancient and

veteran trees or other irreplaceable habitats during both construction and operational phases¹⁶¹.

Applicant assessment – Protection and enhancement of habitats and species

- 5.4.34 Applicants should consider any reasonable opportunities to maximise the restoration, creation, and enhancement of wider biodiversity, and the protection and restoration of the ability of habitats to store or sequester carbon as set out under Section 4.6.
- 5.4.35 Consideration should be given to improvements to, and impacts on, habitats and species in, around and beyond developments, for wider ecosystem services and natural capital benefits, beyond those under protection and identified as being of principal importance. This may include considerations and opportunities identified through Local Nature Recovery Strategies, and national goals and targets set through the Environment Act 2021 and the Environmental Improvement Plan.

Mitigation

- 5.4.36 Applicants should include appropriate avoidance, mitigation, compensation and enhancement measures as an integral part of the proposed development. In particular, the applicant should demonstrate that:
- during construction, they will seek to ensure that activities will be confined to the minimum areas required for the works;
 - the timing of construction has been planned to avoid or limit disturbance;
 - during construction and operation best practice will be followed to ensure that risk of disturbance or damage to species or habitats is minimised, including as a consequence of transport access arrangements;
 - habitats will, where practicable, be restored after construction works have finished;
 - opportunities will be taken to enhance existing habitats rather than replace them, and where practicable, create new habitats of value within the site landscaping proposals. Where habitat creation is required as mitigation, compensation, or enhancement, the location and quality will be of key importance. In this regard habitat creation should be focused on areas where the most ecological and ecosystems benefits can be realised; and

¹⁶¹ Applicants in Wales should consult PPW 6.4.26.

- mitigations required as a result of legal protection of habitats or species will be complied with.
- 5.4.37 Applicants should produce and implement a Biodiversity Management Strategy as part of their development proposals. This could include provision for biodiversity awareness training to employees and contractors so as to avoid unnecessary adverse impacts on biodiversity during the construction and operation stages.
- 5.4.38 In the design of any direct cooling system the locations of the intake and outfall should be sited to avoid or minimise adverse impacts on the receiving waters, including their ecology. There should also be specific measures to minimise impact to fish and aquatic biota by entrainment and impingement or by excessive heat or biocidal chemicals from discharges to receiving waters.
- 5.4.39 To further minimise any adverse impacts on geodiversity, where appropriate applicants are encouraged to produce and implement a Geodiversity Management Strategy to preserve and enhance access to geological interest features, as part of relevant development proposals.

Secretary of State decision making

- 5.4.40 The government's Environmental Improvement Plan and the Environment Act 2021 mark a step change in ambition for wildlife and the natural environment. The Secretary of State should have regard to the aims and goals of the government's Environmental Improvement Plan, and in Wales the objectives of the Nature Recovery Plan, and any relevant measures and targets, including statutory targets set under the Environment Act or elsewhere.
- 5.4.41 In addition, in exercising functions in relation to Wales, the Secretary of State should consider section 6 of the Environment (Wales) Act 2016 and seek to maintain and enhance biodiversity, and in so doing promote the resilience of ecosystems, so far as consistent with the proper exercise of the Secretary of State's functions.
- 5.4.42 The benefits of nationally significant low carbon energy infrastructure development may include benefits for biodiversity and geological conservation interests and these benefits may outweigh harm to these interests. The Secretary of State may take account of any such net benefit in cases where it can be demonstrated.
- 5.4.43 As a general principle, and subject to the specific policies below, development should, in line with the mitigation hierarchy, aim to avoid significant harm to biodiversity and geological conservation interests,

including through consideration of reasonable alternatives (as set out in Section 4.3 above). Where significant harm cannot be avoided, impacts should be mitigated and as a last resort, appropriate compensation measures should be sought.

- 5.4.44 If significant harm to biodiversity resulting from a development cannot be avoided (for example through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then the Secretary of State will give significant weight to any residual harm.
- 5.4.45 The Secretary of State should consider what appropriate requirements should be attached to any consent and/or in any planning obligations entered into, in order to ensure that any mitigation or biodiversity net gain measures, if offered, are delivered and maintained. Any habitat creation or enhancement delivered including linkages with existing habitats for compensation or biodiversity net gain should generally be maintained for a minimum period of 30 years, or for the lifetime of the project, if longer.
- 5.4.46 The Secretary of State will need to take account of what mitigation measures may have been agreed between the applicant and the SNCB and the MMO/NRW (where appropriate). The Secretary of State will also need to consider whether the SNCB or the MMO/NRW has granted or refused, or intends to grant or refuse, any relevant licences, including protected species mitigation licences.
- 5.4.47 Development proposals provide many opportunities for building-in beneficial biodiversity or geological features as part of good design. The Secretary of State should give appropriate weight to environmental and biodiversity enhancements, although any weight given to gains provided to meet a legal requirement (for example under the Environment Act 2021) is likely to be limited.
- 5.4.48 When considering proposals, the Secretary of State should maximise such reasonable opportunities in and around developments, using requirements or planning obligations where appropriate. This can help towards delivering biodiversity net gain as part of or in addition to the approach set out at Section 4.6.
- 5.4.49 In taking decisions, the Secretary of State should ensure that appropriate weight is attached to designated sites of international, national, and local importance; protected species; habitats and other species of principal importance for the conservation of biodiversity; and to biodiversity and geological interests within the wider environment.

5.4.50 In making a decision, the Secretary of State must take into account any measures in relation to other plans or projects which are (i) located within the marine area and (ii) have been used or are identified for use to deliver:

- compensatory measures for adverse effects on Special Protection Areas and Special Areas of Conservation; or
- measures of equivalent environmental benefit for damage to MCZs.

Any impact which negatively impacts the efficacy of the measure will need to be offset to ensure the original compensation requirement is satisfied.

Secretary of State decision making – Habitats Regulations

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

Secretary of State decision making – Sites of Special Scientific Interest (SSSIs)

5.4.52 The Secretary of State should use requirements and/or planning obligations to mitigate the harmful¹⁶² aspects of the development and, where possible, to ensure the conservation and enhancement of the site's biodiversity or geological interest.

Secretary of State decision making – Marine Conservation Zones

5.4.53 The Secretary of State is bound by the duties on public authorities in relation to MCZs imposed by sections 125 and 126 of the Marine and Coastal Access Act 2009.

Secretary of State decision making – Regional and Local Sites

5.4.54 The Secretary of State should give due consideration to regional or local designations. However, given the need for new nationally significant infrastructure, these designations should not be used in themselves to refuse development consent.

Secretary of State decision making – Ancient woodland, ancient trees, veteran trees and other irreplaceable habitats

5.4.55 The Secretary of State should not grant development consent for any development that would result in the loss or deterioration of any irreplaceable habitats, including ancient woodland, and ancient and

¹⁶² In line with the principle in paragraph 4.3.8, the term 'harm' should be understood to mean 'significant harm'.

veteran trees unless there are wholly exceptional reasons¹⁶³ and a suitable compensation strategy exists.

Secretary of State decision making – Protection and enhancement of habitats and species

- 5.4.56 The Secretary of State should ensure that species and habitats identified as being of importance for the conservation of biodiversity are protected from the adverse effects of development by using requirements, planning obligations, or licence conditions where appropriate.
- 5.4.57 The Secretary of State should refuse consent where harm to a protected species and relevant habitat would result, unless there is an overriding public interest and the other relevant legal tests are met. In this context the Secretary of State should give substantial weight to any such harm to the detriment of biodiversity features of national or regional importance or the climate resilience and the capacity of habitats to store carbon, which they consider may result from a proposed development.

5.5 Civil and Military Aviation and Defence Interests

- 5.5.1 All aerodromes, covering civil and military activities, as well as aviation technical sites, meteorological radars and other types of defence interests (both onshore and offshore) can be affected by new energy development.
- 5.5.2 Collaboration and co-existence between aviation, defence and energy industry stakeholders should be strived for to ensure scenarios such that neither is unduly compromised.
- 5.5.3 Alongside defence and other infrastructure, energy infrastructure, such as wind turbines, are an established part of the current and expected built energy environment. However, issues such as the cumulative impact, location and increasing geographical spread and height of windfarms, can all potentially have a bearing on aviation safety, defence capabilities and weather warnings and forecasts.
- 5.5.4 Windfarms are an integral part of our plan to achieve Net Zero, as well as delivering affordable clean energy to consumers. The government has an ambition to accelerate the deployment of offshore and onshore wind to meet our Clean Power 2030 Mission and the Committee on

¹⁶³ For example where the public benefits (including need) of the nationally significant energy infrastructure would clearly outweigh the loss or deterioration of the habitat.

Climate Change's CB6 views wind, particularly offshore, as the backbone of electricity generation across all its scenarios. The Offshore Wind Sector Deal and Onshore Wind Taskforce Strategy confirmed that government will work collaboratively with the energy sector and wider stakeholders to address strategic deployment issues including aviation and surveillance systems including radar.

- 5.5.5 The full costs of the enduring air defence radar mitigation solutions identified by MOD's Programme NJORD are being funded through a government-delivered route. The funding requirement is therefore removed from offshore wind developers. This alternative funding route will support delivery of the Clean Power 2030 Mission by helping to accelerate the deployment of offshore wind, whilst delivering maximum value for money to the energy billpayer. This funding applies to the known pipeline of offshore wind projects as of August 2024, at the following four air defence radar sites: Buchan, Brizlee Wood, Neatishead and Staxton Wold. For onshore wind development which impacts military aviation, government is working at pace to seek an acceptable mitigation.
- 5.5.6 Government will consider funding radar mitigations for additional projects including at the three additional air defence radar sites (Benbecula, Portreath and Saxa Vord) subject to the project pipeline maturing sufficiently and any other relevant considerations at the time.

Aviation

- 5.5.7 UK airspace is important for both civilian and military aviation interests. It is essential that new energy infrastructure is developed collaboratively alongside aerodromes, aircraft, manned and unmanned air systems and airspace so that safety, operations and capabilities are not adversely affected by new energy infrastructure. Likewise, it is essential that aerodromes, aircraft, air systems and airspace operators work collaboratively with energy infrastructure developers essential for net zero. Aerodromes can have important economic and social benefits, particularly at the regional and local level, but their needs must be balanced with the urgent need for new energy developments, which bring about a wide range of social, economic and environmental benefits.
- 5.5.8 Commercial civil aviation is largely confined to designated corridors of controlled airspace and set approaches to airports. However, other aircraft often fly outside of 'controlled air space'.
- 5.5.9 The approaches and flight patterns to aerodromes can be irregular owing to a variety of factors including the performance characteristics of the aircraft concerned and the prevailing meteorological conditions.

It may be possible to adapt flight patterns to work alongside new energy infrastructure without impacting on aviation safety.

- 5.5.10 The Civil Aviation Authority (CAA) sets out in CAP764¹⁶⁴ policy and guidance on a range of issues associated with wind turbines and their effect on aviation that needs to be accounted for by aviation stakeholders, wind energy developers and LPAs when assessing the viability of wind turbine developments.

Safeguarding

- 5.5.11 Certain civil aerodromes, and aviation technical sites, selected on the basis of their importance to the national air transport system, are officially safeguarded in order to ensure that their safety and operation are not compromised by new development.
- 5.5.12 A similar official safeguarding system applies to all military aerodromes, defence surveillance sites, and other defence assets.
- 5.5.13 Areas of airspace around aerodromes used by aircraft, including taking off or on approach and landing are described as “obstacle limitation surfaces” (OLS). All civil aerodromes licensed by the CAA and all military aerodromes must comply with the OLS. These are defined according to criteria set out in relevant CAA guidance¹⁶⁵ for licensed civil aerodromes and according to Ministry of Defence (MOD) criteria, as set by the Military Aviation Authority, which is part of the Defence Safety Authority (DSA), for military aerodromes.
- 5.5.14 Aerodromes that are officially safeguarded will have officially produced plans that show the OLS. Care must be taken to ensure that new developments do not infringe these protected OLS except where an aerodrome operator has considered the development and either determined there to be no adverse impact or agreed an acceptable mitigation can be put in place, as these encompass the critical airspace within which key air traffic associated with the aerodrome operates.
- 5.5.15 The CAA’s CAP 738¹⁶⁶ sets out that all licensed aerodromes are required to ensure they have a system in place to safeguard their aerodrome against the growth of obstacles or activities that may present a hazard to aircraft operations.

¹⁶⁴ CAA CAP 764: Policy and Guidance on Wind Turbines: See <https://www.caa.co.uk/publication/download/14561>

¹⁶⁵ CAA CAP 168: Licensing of Aerodromes: See <https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=6114>

¹⁶⁶ See <https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=576>

- 5.5.16 It is considered best practice for the LPA to include the safeguarded area and explanatory notes on its planning 'constraints' plan so that potential applicants can be aware of the presence of the aerodrome and the extent and nature of the safeguarding relevant to a particular aerodrome. DfT/ODPM Circular 01/2003¹⁶⁷ provides advice to planning authorities on the official safeguarding of aerodromes and includes a list of the civil aerodromes which are officially safeguarded.
- 5.5.17 The DfT/ODPM Circular 01/2003 and CAA guidance also recommends that the operators of aerodromes which are not officially safeguarded should take steps to protect their aerodrome from the possible effects of development by establishing an agreed consultation procedure between themselves and the LPAs.
- 5.5.18 The certified Safeguarding maps for all aerodromes (both licensed and unlicensed) depicting the OLS and other criteria (for example to minimise "birdstrike" hazards) are deposited with the relevant LPAs.
- 5.5.19 The CAA makes clear that the responsibility for the safeguarding of General Aviation aerodromes lies with the aerodrome operator.
- 5.5.20 There are also "Public Safety Zones" (PSZs) at the end of runways of the busiest airports in the UK, within which development is restricted to minimise risks to people on the ground in the event of an aircraft accident on take-off or landing. Maps showing the PSZs are deposited with the relevant LPAs. DfT Circular 01/2010 provides advice to LPAs on Public Safety Zones¹⁶⁸.
- 5.5.21 The Military Low Flying System covers the whole of the UK and enables low flying activities as low as 75m (mean separation distance). A considerable amount of military flying for training purposes is conducted at as low as 30m in designated Tactical Training Areas (TTAs) in mid Wales, Cumbria, the Scottish Border region and in the Electronic Warfare Range in the Scottish Border area. In addition, military helicopters may operate down to ground level.
- 5.5.22 New energy infrastructure may cause obstructions in MOD low flying areas. A balance must be struck between defence and energy needs in these areas.

¹⁶⁷ DfT/ODPM Circular 01/2003: Safeguarding, Aerodromes, Technical Sites and Military Explosives Storage Areas.

¹⁶⁸ DfT circular 01/2010: Control of Development in Airport Public Safety Zones: See <https://www.gov.uk/government/publications/control-of-development-in-airport-public-safety-zones>

- 5.5.23 Sufficient air training space and space for civil operations will be required and operation around structures such as wind turbines will become increasingly important as the number of these structures increase.

Communications, navigation and surveillance (CNS) infrastructure

- 5.5.24 Safe and efficient operations within UK airspace and defence operations are dependent upon CNS infrastructure, which includes assets that facilitate radio communications, navigational and landing systems, and radars such as those used to facilitate air defence and air traffic management (often referred to as ‘technical sites’). Energy infrastructure development may interfere with the operation of CNS systems such as radar. This is a particular problem for wind turbines as they can act as a reflector or diffractor of radio signals upon which Air Traffic Control Services and Air Defence Operations rely (an effect which is particularly likely to arise when large structures, such as wind turbines, are near Communications and Navigation Aids and technical sites). Wind turbines may also cause false returns and other technical issues when built in line of sight to radar installations. Windfarms are an integral part of the plan to achieve Net Zero, as well as delivering affordable clean energy to consumers. The government has an ambition to accelerate the deployment of offshore and onshore wind to meet our Clean Power 2030 Mission and the Committee on Climate Change’s 6th CB6 views wind, particularly offshore wind, as the backbone of electricity generation across all its scenarios. The Offshore Wind Sector Deal and the Onshore Wind Taskforce Strategy confirmed that government will work collaboratively with the energy sector and wider stakeholders to address strategic deployment issues including aviation and surveillance systems including radar.
- 5.5.25 Whilst it is hoped that future surveillance technologies will enable civil and military aviation, defence and meteorological surveillance providers and windfarms to meet coexistence challenges, it should not be assumed, however, that there will be sufficient advancement in surveillance technologies to meet all future requirements. A “system of systems” approach may help address the impacts on air surveillance and routine air traffic control operations for those windfarms that exist when radar or other surveillance systems are procured, however this can add complexity to aviation safety assurance and operating practices.
- 5.5.26 Surveillance methods that rely on cooperation alone, such as Automatic Dependent Surveillance – Broadcast (ADS-B) or Secondary Surveillance Radar transponders, are not sufficient to meet the UK’s

security and national defence requirements nor would they assure the flight safety of air traffic from non-cooperative threats.

- 5.5.27 MOD recognises that the environmental baseline includes existing windfarms and any mitigation solutions that have been established to support them when procuring future radar systems.
- 5.5.28 As existing CNS infrastructure reaches the end of its operational life, replacement options that are more tolerant of wind turbines, if available, should be installed by CNS owners/operators to futureproof, so far as is practicable, aerodromes against possible future turbine installations in order to maintain or enhance aviation safety. This should be considered on a case-by-case basis, so that the correct solution(s) are identified which strike the balance between surveillance quality/needs and reasonableness of costs being achieved, whilst maintaining safety.
- 5.5.29 Applicants should provide relevant information on proposed developments to enable CNS owners/operators to consider upgrades appropriately.

Weather warnings and forecasts

- 5.5.30 The UK weather radar network is composed of 15 weather radars that are operated and maintained by the Met Office. Each radar provides data out to 255km that underpin the Public Weather Service and the provision of critical meteorological information to a range of stakeholders including aviation, defence, civil contingencies, and the wider UK population and, in the case of severe weather, through the National Severe Weather Warning Service (NSWWS).
- 5.5.31 Weather radars are currently the only means of detecting the presence and location of precipitation in real time. The main hazard from precipitation is flooding and assessment of the potential flood impacts are carried out in consultation with the UK's authoritative flood agencies.
- 5.5.32 Some energy structures, such as wind turbines, have the potential to adversely impact weather radar signals. This can lead to downstream impacts in meteorological and hydrological warning systems that use radar data, which in turn decreases the credibility of warning systems. For example, when the size of the affected area exceeds the typical size of storms, warning systems may miss the initial stages of a significant rainfall event, which can cause delays in issuing warnings.
- 5.5.33 The Met Office protects its weather radars by engaging in the formal planning consultation process. Met Office weather radars are officially

safeguarded¹⁶⁹ and as per Secretary of State direction will be consulted directly on all relevant applicable planning applications within safeguarded zones by LPAs¹⁷⁰.

Other defence interests

- 5.5.34 The MOD operates military training areas, military danger zones (offshore Danger and Exercise areas), military explosives storage areas and TTAs. There are extensive Danger and Exercise Areas across the UKCS for military firing and highly surveyed routes to support government shipping that are essential for national defence. In addition, the MOD retains defence maritime navigational capabilities throughout the UKCS to maintain national defence.
- 5.5.35 Other operational defence assets may be affected by new development, for example non-aviation technical equipment such as: the Seismological Monitoring Station at Eskdalemuir; maritime acoustic facilities; communications installations including satellite ground stations; and range control radars.
- 5.5.36 It is important that new energy infrastructure does not unacceptably impede or compromise the safe and effective use of any defence assets or operations.
- 5.5.37 The joint industry and government Air Defence and Offshore Wind Mitigation Task Force was set up to enable the co-existence of UK Air Defence and offshore wind. The Strategy and Implementation Plan¹⁷¹, including future iterations, sets the direction for that collaboration. The recommendations generated from this Task Force should be referred to by both defence and energy stakeholders.

Applicant assessment

- 5.5.38 Where the proposed development may affect the performance of civil or military aviation CNS, meteorological radars and/or other defence assets an assessment of potential effects should be set out in the ES (see Section 4.3).

¹⁶⁹ Town & Country Planning (Safeguarded Meteorological Sites) (England) Direction 2014, The Town and Country Planning (Safeguarded Aerodromes, Technical Sites, Meteorological Technical Sites and Military Explosives Storage Areas) (Scotland) Direction 2016), Town and Country Planning (Crug-yGorllwyn) Technical Site Direction (2016), Town and Country Planning (Safeguarded Meteorological Sites) Order 2014, Meteorological (Castor Bay) Technical Sites Direction

¹⁷⁰ See <https://www.gov.uk/guidance/consultation-and-pre-decision-matters#safeguarding-directions>

¹⁷¹ See <https://www.gov.uk/government/publications/air-defence-and-offshore-wind-working-together-towards-net-zero/air-defence-and-offshore-wind-working-together-towards-net-zero>

- 5.5.39 The requirement for ATC and non-cooperative surveillance – i.e. radar/tracking technologies – forms part of the environmental baseline for proposed developments.
- 5.5.40 The applicant should consult the MOD, Met Office, Civil Aviation Authority (CAA), NATS and any aerodrome – licensed or otherwise – likely to be affected by the proposed development in preparing an assessment of the proposal on aviation, meteorological or other defence interests.
- 5.5.41 Any assessment of effects on aviation, meteorological or other defence interests should include potential impacts of the project upon the operation of CNS infrastructure, Instrument Flight Procedures, flight patterns (both civil and military), generation of weather warnings and forecasts, other defence assets (including radar) and aerodrome operational procedures. It should also assess the demonstratable cumulative effects¹⁷² of the project with other relevant projects in relation to aviation, meteorological and defence.
- 5.5.42 In addition, consideration of developments near aerodromes should take into account the following factors:
- Bird Strike Risk – Aircraft are vulnerable to wildlife strike, in particular bird strike. Birds and other wildlife may be attracted to the vicinity of an aerodrome by various types of development, for example, large buildings with perching/roosting opportunities for birds. It is therefore important that infrastructure, buildings and other elements from energy installations, as well as environmental mitigation and enhancement are designed in such a way so as not to increase the bird strike risk to the airport for developments within 13km (this can vary)¹⁷³.
 - Building Induced Turbulence – If a significant building or structure is proposed close to the airport/runways, there is potential for building induced turbulence/wind shear to be created which has the potential to impact on aircraft on take-off and landing. Studies may be required to identify the extent of any turbulence resulting from the energy infrastructure.
 - Thermal Plume Turbulence – This is caused under certain conditions by the release of hot air from a power plant equipped with a dry cooling system. The plumes generated by these facilities

¹⁷² It may not always be appropriate to share the detailed bases of defence asset assessments on security grounds, to avoid exposing vulnerabilities that could be exploited by potential adversaries.

¹⁷³ CAP 772 Wildlife Hazard Management at Aerodromes

have the potential to create invisible turbulence that can affect the manoeuvrability of aircraft.

- 5.5.43 In addition, consideration of development near communication, navigation, and surveillance (CNS) infrastructure should take into account statutory technical safeguarding zones defined in accordance with Planning Circular 01/03, or any successor, and the potential for energy development, and/or its supporting infrastructure, to produce electro-magnetic and electrical noise interference which may degrade the capability or operation of defence CNS infrastructure.
- 5.5.44 If any relevant changes are made to proposals during the pre-application and determination period, it is the responsibility of the applicant to ensure that the relevant aviation, meteorological and defence consultees are informed as soon as reasonably possible.

Mitigation

- 5.5.45 The applicant should include appropriate mitigation measures as an integral part of the proposed development.
- 5.5.46 Mitigation for infringement of OLS may include¹⁷⁴:
- Agreed changes to operational procedures of the aerodromes in accordance with relevant guidance, provided that safety assurances can be provided by the operator that are acceptable to the CAA where the changes are proposed to a civilian aerodrome. Applicants should engage airport operators at an early stage of the planning process to understand the potential impacts of development on aviation operations and develop mitigations if appropriate; or
 - Installation of obstacle lighting and/or by notification in Aeronautical Information Service publications
- 5.5.47 For CNS infrastructure, the UK Military Low Flying System (including TTAs) and designated air traffic routes, mitigation may also include:
- Operational airspace changes;
 - Agreement to upgrade CNS infrastructure, the cost of which the applicant will be required to fund until the end of the life of the surveillance equipment unless or until such time as the affected CNS infrastructure may be replaced by a fully windfarm tolerant system. If an appropriate system upgrade cannot be identified at the point of application, the applicant will be required to fund any future upgrade for the lifetime of the wind farm. MOD will engage

¹⁷⁴ Where mitigation is required using a condition or planning obligation, the tests set out at paragraphs 4.1.5 – 4.1.7 in EN-1 should be applied.

early with developers to ensure that costs are reflective of their need and impacts of the energy installation on the monitoring equipment;

- Introducing commercially viable radar mitigation technology to the development, e.g. by using non-radar reflecting materials to manufacture wind turbine blades.

5.5.48 Mitigation for effects on meteorological radar and CNS systems may include reducing the scale of a project, although it is likely to be unreasonable for the Secretary of State to require mitigation by way of a reduction or alteration in the scale of development.

5.5.49 There may be exceptional circumstances where a small reduction in the scale of a development and any associated reduction in generating capacity, will result in proportionately greater mitigation for radar and CNS systems. In these cases, the Secretary of State may consider that the benefits to CNS and radar mitigation outweighs this loss of capacity.

5.5.50 Consideration from energy stakeholders should also be given to the possibility of introducing commercially viable radar mitigation technology as windfarm assets are renewed and replaced e.g., by using non-radar reflecting materials to manufacture turbine blades.

Secretary of State decision making

5.5.51 The Secretary of State should be satisfied that the effects on meteorological radars, civil and military aerodromes, aviation technical sites and other defence assets or operations have been addressed by the applicant and that any necessary assessment of the proposal on aviation, NSWWS or defence interests has been carried out.

5.5.52 In particular, the Secretary of State should be satisfied that the proposal has been designed, where possible, to minimise adverse impacts on the operation and safety of aerodromes and that realistically achievable mitigation is carried out on existing surveillance systems such as radar/tracking technologies. It is incumbent on Operators of aerodromes to regularly review the possibility of agreeing to make reasonable changes to operational procedures.

5.5.53 When assessing the necessity, acceptability, and reasonableness of operational changes to aerodromes, the Secretary of State should be satisfied that they have the necessary information regarding the operational procedures along with any demonstrable risks or harm of such changes, taking into account the cases put forward by all parties. When making such a judgement in the case of military aerodromes,

the Secretary of State should have regard to interests of defence and national security.

- 5.5.54 In the case of meteorological radars, the Secretary of State should consider the extent to which the provision of weather and flood warnings is compromised.
- 5.5.55 If there are conflicts between the government's energy and transport policies and military interests in relation to the application, the Secretary of State should expect the relevant parties to have made appropriate efforts to work together to identify realistic and pragmatic solutions to the conflicts. In so doing, the parties should seek to protect the aims and interests of the other parties as far as possible, recognising simultaneously the evolving landscape in terms of the UK's energy security and the need to tackle climate change, which necessitates the installation of wind turbines, and the need to maintain air safety and national defence and the national weather warning service.
- 5.5.56 There are statutory requirements concerning lighting to tall structures¹⁷⁵. Where lighting is requested on structures that goes beyond statutory requirements by any of the relevant aviation and defence consultees, the Secretary of State should be satisfied of the necessity of such lighting taking into account the case put forward by the consultees. The effect of such lighting on the landscape and ecology may be a relevant consideration.
- 5.5.57 Lighting must also be designed in such a way as to ensure that there is no glare or dazzle to pilots and/or ATC, aerodrome ground lighting is not obscured and that any lighting does not diminish the effectiveness of aeronautical ground lighting and cannot be confused with aeronautical lighting. Lighting may also need to be compatible with night vision devices for military low flying purposes.
- 5.5.58 Where new technologies to mitigate the adverse effects of wind farms on CNS infrastructure, such as radar, are concerned, the Secretary of State should have regard to any Civil Aviation Authority Guidelines and/or government guidance which emerges from existing and future including the joint government/Industry Aviation Management Board and the Joint Air Defence and Offshore Wind Task Force.
- 5.5.59 In order to avoid unacceptable adverse impacts of electro-magnetic and electrical noise interference from energy development, and/or its supporting infrastructure, and associated infrastructure on defence

¹⁷⁵ Articles 222 and 223 of the Air Navigation Order 2016.

technical assets and operations, the Secretary of State will take account of statutory technical safeguarding zones defined in accordance with Planning Circular 01/03, or any successor, when considering DCO applications.

5.5.60 Where suitable technological solutions have not yet been developed or proven, the Secretary of State will need to consider the likelihood of a solution becoming available within the time limit for implementation of the Development Consent Order.

5.5.61 Where a proposed energy infrastructure development would significantly impede or compromise the safe and effective use of civil or military aviation, meteorological radars, defence assets and/or significantly limit military training, the Secretary of State may consider the use of 'Grampian conditions'¹⁷⁶, or other forms of requirement which relate to the use of current or future technological solutions, to mitigate impacts on legacy CNS equipment.

5.5.62 Where, after reasonable mitigation, operational changes, obligations and requirements have been proposed, the Secretary of State should consider whether:

- a development would prevent a licensed aerodrome from maintaining its licence and the operational loss of the said aerodrome would have impacts on national security and defence, or result in substantial local/national economic loss, or emergency service needs
- it would cause harm to aerodromes' training or emergency service needs
- the development would impede or compromise the safe and effective use of defence assets or unacceptably limit military training
- the development would have a negative impact on the safe and efficient provision of en-route air traffic control services for civil aviation, in particular through an adverse effect on CNS infrastructure
- the development would compromise the effective provision of weather warnings by the NSWWS, or flood warnings by the UK's flood agencies

¹⁷⁶ As set out on See <https://www.gov.uk/guidance/use-of-planning-conditions>, a Grampian condition refers to a condition worded in a negative form, i.e. prohibiting development authorised by the planning permission or other aspects linked to the planning permission (e.g. occupation of premises) until a specific action has been taken (such as the provision of supporting infrastructure).

- 5.5.63 Provided that the Secretary of State is satisfied that the impacts of proposed energy developments do not present risks to national security and physical safety, and where they do, provided that the Secretary of State is satisfied that appropriate mitigation can be achieved, or appropriate requirements can be attached to any Development Consent Order to secure those mitigations, consent may be granted.

5.6 Coastal Change

- 5.6.1 The National Flood and Coastal Erosion Risk Management Strategy for England sets a long-term vision for a nation ready for, and resilient to, flooding and coastal change. The Government is committed to supporting coastal communities and ensuring flood risk management is fit for the challenges we face now and in the future. This means planning should:
- ensure that policies and decisions in coastal areas are based on an understanding of coastal change over time
 - prevent new development from being put at risk from coastal change by:
 - i. avoiding inappropriate development in areas that are vulnerable to coastal change or any development that adds to the impacts of physical changes to the coast
 - ii. directing development away from areas vulnerable to coastal change
 - ensure that the risk to development which is, exceptionally, necessary in coastal change areas because it requires a coastal location and provides substantial economic and social benefits to communities, is managed over its planned lifetime
 - ensure that plans are in place to secure the long-term sustainability of coastal areas
- 5.6.2 For the purpose of this section, coastal change means physical change to the shoreline, i.e. erosion, coastal landslide, permanent inundation and coastal accretion.
- 5.6.3 Where onshore infrastructure projects are proposed on the coast, coastal change is a key consideration as well as a vital element of climate change adaptation (see Section 4.10).
- 5.6.4 Some kinds of coastal change happen very gradually, others over shorter timescales. Some are the result of purely natural processes while others, including potentially significant modifications of the

coastline or coastal environment resulting from climate change, are wholly or partly man-made. This section concerns both the impacts which energy infrastructure can have as a driver of coastal change, and how to ensure that developments are resilient to ongoing and potential future coastal change.

- 5.6.5 The construction of an onshore energy project on the coast may involve, for example, dredging, dredge spoil deposition, cooling water, culvert construction, marine landing facility construction and flood and coastal protection measures which could result in direct effects on the coastline, seabed and marine ecology and biodiversity.
- 5.6.6 Additionally, indirect changes to the coastline and seabed might arise as a result of a hydrodynamic response to some of these direct changes. This could lead to localised or more widespread coastal erosion or accretion and changes to offshore features such as submerged banks and ridges, marine biodiversity and heritage assets.
- 5.6.7 This section only applies to onshore energy infrastructure projects situated on the coast. The impacts of offshore renewable energy projects on marine life and coastal geomorphology are considered in EN-3.
- 5.6.8 Section 5.4 on biodiversity and geological conservation, Section 5.8 on flood risk and Section 4.10 on adaptation to climate change, including the increased risk of coastal erosion, are also relevant, as is advice on access to coastal recreation sites and features in Section 5.11 on land use. Advice on the historic environment in Section 5.9 may also be relevant.

Applicant assessment

- 5.6.9 Where relevant, applicants should undertake coastal geomorphological and sediment transfer modelling to predict and understand impacts and help identify relevant mitigating or compensatory measures.
- 5.6.10 The ES (see Section 4.3) should include an assessment of the effects on the coast, tidal rivers and estuaries. In particular, applicants should assess:
 - The impact of the proposed project on coastal processes and geomorphology, including by taking account of potential impacts from climate change. If the development will have an impact on coastal processes the applicant must demonstrate how the impacts will be managed to minimise adverse impacts on other parts of the coast;

- The implications of the proposed project on strategies for managing the coast as set out in Shoreline Management Plans (SMPs)¹⁷⁷ (which are designed to identify the most sustainable approach to managing flood and coastal erosion risks from short to long term and are long term non-statutory plans which set out the agreed high-level objective for coastal flooding and erosion management for each SMP area), any relevant Marine Plans, River Basin Management Plans, and capital programmes for maintaining flood and coastal defences and Coastal Change Management Areas;
 - The effects of the proposed project on marine ecology, biodiversity, protected sites and heritage assets;
 - How coastal change could affect flood risk management infrastructure, drainage and flood risk;
 - The effects of the proposed project on maintaining coastal recreation sites and features;
 - The vulnerability of the proposed development to coastal change, taking account of climate change, during the project's operational life and any decommissioning period.
- 5.6.11 For any projects involving dredging or deposit of any substance or object into the sea, the applicant should consult the MMO and Historic England or the NRW in Wales. Where a project has the potential to have a major impact in this respect, this is covered in the technology specific NPSs. For example, EN-4 looks further at the environmental impacts of dredging in connection with Liquefied Natural Gas (LNG) tanker deliveries to LNG import facilities.
- 5.6.12 The applicant should be particularly careful to identify any effects of physical changes on the integrity and special features of MPAs. These could include MCZs, habitat sites including Special Areas of Conservation and Special Protection Areas with marine features, Ramsar Sites, Sites of Community Importance, and SSSIs with marine features. Applicants should also identify any effects on the special character of Heritage Coasts¹⁷⁸.
- 5.6.13 Applicants must demonstrate that full account has been taken of the policy on assessment and mitigation in paragraphs 4.3.1 to 4.3.9 of this NPS, taking account of the potential effects of climate change on these risks.

¹⁷⁷ See <https://www.gov.uk/government/publications/shoreline-management-plans-smpls>

¹⁷⁸ See <https://www.gov.uk/government/publications/heritage-coasts-protecting-undeveloped-coast/heritage-coasts-definition-purpose-and-natural-englands-role>

Mitigation

- 5.6.14 Applicants should propose appropriate mitigation measures to address adverse physical changes to the coast, in consultation with the MMO, the EA or NRW, LPAs, other statutory consultees, Coastal Partnerships and other coastal groups, as it considers appropriate. Where this is not the case, the Secretary of State should consider what appropriate mitigation requirements might be attached to any grant of development consent.

Secretary of State decision making

- 5.6.15 The Secretary of State should be satisfied that the proposed development will be resilient to coastal erosion and deposition, taking account of climate change, during the project's operational life and any decommissioning period. Proposals that aim to facilitate the relocation of existing energy infrastructure from unsustainable locations which are at risk from coastal change, should be supported where it would result in climate resilient infrastructure.
- 5.6.16 The Secretary of State should not normally consent new development in areas of dynamic shorelines where the proposal could inhibit sediment flow or have an adverse impact on coastal processes at other locations. Impacts on coastal processes must be managed to minimise adverse impacts on other parts of the coast. Where such proposals are brought forward, consent should only be granted where the Secretary of State is satisfied that the benefits (including need) of the development outweigh the adverse impacts.
- 5.6.17 The Secretary of State should ensure that applicants have restoration plans for areas of foreshore disturbed by direct works and will undertake pre- and post-construction coastal monitoring arrangements with defined triggers for intervention and restoration.
- 5.6.18 The Secretary of State should examine the broader context of coastal protection around the proposed site, and the influence in both directions, i.e. coast on site, and site on coast.
- 5.6.19 The Secretary of State should consult the MMO on projects which could impact on coastal change in England, or NRW for projects in Wales, since the MMO or NRW may also be involved in considering other projects which may have related coastal impacts.
- 5.6.20 In addition to this NPS, the Secretary of State must have regard to the appropriate marine policy documents in taking any decision which relates to the exercise of any function capable of affecting any part of the UK marine area.

- 5.6.21 The Secretary of State should also have regard to any relevant Shoreline Management Plans¹⁷⁹.
- 5.6.22 Substantial weight should be attached to the risks of flooding and coastal erosion and the Secretary of State should be satisfied that the applicant has taken full account of the policy on assessment and mitigation in paragraphs 4.3.1 to 4.3.9 of this NPS, taking account of the potential effects of climate change on these risks.

5.7 Dust, Odour, Artificial Light, Smoke, Steam, and Insect Infestation

- 5.7.1 During the construction, operation and decommissioning of energy infrastructure there is potential for the release of a range of emissions such as odour, dust, steam, smoke, artificial light and infestation of insects. All have the potential to have a detrimental impact on amenity or cause a common law nuisance or statutory nuisance under Part III, Environmental Protection Act 1990. However, they are not regulated by the environmental permitting regime, so mitigation of these impacts will need to be included in the Development Consent Order.
- 5.7.2 Note that pollution impacts from some of these emissions (for example dust, smoke) are covered in the Section 5.2 on air emissions.
- 5.7.3 Because of the potential effects of these emissions and infestation, and in view of the availability of the defence of statutory authority against nuisance claims described in Section 4.15, it is important that the potential for these impacts is considered by the applicant and Secretary of State.
- 5.7.4 For energy NSIPs of the type covered by this NPS, some impact on amenity for local communities is likely to be unavoidable. The aim should be to keep impacts to a minimum, and at a level that is acceptable.

¹⁷⁹ Shoreline management plans are developed by Coastal Groups with members mainly from local councils and the EA. They identify the most sustainable approach to managing the flood and coastal erosion risks to the coastline in the short term (0 to 20 years), medium term (20 to 50 years) and the long term (50 to 100 years). The Shoreline Management Plan is available online at: <https://www.gov.uk/government/publications/shoreline-management-plans-smpps>

Applicant assessment

- 5.7.5 The applicant should assess the potential for insect infestation and emissions of odour, dust, steam, smoke, and artificial light to have a detrimental impact on amenity, as part of the ES.
- 5.7.6 In particular, the assessment provided by the applicant should describe:
- the type, quantity and timing of emissions
 - aspects of the development which may give rise to emissions
 - premises or locations that may be affected by the emissions
 - effects of the emission on identified premises or locations
 - measures to be employed in preventing or mitigating the emissions
- 5.7.7 The applicant is advised to consult the relevant LPA and, where appropriate, the EA about the scope and methodology of the assessment.

Mitigation

- 5.7.8 Mitigation measures may include one or more of the following:
- engineering: prevention of a specific emission at the point of generation; control, containment and abatement of emissions if generated
 - lay-out: adequate distance between source and sensitive receptors; reduced transport or handling of material
 - administrative: limiting operating times; restricting activities allowed on the site; implementing management plans
- 5.7.9 Construction should be undertaken in a way that reduces emissions, for example the use of low emission mobile plant during the construction, and demolition phases as appropriate, and consideration should be given to making these mandatory in Development Consent Order requirements.
- 5.7.10 Demolition considerations should be embedded into designs at the outset to enable demolition techniques to be adopted that remove the need for explosive demolition.
- 5.7.11 A construction management plan may help clarify and secure mitigation.

Secretary of State decision making

5.7.12 The Secretary of State should satisfy itself that:

- an assessment of the potential for artificial light, dust, odour, smoke, steam and insect infestation to have a detrimental impact on amenity has been carried out
- that all reasonable steps have been taken, and will be taken, to minimise any such detrimental impacts

5.7.13 If development consent is granted for a project, the Secretary of State should consider whether there is a justification for all of the authorised project (including any associated development) to be covered by a defence of statutory authority against nuisance claims. If the Secretary of State cannot conclude that this is justified, the Secretary of State should disapply in whole or in part the defence through a provision in the Development Consent Order.

5.7.14 Where the Secretary of State believes it appropriate, the Secretary of State may consider attaching requirements to the development consent, to secure certain mitigation measures.

5.7.15 In particular, the Secretary of State should consider whether to require the applicant to abide by a scheme of management and mitigation concerning insect infestation and emissions of odour, dust, steam, smoke, and artificial light from the development. The Secretary of State should consider the need for such a scheme to reduce any loss to amenity which might arise during the construction, operation and decommissioning of the development. A construction management plan may help codify mitigation at that stage.

5.8 Flood Risk

5.8.1 Flooding is a natural process that plays an important role in shaping the natural environment. However, flooding threatens life and causes substantial disruption and damage to property.

5.8.2 The effects of weather events on the natural environment, life and property can be increased in severity both as a consequence of decisions about the location, design and nature of settlement and land use, and as a potential consequence of future climate change. Having resilient energy infrastructure not only reduces the risk of flood damages to the infrastructure, it also reduces the disruptive impacts of flooding on those homes and businesses that rely on that infrastructure. Although flooding cannot be wholly prevented, its

adverse impacts can be avoided or reduced through good planning and management.

- 5.8.3 Protecting communities around the country from flooding is one of the government's priorities. The EA has a statutory duty to publish the National Flood and Coastal Erosion Risk Management Strategy for England. The Strategy describes what needs to be done by all risk management authorities involved in flood and coastal erosion risk management for the benefit of people and places. The industry should consider any updates to government policies and the statutory Strategy and apply updated approaches as a matter of priority.
- 5.8.4 All buildings in flood risk areas can improve their preparedness to reduce costs and disruption to key public services when a flood happens. Where infrastructure is not better protected as part of a wider community scale flood defence scheme, those who own and run infrastructure sites – whether in public or private hands – are expected to take action to keep water out, minimise the damage if water gets in through flood-resilient materials, and reduce the disruption caused. This includes effective contingency planning to mitigate the impacts of flooding on the delivery of important services.
- 5.8.5 Climate change is already having an impact and is expected to have an increasing impact on the UK throughout this century. The UK Climate Projections 2018¹⁸⁰ show an increased chance of milder, wetter winters and hotter, drier summers in the UK, with more intensive rainfall causing flooding. Sea levels will continue to rise beyond the end of the century, increasing risks to vulnerable coastal communities. Within the lifetime of energy projects, these factors will lead to increased flood risks in areas susceptible to flooding, and to an increased risk of the occurrence of floods in some areas which are not currently thought of as being at risk. A robust approach to flood risk management is a vital element of climate change adaptation; the applicant and the Secretary of State should take account of the policy on climate change adaptation in Section 4.10.
- 5.8.6 The aims of planning policy on development and flood risk are to ensure that flood risk from all sources of flooding is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to steer new development to areas with the lowest risk of flooding.

¹⁸⁰ See

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69257/pb13274-uk-climate-projections-090617.pdf

- 5.8.7 Where new energy infrastructure is, exceptionally, necessary in flood risk areas (for example where there are no reasonably available sites in areas at lower risk), policy aims to make it safe for its lifetime without increasing flood risk elsewhere and, where possible, by reducing flood risk overall. It should also be designed and constructed to remain operational in times of flood.
- 5.8.8 Proposals that aim to facilitate the relocation of existing energy infrastructure from unsustainable locations which are or will be at unacceptable risk of flooding, should be supported where it would result in climate-resilient infrastructure.
- 5.8.9 If, following application of the Sequential Test¹⁸¹, it is not possible (taking into account wider sustainable development objectives) for the project to be located in areas of lower flood risk, the Exception Test can be applied as defined in Table 2 of the Flood Risk and Coastal Change Guidance¹⁸². The test provides a method of allowing necessary development to go ahead in situations where suitable sites at lower risk of flooding are not available.
- 5.8.10 The Exception Test¹⁸³ is only appropriate for use where the Sequential Test alone cannot deliver an acceptable site. It would only be appropriate to move onto the Exception Test when the Sequential Test has identified reasonably available, lower risk sites appropriate for the proposed development where, accounting for wider sustainable development objectives, application of relevant policies would provide a clear reason for refusing development in any alternative locations identified. Examples could include alternative site(s) that are subject to national designations such as landscape, heritage and nature conservation designations, for example National Landscapes, SSSIs and World Heritage Sites (WHS) which would not usually be considered appropriate.
- 5.8.11 Both elements of the Exception Test will have to be satisfied for development to be consented. To pass the Exception Test it should be demonstrated that:
- The project would provide wider sustainability benefits to the community¹⁸⁴ that outweigh flood risk; and

¹⁸¹ See <https://www.gov.uk/guidance/flood-risk-and-coastal-change#the-sequential-approach-to-the-location-of-development>

¹⁸² See <https://www.gov.uk/guidance/flood-risk-and-coastal-change#table2>

¹⁸³ See <https://www.gov.uk/guidance/flood-risk-and-coastal-change#the-exception-test>

¹⁸⁴ These would include the benefits (including need), for the infrastructure set out in Part 3.

- The project will be safe for its lifetime, taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.
- 5.8.12 Development should be designed to ensure there is no increase in flood risk elsewhere, accounting for the predicted impacts of climate change throughout the lifetime of the development. There should be no net loss of floodplain storage and any deflection or constriction of flood flow routes should be safely managed within the site. Mitigation measures should make as much use as possible of natural flood management techniques.

Applicant assessment

- 5.8.13 A site-specific flood risk assessment should be provided for all energy projects in Flood Zones 2 and 3 in England or Defended Flood Zones and Flood Zones 2 and 3 in Wales. In Flood Zone 1 in England or Flood Zone 1 in Wales, an assessment should accompany all proposals involving:
- sites of 1 hectare or more
 - land which has been identified by the EA or NRW as having critical drainage problems
 - land identified (for example in a local authority strategic flood risk assessment) as being at increased flood risk in future
 - land that may be subject to other sources of flooding (for example surface water)
 - where the EA or NRW, Lead Local Flood Authority, Internal Drainage Board or other body have indicated that there may be drainage problems.
- 5.8.14 This assessment should identify and assess the risks of all forms of flooding to and from the project and demonstrate how these flood risks will be managed, taking climate change into account.
- 5.8.15 The minimum requirements for Flood Risk Assessments (FRA) are that they should:
- Be proportionate to the risk and appropriate to the scale, nature and location of the project;
 - Consider the risk of flooding arising from the project in addition to the risk of flooding to the project;

- Take the impacts of climate change into account, across a range of climate scenarios, clearly stating the development lifetime over which the assessment has been made¹⁸⁵;
- Be undertaken by competent people, as early as possible in the process of preparing the proposal;
- Consider both the potential adverse and beneficial effects of flood risk management infrastructure, including raised defences, flow channels, flood storage areas and other artificial features, together with the consequences of their failure and exceedance;
- Consider the vulnerability of those using the site, including arrangements for safe access and escape;
- Consider and quantify the different types of flooding (whether from natural and human sources and including joint and cumulative effects) and include information on flood likelihood, speed-of-onset, depth, velocity, hazard and duration;
- Identify and secure opportunities to reduce the causes and impacts of flooding overall, making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management;
- Consider the effects of a range of flooding events including extreme events on people, property, the natural and historic environment and river and coastal processes;
- Include the assessment of the remaining (known as 'residual') risk after risk reduction measures have been taken into account and demonstrate that these risks can be safely managed, ensuring people will not be exposed to hazardous flooding;
- Consider how the ability of water to soak into the ground may change with development, along with how the proposed layout of the project may affect drainage systems. Information should include:
 - Describe the existing surface water drainage arrangements for the site;
 - Set out (approximately) the existing rates and volumes of surface water run-off generated by the site. Detail the proposals for restricting discharge rates;
 - Set out proposals for managing and discharging surface water from the site using sustainable drainage systems and accounting for the predicted impacts of climate change. If

¹⁸⁵ See <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

sustainable drainage systems have been rejected, present clear evidence of why their inclusion would be inappropriate;

- Demonstrate how the hierarchy of drainage options has been followed¹⁸⁶;
 - Explain and justify why the types of SuDS¹⁸⁷ and method of discharge have been selected and why they are considered appropriate;
 - Explain how sustainable drainage systems have been integrated with other aspects of the development such as open space or green infrastructure, so as to ensure an efficient use of the site;
 - Describe the multifunctional benefits the sustainable drainage system will provide;
 - Set out which opportunities to reduce the causes and impacts of flooding have been identified and included as part of the proposed sustainable drainage system;
 - Explain how run-off from the completed development will be prevented from causing an impact elsewhere;
 - Explain how the sustainable drainage system been designed to facilitate maintenance and, where relevant, adoption. Set out plans for ensuring an acceptable standard of operation and maintenance throughout the lifetime of the development;
- Detail those measures that will be included to ensure the development will be safe and remain operational during a flooding event throughout the development's lifetime without increasing flood risk elsewhere;
 - Identify and secure opportunities to reduce the causes and impacts of flooding overall during the period of construction; and
 - Be supported by appropriate data and information, including historical information on previous events.

¹⁸⁶ Refer to Planning Practice Guidance Sustainable Drainage Systems section – See <https://www.gov.uk/guidance/flood-risk-and-coastal-change#sustainable-drainage-systems>

¹⁸⁷ See <https://www.gov.uk/government/publications/sustainable-drainage-systems-non-statutory-technical-standards>

- 5.8.16 Further guidance can be found in the Planning Practice Guidance Flood Risk and Coastal Change section¹⁸⁸ which accompanies the NPPF¹⁸⁹, TAN15 for Wales¹⁹⁰ or successor documents.
- 5.8.17 Development (including construction works) will need to account for any existing watercourses and flood and coastal erosion risk management structures or features, or any land likely to be needed for future structures or features so as to ensure:
- Access, clearances and sufficient land are retained to enable their maintenance, repair, operation, and replacement, as necessary;
 - Their standard of protection is not reduced; and
 - Their condition or structural integrity is not reduced.
- 5.8.18 Applicants for projects which may be affected by, or may add to, flood risk should arrange pre-application discussions before the official pre-application stage of the NSIP process with the EA or NRW, and, where relevant, other bodies such as Lead Local Flood Authorities, Internal Drainage Boards, sewerage undertakers, navigation authorities, highways authorities and reservoir owners¹⁹¹ and operators.
- 5.8.19 Such discussions should identify the likelihood and possible extent and nature of the flood risk, help scope the FRA, and identify the information that will be required by the Secretary of State to reach a decision on the application when it is submitted. The Secretary of State should advise applicants to undertake these steps where they appear necessary but have not yet been addressed.
- 5.8.20 If the EA, NRW or another flood risk management authority¹⁹² has reasonable concerns about the proposal on flood risk grounds, the applicant should discuss these concerns with the EA or NRW and take all reasonable steps to agree ways in which the proposal might be amended, or additional information provided, which would satisfy the authority's concerns.
- 5.8.21 The Sequential Test¹⁹³ ensures that a sequential, risk-based approach is followed to steer new development to areas with the lowest risk of

¹⁸⁸ See <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

¹⁸⁹ See <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

¹⁹⁰ See <https://gov.wales/technical-advice-note-tan-15-development-and-flood-risk-2004>

¹⁹¹ Note that developers should be expected to mitigate impacts on reservoir owners where energy development increases risks and requires reservoir owners to increase their standard of protection. FRAs will need to demonstrate how residual risks from reservoirs will be safely managed.

¹⁹² See <https://www.gov.uk/government/collections/flood-and-coastal-erosion-risk-management-authorities>

¹⁹³ See <https://www.gov.uk/guidance/flood-risk-and-coastal-change#the-sequential-approach-to-the-location-of-development>

flooding, taking all sources of flood risk and climate change into account. Where it is not possible to locate development in low-risk areas, the Sequential Test should go on to compare reasonably available sites with medium risk areas and then, only where there are no reasonably available sites in low and medium risk areas, within high-risk areas.

- 5.8.22 The technology specific NPSs set out some exceptions to the application of the Sequential Test. However, when seeking development consent on a site allocated in a development plan through the application of the Sequential Test, informed by a strategic flood risk assessment, applicants need not apply the Sequential Test, provided the proposed development is consistent with the use for which the site was allocated and there is no new flood risk information that would have affected the outcome of the test.
- 5.8.23 Consideration of alternative sites should take account of the policy on alternatives set out in Section 4.3. All projects should apply the Sequential Test to locating development within the site.

Mitigation

- 5.8.24 To satisfactorily manage flood risk, arrangements are required to manage surface water and the impact of the natural water cycle on people and property.
- 5.8.25 In this NPS, the term SuDS refers to the whole range of sustainable approaches to surface water drainage management including, where appropriate:
- Source control measures including rainwater recycling and drainage;
 - Infiltration devices to allow water to soak into the ground, that can include individual soakaways and communal facilities;
 - Filter strips and swales, which are vegetated features that hold and drain water downhill mimicking natural drainage patterns;
 - Filter drains and porous pavements to allow rainwater and run-off to infiltrate into permeable material below ground and provide storage if needed;
 - Basins, ponds and tanks to hold excess water after rain and allow controlled discharge that avoids flooding; and
 - Flood routes to carry and direct excess water through developments to minimise the impact of severe rainfall flooding.

- 5.8.26 Site layout and surface water drainage systems should cope with events that exceed the design capacity of the system, so that excess water can be safely stored on or conveyed from the site without adverse impacts.
- 5.8.27 The surface water drainage arrangements for any project should, accounting for the predicted impacts of climate change throughout the development's lifetime, be such that the volumes and peak flow rates of surface water leaving the site are no greater than the rates prior to the proposed project, unless specific off-site arrangements are made and result in the same net effect.
- 5.8.28 It may be necessary to provide surface water storage and infiltration to limit and reduce both the peak rate of discharge from the site and the total volume discharged from the site. There may be circumstances where it is appropriate for infiltration facilities or attenuation storage to be provided outside the project site, if necessary, through the use of a planning obligation.
- 5.8.29 The sequential approach should be applied to the layout and design of the project. Vulnerable aspects of the development should be located on parts of the site at lower risk and residual risk of flooding. Applicants should seek opportunities to use open space for multiple purposes such as amenity, wildlife habitat and flood storage uses. Opportunities should be taken to lower flood risk by reducing the built footprint of previously developed sites and using SuDS.
- 5.8.30 Where a development may result in an increase in flood risk elsewhere through the loss of flood storage, on-site level-for-level compensatory storage, accounting for the predicted impacts of climate change over the lifetime of the development, should be provided.
- 5.8.31 Where it is not possible to provide compensatory storage on site, it may be acceptable to provide it off-site if it is hydraulically and hydrologically linked. Where development may cause the deflection or constriction of flood flow routes, these will need to be safely managed within the site.
- 5.8.32 Where development may contribute to a cumulative increase in flood risk elsewhere, the provision of multifunctional sustainable drainage systems, natural flood management and green infrastructure can also make a valuable contribution to mitigating this risk whilst providing wider benefits.
- 5.8.33 The receipt of and response to warnings of floods is an essential element in the management of the residual risk of flooding. Flood

Warning and evacuation plans should be in place for those areas at an identified risk of flooding.

5.8.34 The applicant should take advice from the local authority emergency planning team, emergency services and, where appropriate, from the local resilience forum when producing an evacuation plan for a manned energy project as part of the FRA. Any emergency planning documents, flood warning and evacuation procedures that are required should be identified in the FRA.

5.8.35 Flood resistant and resilient materials and design should be adopted to minimise damage and speed recovery in the event of a flood.

Secretary of State decision making

5.8.36 In determining an application for development consent, the Secretary of State should be satisfied that where relevant:

- The application is supported by an appropriate FRA;
- The Sequential Test has been applied and satisfied as part of site selection (subject to the exception set out in paragraph 5.8.22 of this NPS, and any technology specific exceptions set out in other NPSs);
- A sequential approach has been applied at the site level to minimise risk by directing the most vulnerable uses to areas of lowest flood risk;
- The proposal is in line with any relevant national and local flood risk management strategy¹⁹⁴;
- SuDS (as required in the next paragraph on National Standards) have been used unless there is clear evidence that their use would be inappropriate;
- In flood risk areas the project is designed and constructed to remain safe and operational during its lifetime, without increasing flood risk elsewhere (subject to the exceptions set out in paragraph 5.8.22);
- The project includes safe access and escape routes where required, as part of an agreed emergency plan, and that any residual risk can be safely managed over the lifetime of the development; and
- Land that is likely to be needed for present or future flood risk management infrastructure has been appropriately safeguarded

¹⁹⁴ As provided for in section 9(1) of the Flood and Water Management Act 2010.

from development to the extent that development would not prevent or hinder its construction, operation or maintenance.

- 5.8.37 For energy projects which have drainage implications, approval for the project's drainage system, including during the construction period, will form part of the development consent issued by the Secretary of State. The Secretary of State will therefore need to be satisfied that the proposed drainage system complies with any National Standards published by Ministers under paragraph 5(1) of Schedule 3 to the Flood and Water Management Act 2010.
- 5.8.38 In addition, the Development Consent Order, or any associated planning obligations, will need to make provision for appropriate operation and maintenance of any SuDS throughout the project's lifetime. Where this is secured through the adoption of any SuDS features, any necessary access rights to property will need to be granted.
- 5.8.39 Where relevant, the Secretary of State should be satisfied that the most appropriate body is being given the responsibility for maintaining any SuDS, taking into account the nature and security of the infrastructure on the proposed site. Responsible bodies could include, for example the landowner, the relevant lead local flood authority or water and sewerage company (through the Ofwat-approved Sewerage Sector Guidance¹⁹⁵), or another body, such as an Internal Drainage Board.
- 5.8.40 If the EA, NRW or another flood risk management authority continues to have concerns and objects to the granting of development consent on the grounds of flood risk, the Secretary of State can grant consent, but would need to be satisfied before deciding whether or not to do so that all reasonable steps have been taken by the applicant and the authority to try to resolve the concerns.
- 5.8.41 Energy projects should not normally be consented within Flood Zone 3b¹⁹⁶, or Zone C2 in Wales, or on land expected to fall within these zones within its predicted lifetime. This may also apply where land is subject to other sources of flooding (for example surface water). However, where essential energy infrastructure has to be located in such areas, for operational reasons, they should only be consented if the development will not result in a net loss of floodplain storage, and will not impede water flows.

¹⁹⁵ Sewerage Sector Guidance: See <https://www.water.org.uk/sewerage-sector-guidance-approved-documents/>

¹⁹⁶ The Functional Floodplain where water has to flow or be stored in times of flood.

- 5.8.42 Exceptionally, where an increase in flood risk elsewhere cannot be avoided or wholly mitigated, the Secretary of State may grant consent if they are satisfied that the increase in present and future flood risk can be mitigated to an acceptable and safe level and taking account of the benefits of, including the need for, nationally significant energy infrastructure as set out in Part 3 above. In any such case the Secretary of State should make clear how, in reaching their decision, they have weighed up the increased flood risk against the benefits of the project, taking account of the nature and degree of the risk, the future impacts on climate change, and advice provided by the EA or NRW and other relevant bodies.

5.9 Historic Environment

- 5.9.1 The construction, operation and decommissioning of energy infrastructure has the potential to result in adverse impacts on the historic environment above, at and below the surface of the ground.
- 5.9.2 The historic environment includes all aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, landscaped and planted or managed flora.
- 5.9.3 Those elements of the historic environment that hold value to this and future generations because of their historic, archaeological, architectural or artistic interest are called ‘heritage assets’¹⁹⁷. Heritage assets may be buildings, monuments, sites, places, areas or landscapes, or any combination of these. The sum of the heritage interests that a heritage asset holds is referred to as its significance¹⁹⁸. Significance derives not only from a heritage asset’s physical presence, but also from its setting¹⁹⁹.
- 5.9.4 Some heritage assets have a level of significance that justifies official designation. Categories of designated heritage assets are:

¹⁹⁷ Where the terms “heritage assets” or “designated heritage assets” are referred to, this also refers to “historic assets” or “designated historic assets” which is the terminology used in Welsh planning policy.

¹⁹⁸ Terms used in this section, including the term “Designated Heritage Asset” are defined in Annex 2 of the National Planning Policy Framework.

¹⁹⁹ The setting of a heritage asset is the surroundings in which it is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset and may affect the ability to appreciate that significance or may be neutral. In Wales, the definition of the setting of a heritage asset is similar, but slightly different. The Welsh definition can be found in TAN 24. See <https://www.gov.wales/technical-advice-note-tan-24-historic-environment>

5.9.5 World Heritage Sites²⁰⁰

- Scheduled Monuments
- Protected Wreck Sites
- Protected Military Remains
- Listed Buildings
- Registered Parks and Gardens
- Registered Battlefields

5.9.6 Conservation Areas²⁰¹

- Registered Historic Landscapes (Wales only).

5.9.7 There are heritage assets that are not currently designated, but which have been demonstrated to be of equivalent significance to designated heritage assets of the highest significance. These are:

- Those that the Secretary of State has recognised as being capable of being designated as a Scheduled Monument or Protected Wreck Site but has decided not to designate;
- Those that the Secretary of State has recognised as being of equivalent significance to Scheduled Monuments or Protected Wreck Sites but are incapable of being designated by virtue of being outside the scope of the related legislation; and
- Those that have yet to be formally assessed by the Secretary of State, but which have potential to demonstrate equivalent significance to Scheduled Monuments or Protected Wreck Sites.

5.9.8 Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to Scheduled Monuments or Protected Wreck Sites should be considered subject to the policies for designated heritage assets²⁰². The absence of designation for such

²⁰⁰ The Department for Culture, Media and Sport is responsible for consultation with UNESCO but Historic England generally deal with the issues at a project level. In Wales, Cadw generally deals with World Heritage Site issues at a project level.

²⁰¹ The issuing of licences to undertake works on Protected Wreck Sites in English waters is the responsibility of the Secretary of State for Culture, Media and Sport and does not form part of development consents issued by the Secretary of State for DESNZ. In Wales it is the responsibility of Welsh Ministers. The issuing of licences for Protected Military Remains is the responsibility of the Secretary of State for Defence.

²⁰² There will be archaeological interest in a heritage asset if it holds, or may potentially hold, evidence of past human activity worthy of expert investigation at some point.

heritage assets does not indicate lower significance or necessarily imply that it is not of national importance.

- 5.9.9 The Secretary of State should also consider the impacts on other non-designated heritage assets (as identified either through the development plan making process by plan-making bodies, including 'local listing', or through the application, examination and decision making process). This is on the basis of clear evidence that such heritage assets have a significance that merits consideration in that process, even though those assets are of lesser significance than designated heritage assets.
- 5.9.10 Impacts on heritage assets specific to types of infrastructure are included in the technology specific NPSs.

Applicant assessment

- 5.9.11 The applicant should undertake an assessment of any likely significant heritage impacts of the proposed development as part of the EIA, and describe these along with how the mitigation hierarchy has been applied in the ES (see Section 4.3). This should include consideration of heritage assets above, at, and below the surface of the ground. Consideration will also need to be given to the possible impacts, including cumulative, on the wider historic environment. The assessment should include reference to any historic landscape or seascape character assessment and associated studies as a means of assessing impacts relevant to the proposed project.
- 5.9.12 As part of the ES the applicant should provide a description of the significance of the heritage assets affected by the proposed development, including any contribution made by their setting. The level of detail should be proportionate to the importance of the heritage assets and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum, the applicant should have consulted the relevant Historic Environment Record²⁰³ (or, where the development is in English or Welsh waters, Historic England or Cadw) and assessed the heritage assets

²⁰³ Historic Environment Records (HERs) are information services that seek to provide access to comprehensive and dynamic resources relating to the historic environment of a defined geographic area for public benefit and use. HERs are maintained by local authorities and National Park Authorities with a view to providing access to comprehensive and dynamic resources relating to the historic environment of an area for public benefit and use. Details of Historic Environment Records in England are available from the Heritage Gateway website. For Wales, HERs can be obtained through requesting data through the relevant archaeological trust who hold the copyright. Historic England and Cadw hold additional information about heritage assets in English or Welsh waters. Historic England or Cadw should also be consulted, where relevant.

themselves using expertise where necessary according to the proposed development's impact.

- 5.9.13 Where a site on which development is proposed includes, or the available evidence suggests it has the potential to include, heritage assets with an archaeological interest, the applicant should carry out appropriate desk-based assessment and, where such desk-based research is insufficient to properly assess the interest, a field evaluation. Where proposed development will affect the setting of a heritage asset, accurate representative visualisations may be necessary to explain the impact²⁰⁴.
- 5.9.14 The applicant should ensure that the extent of the impact of the proposed development on the significance of any heritage assets affected can be adequately understood from the application and supporting documents. Studies will be required on those heritage assets affected by noise, vibration, light and indirect impacts, the extent and detail of these studies will be proportionate to the significance of the heritage asset affected.
- 5.9.15 The applicant is encouraged, where opportunities exist, to prepare proposals which can make a positive contribution to the historic environment, and to consider how their scheme takes account of the significance of heritage assets affected. This can include, where possible:
- Enhancing, through a range of measures such a sensitive design, the significance of heritage assets or setting affected;
 - Considering where required the development of archive capacity which could deliver significant public benefits; and
 - Considering how visual or noise impacts can affect heritage assets, and whether there may be opportunities to enhance access to, or interpretation, understanding and appreciation of, the heritage assets affected by the scheme.
- 5.9.16 Careful consideration in preparing the scheme will be required on whether the impacts on the historic environment will be direct or indirect, temporary, or permanent.
- 5.9.17 Applicants should look for opportunities for new development within Conservation Areas and World Heritage Sites, and within the setting of

²⁰⁴ Relevant guidance is given in the Historic England publication, The Setting of Heritage Assets See <https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/> For projects in Wales, relevant guidance is given in The Setting of Historic Assets in Wales. See <https://cadw.gov.wales/advice-support/placemaking/heritage-impact-assessment/setting-historic-assets>

heritage assets, to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to the asset (or which better reveal its significance) should be treated favourably.

Mitigation

- 5.9.18 A documentary record of our past is not as valuable as retaining the heritage asset, and therefore the ability to record evidence of the asset should not be a factor in deciding whether such loss should be permitted, and whether or not consent should be given.
- 5.9.19 Where the loss of the whole or part of a heritage asset's significance is justified, the Secretary of State will require the applicant to record and advance understanding of the significance of the heritage asset before it is lost (wholly or in part). The extent of the requirement should be proportionate to the asset's importance and significance and the impact. The applicant should be required to publish this evidence and to deposit copies of the reports with the relevant Historic Environmental Record. They should also be required to deposit the archive generated in a local museum or other public repository willing to receive it.
- 5.9.20 Where appropriate, the Secretary of State will impose requirements on the Development Consent Order to ensure that the work is undertaken in a timely manner, in accordance with a written scheme of investigation that complies with the policy in this NPS and which has been agreed in writing with the relevant local authority, and to ensure that the completion of the exercise is properly secured.
- 5.9.21 Where the loss of significance of any heritage asset has been justified by the applicant on the merits of the new development and the significance of the asset in question, the Secretary of State should consider:
- Imposing a requirement in the Development Consent Order; and
 - Requiring the applicant to enter into an obligation that will prevent the loss occurring until the relevant part of the development has commenced, or it is reasonably certain that the relevant part of the development is to proceed.
- 5.9.22 Where there is a high probability (based on an adequate assessment) that a development site may include as yet undiscovered heritage assets with archaeological interest, the Secretary of State will consider requirements to ensure appropriate procedures are in place for the

identification and treatment of such assets discovered during construction.

Secretary of State decision making

- 5.9.23 In determining applications, the Secretary of State should seek to identify and assess the particular significance of any heritage asset that may be affected by the proposed development, including by development affecting the setting of a heritage asset, taking account of:
- Relevant information provided with the application and, where applicable, relevant information submitted during the examination of the application;
 - Any designation records, including those on the National Heritage List for England²⁰⁵, or included on Cof Cymru²⁰⁶ for Wales;
 - Historic landscape character records;
 - The relevant Historic Environment Record(s), and similar sources of information;
 - Representations made by interested parties during the examination process; and
 - Expert advice, where appropriate, and when the need to understand the significance of the heritage asset demands it.
- 5.9.24 The Secretary of State must also comply with the requirements on listed buildings, conservation areas and scheduled monuments, set out in regulation 3 of the Infrastructure Planning (Decisions) Regulations 2010.
- 5.9.25 In considering the impact of a proposed development on any heritage assets, the Secretary of State should consider the particular nature of the significance of the heritage assets and the value that they hold for this and future generations. This understanding should be used to avoid or minimise conflict between their conservation and any aspect of the proposal.
- 5.9.26 The Secretary of State should consider the desirability of sustaining and, where appropriate, enhancing the significance of heritage assets, the contribution of their settings and the positive contribution that their conservation can make to sustainable communities, including to their

²⁰⁵ See <https://historicengland.org.uk/listing/the-list/>

²⁰⁶ See <https://cadw.gov.wales/advice-support/cof-cymru>

quality of life, their economic vitality, and to the public's enjoyment of these assets²⁰⁷.

- 5.9.27 The Secretary of State should also consider the desirability of the new development making a positive contribution to the character and local distinctiveness of the historic environment. The consideration of design should include scale, height, massing, alignment, materials, use and landscaping (for example, screen planting).
- 5.9.28 When considering the impact of a proposed development on the significance of a designated heritage asset, the Secretary of State should give great weight to the asset's conservation. The more important the asset, the greater the weight should be. This is irrespective of whether any potential harm amounts to substantial harm, total loss, or less than substantial harm to its significance.
- 5.9.29 The Secretary of State should give considerable importance and weight to the desirability of preserving all heritage assets. Any harm or loss of significance of a designated heritage asset (from its alteration or destruction, or from development within its setting) should require clear and convincing justification.
- 5.9.30 Substantial harm to or loss of significance of a grade II Listed Building or a grade II Registered Park or Garden should be exceptional.
- 5.9.31 Substantial harm to or loss of significance of assets of the highest significance, including Scheduled Monuments; Protected Wreck Sites; Registered Battlefields; grade I and II* Listed Buildings; grade I and II* Registered Parks and Gardens; and World Heritage Sites, should be wholly exceptional.
- 5.9.32 Where the proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset the Secretary of State should refuse consent unless it can be demonstrated that the substantial harm to, or loss of, significance is necessary to achieve substantial public benefits that outweigh that harm or loss, or all the following apply:
- The nature of the heritage asset prevents all reasonable uses of the site;

²⁰⁷ This can be by virtue of: heritage assets having an influence on the character of the environment and an area's sense of place; heritage assets having a potential to be a catalyst for regeneration in an area, particularly through leisure, tourism and economic development; heritage assets being a stimulus to inspire new development of imaginative and high quality design; and the mixed and flexible patterns of land use in historic areas that are likely to be, and remain, sustainable.

- No viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation;
 - Conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and
 - The harm or loss is outweighed by the benefit of bringing the site back into use.
- 5.9.33 Where the proposed development will lead to less than substantial harm to the significance of the designated heritage asset, this harm should be weighed against the public benefits of the proposal, including, where appropriate securing its optimum viable use.
- 5.9.34 In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.
- 5.9.35 Not all elements of a Conservation Area or World Heritage Site will necessarily contribute to its significance. Loss of a building (or other element) which makes a positive contribution to the significance of the Conservation Area or World Heritage Site should be treated either as substantial harm under paragraph 5.9.30 or less than substantial harm under paragraph 5.9.31, as appropriate, considering the relative significance of the element affected and its contribution to the significance of the Conservation Area or World Heritage Site as a whole.
- 5.9.36 Where there is evidence of deliberate neglect of, or damage to, a heritage asset, the Secretary of State should not take its deteriorated state into account in any decision²⁰⁸.
- 5.9.37 When considering applications for development affecting the setting of a designated heritage asset, the Secretary of State should give appropriate weight to the desirability of preserving the setting of such assets and treat favourably applications that preserve those elements of the setting that make a positive contribution to, or better reveal the significance of, the asset. When considering applications that do not do this, the Secretary of State should give great weight to any negative effects, when weighing them against the wider benefits of the application. The greater the negative impact on the significance of the

²⁰⁸ Historic Environment Good Practice Advice in Planning 2 provides further advice on managing significance in decision-taking in the historic environment, available online at: See <https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/>

designated heritage asset, the greater the benefits that will be needed to justify approval²⁰⁹.

5.10 Landscape and Visual

- 5.10.1 The landscape and visual effects of energy projects will vary on a case-by-case basis according to the type of development, its location and the landscape setting of the proposed development. In this context, references to landscape should be taken as covering seascape and townscape where appropriate.
- 5.10.2 Among the features which are common to a number of different thermal combustion technologies, cooling towers and exhaust stacks and their plumes have the most obvious impact on landscape and visual amenity. Visual impacts may be not just the physical structures but also visible steam plumes from cooling towers²¹⁰.
- 5.10.3 Other types of cooling system, for example direct throughput where water is abstracted, used for cooling then returned to source, or air-cooled condensers, will have less visible impacts as the structures are considerably lower than natural draught cooling towers and exhibit no visible steam plumes. Further, modern hybrid cooling systems – for example mechanical draught – do not generally exhibit visible steam plumes except in exceptional adverse weather conditions. These systems are normally considered as the BAT. However there may be losses of electricity output owing to the need for energy to operate hybrid cooling or air-cooled condenser systems.
- 5.10.4 Landscape effects arise not only from the sensitivity of the landscape but also the nature and magnitude of change proposed by the development, whose specific siting and design make the assessment a case-by-case judgement.
- 5.10.5 Virtually all nationally significant energy infrastructure projects will have adverse effects on the landscape, but there may also be beneficial landscape character impacts arising from mitigation.
- 5.10.6 Projects need to be designed carefully, taking account of the potential impact on the landscape. Having regard to siting, operational and other relevant constraints the aim should be to minimise harm to the

²⁰⁹ See the Infrastructure Planning (Decisions) Regulations 2010.

²¹⁰ Cooling towers and exhaust stacks can form part of projects covered by EN-2, EN-3 and EN-6. Other features of energy infrastructure which can be similarly prominent are associated with particular technologies and so are considered in the technology-specific NPSs.

landscape, providing reasonable mitigation where possible and appropriate.

- 5.10.7 National Parks, the Broads and National Landscapes have been confirmed by the government as having the highest status of protection in relation to landscape and natural beauty. Each of these designated areas has specific statutory purposes. Projects should be designed sensitively given the various siting, operational, and other relevant constraints. For development proposals located within designated landscapes the Secretary of State should be satisfied that measures which seek to further purposes of the designation are sufficient, appropriate and proportionate to the type and scale of the development.
- 5.10.8 The duty to seek to further the purposes of nationally designated landscapes also applies when considering applications for projects outside the boundaries of these areas which may have impacts within them. In these locations, projects should be designed sensitively given the various siting, operational, and other relevant constraints. The Secretary of State should be satisfied that measures which seek to further the purposes of the designation are sufficient, appropriate and proportionate to the type and scale of the development.
- 5.10.9 The Secretary of State has a duty of to have regard to the statutory purposes of National Parks and National Landscapes in Wales when making decisions about development schemes within England which affect designated landscapes in Wales. Similar regard should also be had in relation to schemes in England which have impacts on National Parks and National Scenic Areas in Scotland.
- 5.10.10 Heritage Coasts are defined areas of undeveloped coastline which are managed to conserve their natural beauty and, where appropriate, to improve accessibility for visitors.
- 5.10.11 Development within a Heritage Coast (that is not also a National Park, The Broads or a National Landscape) is unlikely to be appropriate, unless it is compatible with the natural beauty and special character of the area.
- 5.10.12 Outside nationally designated areas, there are landscapes that may be highly valued locally. Where a local development document in England or a local development plan in Wales has policies based on landscape or waterscape character assessment, these should be paid particular attention. However, locally valued landscapes should not be used in themselves to refuse consent, as this may unduly restrict acceptable development..

- 5.10.13 All proposed energy infrastructure is likely to have visual effects for many receptors around proposed sites.
- 5.10.14 The Secretary of State will have to judge whether the visual effects on sensitive receptors, such as local residents, and other receptors, such as visitors to the local area, outweigh the benefits of the project.
- 5.10.15 Coastal areas are particularly vulnerable to visual intrusion because of the potential high visibility of development on the foreshore, on the skyline and affecting views along stretches of undeveloped coast.

Applicant assessment

- 5.10.16 The applicant should carry out a landscape and visual impact assessment and report it in the ES, including cumulative effects (see Section 4.3). Several guides have been produced to assist in addressing landscape issues²¹¹.
- 5.10.17 The landscape and visual assessment should include reference to any landscape character assessment and associated studies as a means of assessing landscape impacts relevant to the proposed project. The applicant's assessment should also take account of any relevant policies based on these assessments in local development documents in England and local development plans in Wales.
- 5.10.18 For seascapes, applicants should consult the Seascape Character Assessment and the Marine Plan Seascape Character Assessments, and any successors to them²¹².
- 5.10.19 The applicant should consider landscape and visual matters in the early stages of siting and design, where site choices and design principles are being established. This will allow the applicant to demonstrate in the ES how negative effects have been minimised and opportunities for creating positive benefits or enhancement have been recognised and incorporated into the design, delivery and operation of the scheme.

²¹¹ The Landscape Institute and Institute of Environmental Management and Assessment: Guidelines for Landscape and Visual Impact Assessment (2013, 3rd edition); Landscape and Seascape Character Assessments – see <https://www.gov.uk/guidance/landscape-and-seascape-character-assessments>; Countryside Council for Wales/Cadw (2007) Guide to Good Practice on Using the Register of Landscapes of Historic Interest in Wales in the Planning and Development Process; or any successor documents.

²¹² The Seascape Character Assessments Guidance: See <https://www.gov.uk/government/publications/seascape-character-assessments-identify-and-describe-seascape-types>; Marine plan seascape character assessments: see <https://www.gov.uk/government/publications/seascape-assessments-for-north-east-north-west-south-east-south-west-marine-plan-areas-mmo1134>, See <https://www.gov.uk/government/publications/seascape-assessment-for-the-south-marine-plan-areas-mmo-1037> and see <https://www.gov.uk/government/publications/east-marine-plan-areas-seascape-character-assessment-for-england> and See <https://naturalresources.wales/evidence-and-data/maps/marine-character-areas/?lang=en> for Wales

- 5.10.20 The assessment should include the effects on landscape components and character (including key characteristics) during construction and operation. For projects which may affect a National Park, The Broads or a National Landscape the assessment should include effects on the natural beauty and special qualities of these areas.
- 5.10.21 The assessment should include the visibility and conspicuousness of the project during construction and of the presence and operation of the project and potential impacts on views and visual amenity. This should include light pollution effects, including on dark skies, local amenity and nature conservation.
- 5.10.22 The assessment should also address the landscape and visual effects of light pollution and other emissions (see Section 5.2 and Section 5.7), from construction and operational activities on residential amenity and on sensitive locations, receptors and views, and how these will be minimised.
- 5.10.23 Applicants are expected to justify BAT for the use of a cooling system that involves visible steam plumes or has a high visible structure, such as a natural draught cooling tower explaining why the application of modern hybrid cooling technology or other technologies is not reasonably practicable.
- 5.10.24 Applicants should consider how landscapes can be enhanced using landscape management plans, as this will help to enhance environmental assets where they contribute to landscape and townscape quality.
- 5.10.25 In considering visual effects it may be helpful for applicants to draw attention, in the supporting evidence to their applications, to any examples of existing permitted infrastructure they are aware of with a similar magnitude of impact on equally sensitive receptors. This may assist the Secretary of State in judging the weight they should give to the assessed visual impacts of the proposed development.

Mitigation

- 5.10.26 Reducing the scale of a project can help to mitigate the visual and landscape effects of a proposed project. However, reducing the scale or otherwise amending the design of a proposed energy infrastructure project may result in a significant operational constraint and reduction in function – for example, electricity generation output. There may, however, be exceptional circumstances, where mitigation could have a very significant benefit and warrant a small reduction in function. In these circumstances, the Secretary of State may decide that the

benefits of the mitigation to reduce the landscape and/or visual effects outweigh the marginal loss of function.

5.10.27 Adverse landscape and visual effects may be minimised through appropriate siting of infrastructure within its development site and wider setting. The careful consideration of colours and materials will support the delivery of a well-designed scheme, as will sympathetic landscaping and management of its immediate surroundings.

5.10.28 Depending on the topography of the surrounding terrain and areas of population it may be appropriate to undertake landscaping off site. For example, filling in gaps in existing tree and hedge lines may mitigate the impact when viewed from a more distant vista.

Secretary of State decision making

5.10.29 The Secretary of State should take into consideration the level of detailed design which the applicant has provided and is secured in the Development Consent Order, and the extent to which design details are subject to future approvals.

5.10.30 The Secretary of State should be satisfied that local authorities will have sufficient design content secured to ensure future consenting will meet landscape, visual and good design objectives.

5.10.31 When considering visual impacts of thermal combustion generating stations, the Secretary of State should presume that the adverse impacts would be less if a hybrid or direct cooling system is used. The Secretary of State should therefore expect information in the application justifying BAT for the use of a cooling system that involves visible steam plumes or has a high visible structure, such as a natural draught cooling tower, and be satisfied that the application of modern hybrid cooling technology or other technologies is not reasonably practicable before giving consent to a development with natural draught cooling towers.

5.10.32 When considering applications for development within National Parks, the Broads and National Landscapes the conservation and enhancement of the landscape and scenic beauty should be given great weight by the Secretary of State in deciding on applications for development consent in these areas. The Secretary of State may grant development consent in these areas in exceptional circumstances. Such development should be demonstrated to be in the public interest and consideration of such applications should include an assessment of:

- The need for the development, including in terms of national considerations²¹³, and the impact of consenting or not consenting it upon the local economy;
- The cost of, and scope for, developing all or part of the development elsewhere outside the designated area or meeting the need for it in some other way, taking account of the policy on alternatives set out in Section 4.3; and
- Any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.

5.10.33 For development proposals located within designated landscapes the Secretary of State should be satisfied that measures which seek to further purposes of the designation are appropriate, reasonable and proportionate to the type and scale of the development. The Secretary of State should ensure that any projects consented in these designated areas should be carried out to high environmental standards, including through the application of appropriate requirements where necessary.

5.10.34 The duty to seek to further the purposes of nationally designated landscapes also applies when considering applications for projects outside the boundaries of these areas, which may have impacts within them. The aim should be to avoid harming the purposes of designation or to minimise adverse effects on the designation. Such projects should be designed sensitively given the various siting, operational, and other relevant constraints. The fact that a proposed project will be visible from within a designated area should not in itself be a reason for the Secretary of State to refuse consent.

5.10.35 The scale of energy projects means that they will often be visible across a very wide area. The Secretary of State should judge whether any adverse impact on the landscape would be so damaging that it is not offset by the benefits (including need) of the project.

5.10.36 In reaching a judgement, the Secretary of State should consider whether any adverse impact is temporary, such as during construction, and/or whether any adverse impact on the landscape will be capable of being reversed in a timescale that the Secretary of State considers reasonable.

5.10.37 The Secretary of State should consider whether the project has been designed carefully, taking account of environmental effects on the

²¹³ National considerations should be understood to include the national need for the infrastructure as set out in Part 3 of this NPS and the contribution of the infrastructure to the national economy.

landscape and siting, operational and other relevant constraints, to minimise harm to the landscape, including by appropriate mitigation.

- 5.10.38 The Secretary of State should consider whether requirements to the consent are needed requiring the incorporation of particular design details that are in keeping with the statutory and technical requirements for landscape and visual impacts.

5.11 Land Use, Including Open Space, Green Infrastructure, and Green Belt

- 5.11.1 An energy infrastructure project will have a direct effect on the existing use of the proposed site and may have indirect effects on the use, or planned use, of land in the vicinity for other types of development. Given the likely locations of energy infrastructure projects there may be particular effects on open space²¹⁴ including green and blue infrastructure²¹⁵.
- 5.11.2 Green Belts, defined in a local authority's development plan²¹⁶ in England or regional strategic development plans in Wales, are situated around certain cities and large built-up areas. The fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the essential characteristics of Green Belts are their openness and permanence. For further information on the purposes of Green Belt policy see chapter 13 of the NPPF, or any successor to it²¹⁷.
- 5.11.3 Although the re-use of previously developed land for new development can make a major contribution to sustainable development by reducing the amount of countryside and undeveloped greenfield land that needs to be used, it may not be possible for many forms of energy infrastructure.
- 5.11.4 Development of land will affect soil resources, including physical loss of and damage to soil resources, through land contamination and structural damage. Indirect impacts may also arise from changes in

²¹⁴ Open space is defined in the Town and Country Planning Act 1990 as land laid out as a public garden, or used for the purposes of public recreation, or land which is a disused burial ground. However, in applying the policies in this section, open space should be taken to mean all open space of public value, including not just land, but also areas of water such as rivers, canals, lakes and reservoirs which offer important opportunities for sport and recreation and can also act as a visual amenity.

²¹⁵ Green infrastructure is a network of multi-functional green and blue spaces and other natural features, both rural and urban, which is capable of delivering a wide range of environmental, economic, health and wellbeing benefits for nature, climate, local and wider communities and prosperity

²¹⁶ Or else so designated under The Green Belt (London and Home Counties) Act 1938.

²¹⁷ Further information on Wales can be found in PPW 3.64-3.78.

the local water regime, organic matter content, soil biodiversity and soil process.

- 5.11.5 Where pre-existing land contamination is being considered within a development, the objective is to ensure that the site is suitable for its intended use. Risks would require consideration in accordance with the contaminated land statutory guidance as a minimum²¹⁸.
- 5.11.6 The government's policy is to ensure there is adequate provision of high quality open space and sports and recreation facilities to meet the needs of local communities. Connecting people with open spaces, sports and recreational facilities all help to underpin people's quality of life and have a vital role to play in promoting healthy living.
- 5.11.7 Green and blue infrastructure²¹⁹ can also enable developments to provide positive environmental, social, health and economic benefits. Green infrastructure includes green space such as parks and woodlands but also other environmental features such as street trees, hedgerows and green walls and roofs. It also includes blue infrastructure such as canals, rivers, streams, ponds, lakes and their borders. Well designed and managed green and blue infrastructure provides multiple benefits at a range of scales. It can contribute to biodiversity recovery, sequester carbon, absorb surface water, cleanse pollutants, absorb noise and reduce high temperatures. The Green Infrastructure Framework – Principles and Standards for England can be used to consider green infrastructure in development and plan for good quality and targeted creation or improvement.

Applicant assessment

- 5.11.8 The ES (see Section 4.3) should identify existing and proposed²²⁰ land uses near the project, any effects of replacing an existing development or use of the site with the proposed project or preventing a development or use on a neighbouring site from continuing. Applicants should also assess any effects of precluding a new development or use proposed in the development plan. The assessment should be proportionate to the scale of the preferred scheme and its likely impacts on such receptors. For developments on previously developed

²¹⁸ <https://www.gov.uk/government/publications/contaminated-land-statutory-guidance>

²¹⁹ Green infrastructure is a network of multi-functional green spaces, both new and existing, both rural and urban, which supports the natural and ecological processes and is integral to the health and quality of life of sustainable communities. Blue infrastructure relates to features which incorporate the water environment. For infrastructure in Wales, see <https://www.gov.wales/development-plans> <https://naturalresources.wales/guidance-and-advice/business-sectors/planning-and-development/evidence-to-inform-development-planning/green-infrastructure-assessments-a-guide-to-key-natural-resources-wales-datasets-and-how-to-use-them-as-part-of-a-green-infrastructure-assessment/?lang=en>

²²⁰ For example, where a planning application has been submitted.

land, the applicant should ensure that they have considered the risk posed by land contamination and how it is proposed to address this.

- 5.11.9 Applicants will need to consult the local community on their proposals to build on existing open space, sports or recreational buildings and land. Taking account of the consultations, applicants should consider providing new or additional open space including green and blue infrastructure, sport or recreation facilities, to substitute for any losses as a result of their proposal. When considering proposals for green infrastructure, applicants should refer to the Green Infrastructure Framework²²¹.
- 5.11.10 Applicants should use any up-to-date local authority assessment or, if there is none, provide an independent assessment to show whether the existing open space, sports and recreational buildings and land is surplus to requirements.
- 5.11.11 During any pre-application discussions with the applicant the LPA should identify any concerns it has about the impacts of the application on land use, having regard to the development plan and relevant applications and including, where relevant, whether it agrees with any independent assessment that the land is surplus to requirements.
- 5.11.12 Applicants should seek to minimise impacts on the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification) and preferably use land in areas of poorer quality (grades 3b, 4 and 5).
- 5.11.13 Applicants should also identify any effects and seek to minimise impacts on soil health and protect and improve soil quality taking into account any mitigation measures proposed.
- 5.11.14 Applicants are encouraged to develop and implement a Soil Management Plan which could help minimise potential land contamination. The sustainable reuse of soils needs to be carefully considered in line with good practice guidance where large quantities of soils are surplus to requirements or are affected by contamination²²².
- 5.11.15 Developments should contribute to and enhance the natural and local environment by preventing new and existing developments from contributing to, being put at unacceptable risk from, or being adversely

²²¹ See <https://designatedsites.naturalengland.org.uk/GreenInfrastructure/Home.aspx>

²²² For guidance, see the Defra Code of practice for the sustainable use of soils on construction sites.

affected by, unacceptable levels of soil, air, water or noise pollution or land instability.

- 5.11.16 Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.
- 5.11.17 Applicants should ensure that a site is suitable for its proposed use, taking account of ground conditions and any risks arising from land instability and contamination.
- 5.11.18 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. It is important to do this as early as possible as part of engagement with the relevant bodies before the official pre-application stage²²³.
- 5.11.19 Applicants should safeguard any mineral resources on the proposed site as far as possible, taking into account the long-term potential of the land use after any future decommissioning has taken place.
- 5.11.20 The general policies controlling development in the countryside apply with equal force in Green Belts but there is, in addition, a general presumption against inappropriate development within them. Such development should not be approved except in very special circumstances. Applicants should therefore determine whether their proposal, or any part of it, is within an established Green Belt and, if it is, whether their proposal may be inappropriate development within the meaning of Green Belt policy (see paragraph 5.11.36 below).
- 5.11.21 However, infilling or redevelopment of major developed sites in the Green Belt, if identified as such by the LPA, may be suitable for energy infrastructure. It may help to secure jobs and prosperity without further prejudicing the Green Belt or offer the opportunity for environmental improvement. Applicants should refer to relevant criteria²²⁴ on such developments in Green Belts.
- 5.11.22 Moreover an applicant may be able to demonstrate that particular energy infrastructure, such as an underground pipeline, may be considered an “engineering operation” and regarded as not inappropriate in Green Belt. This is provided it preserves the openness of the Green Belt and does not conflict with the purposes of Green Belt designation. It may also be possible for an applicant to show that the

²²³ See <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>

²²⁴ See Section 13 of the NPPF, or any successor to it.

physical characteristics of a proposed overhead line in a particular location would not have so harmful an impact as to conflict with the purposes of Green Belt designation, or with other protections of rural landscape.

Mitigation

- 5.11.23 Although in the case of most energy infrastructure there may be little that can be done to mitigate the direct effects of an energy project on the existing use of the proposed site (assuming that some of that use can still be retained post project construction) applicants should nevertheless seek to minimise these effects and the effects on existing or planned uses near the site by the application of good design principles, including the layout of the project and the protection of soils during construction.
- 5.11.24 Where green infrastructure is affected, the Secretary of State should consider imposing requirements to ensure the functionality and connectivity of the green infrastructure network is maintained in the vicinity of the development and that any necessary works are undertaken, where possible, to mitigate any adverse impact and, where appropriate, to improve that network and other areas of open space including appropriate access to National Trails and other public rights of way and new coastal access routes.
- 5.11.25 The Secretary of State should also consider whether any adverse effect on green infrastructure and other forms of open space is adequately mitigated or compensated by means of any planning obligations, for example exchange land and provide for appropriate management and maintenance agreements. Any exchange land should be at least as good in terms of size, usefulness, attractiveness and quality, and accessibility.
- 5.11.26 Alternatively, where sections 131 and 132 of the Planning Act 2008 apply, replacement land provided under those sections will need to conform to the requirements of those sections.
- 5.11.27 Existing trees and woodlands should be retained wherever possible. Under the Environment Act 2021 the government set a legally binding target to increase the tree canopy and woodland cover to 16.5% of total land area of England by 2050. The Environmental Improvement Plan recognises the need to protect and increase tree canopy and woodland covers. The applicant should assess the impacts on, and loss of, all trees and woodlands within the project boundary and develop mitigation measures to minimise adverse impacts and any risk of net deforestation as a result of the scheme. Mitigation may include,

but is not limited to, the use of buffers to enhance resilience, improvements to connectivity, and improved woodland management. Where woodland loss is unavoidable, compensation schemes will be required, and the long-term management and maintenance of newly planted trees should be secured. Where possible, projects should include the reuse of materials and use of sustainable materials such as timber, or recycled materials.

5.11.28 Where a proposed development has an impact upon a Mineral Safeguarding Area (MSA), the Secretary of State should ensure that appropriate mitigation measures have been put in place to safeguard mineral resources.

5.11.29 Where a project has a sterilising effect on land use (for example in some cases under transmission lines) there may be scope for this to be mitigated through, for example, using or incorporating the land for nature conservation or wildlife corridors or for parking and storage in employment areas.

5.11.30 Public Rights of way, National Trails, and other rights of access to land are important recreational facilities for example for walkers, cyclists and horse riders. The Secretary of State should expect applicants to take appropriate mitigation measures to address adverse effects on coastal access, National Trails, other rights of way and open access land and, where appropriate, to consider what opportunities there may be to improve or create new access. In considering revisions to an existing right of way, consideration should be given to the use, character, attractiveness, and convenience of the right of way.

5.11.31 The Secretary of State should consider whether the mitigation measures put forward by an applicant are acceptable and whether requirements or other provisions in respect of these measures should be included in any grant of development consent.

Secretary of State decision making

5.11.32 The Secretary of State should not grant consent for development on existing open space, sports and recreational buildings and land unless an assessment has been undertaken either by the local authority or independently, which has shown the open space or the buildings and land to be surplus to requirements or the Secretary of State determines that the benefits of the project (including need), outweigh the potential loss of such facilities, taking into account any positive proposals made by the applicant to provide new, improved or compensatory land or facilities.

- 5.11.33 The loss of playing fields should only be allowed where applicants can demonstrate that they will be replaced with facilities of equivalent or better quantity or quality in a suitable location.
- 5.11.34 The Secretary of State should ensure that applicants do not site their scheme on the best and most versatile agricultural land without justification. Where schemes are to be sited on best and most versatile agricultural land the Secretary of State should take into account the economic and other benefits of that land. Where development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality.
- 5.11.35 In considering the impact on maintaining coastal recreation sites and features, the Secretary of State should expect applicants to have taken advantage of opportunities to maintain and enhance access to the coast. In doing so the Secretary of State should consider the implications for development of the creation of a continuous signed and managed route around the coast, as provided for in the Marine and Coastal Access Act 2009.
- 5.11.36 When located in the Green Belt, energy infrastructure projects may comprise 'inappropriate development'²²⁵. Inappropriate development is by definition harmful to the Green Belt. The NPPF makes clear that most new building is inappropriate in Green Belt²²⁶ and should be refused permission unless in very special circumstances.
- 5.11.37 Very special circumstances are not defined in national planning policy as it is for the individual decision maker to assess each case on its merits and give relevant circumstances their due weight. However, when considering any planning application affecting Green Belt land, the Secretary of State should ensure that substantial weight is given to any harm to the Green Belt when considering any application for such development, while taking account, in relation to renewable and linear infrastructure, of the extent to which its physical characteristics are such that it has limited or no impact on the fundamental purposes of Green Belt designation. Very special circumstances may include the wider environmental benefits associated with increased production of energy from renewables and other low carbon sources.
- 5.11.38 In England, Local Green Spaces may be designated locally in Local Plans and Neighbourhood Plans. These enjoy the same protection as

²²⁵ Referred to in paragraphs 153-160 of section 13 of the NPPF – https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

²²⁶ Other than in the case of development on previously developed land or grey belt land, where development is not inappropriate. See chapter 13 of the NPPF.

Green Belt in England and the Secretary of State should adopt a similar approach.

5.11.39 In Wales, ‘green wedges’ may be designated locally²²⁷. These enjoy the same protection as Green Belt in Wales and the Secretary of State should adopt a similar approach.

5.11.40 Green wedges do not convey the same level of permanence of a Green Belt and should be reviewed by the local authority as part of the development plan review process.

5.12 Noise and Vibration

5.12.1 Excessive noise can have wide-ranging impacts on the quality of human life and health such as annoyance, sleep disturbance, cardiovascular disease and mental ill-health. It can also have an impact on the environment and the use and enjoyment of areas of value such as quiet places and areas with high landscape quality.

5.12.2 The government’s policy on noise is set out in the Noise Policy Statement for England²²⁸. It promotes good health and good quality of life through effective noise management. Similar considerations apply to vibration, which can also cause damage to buildings. In this section, in line with current legislation, references to “noise” below apply equally to the assessment of impacts of vibration.

5.12.3 The Welsh Government’s overarching policy is set out in its Noise and Soundscape Plan for Wales 2023 to 2028²²⁹. Its focus is on creating appropriate soundscapes for communities. This includes not only managing noise but also considering what sounds are appropriate in each time and place.

5.12.4 Noise resulting from a proposed development can also have adverse impacts on wildlife and biodiversity. Noise effects of the proposed development on ecological receptors should be assessed by the Secretary of State in accordance with the Biodiversity and Geological Conservation section of this NPS at Section 5.4. This should consider underwater noise and vibration especially for marine developments.

²²⁷ See Managing Settlement Form - Green Belts and Green Wedges, in Planning Policy Wales (Edition 11, February 2021), or any successor to it See https://gov.wales/sites/default/files/publications/2021-02/planning-policy-wales-edition-11_0.pdf

²²⁸ See <https://www.gov.uk/government/publications/noise-policy-statement-for-england>

²²⁹ See Noise and soundscape plan for Wales 2023 to 2028

Underwater noise can be a significant issue in the marine environment, particularly in regard to energy production.

5.12.5 Factors that will determine the likely noise impact of a proposed development include:

- The inherent operational noise from the proposed development, and its characteristics;
- The proximity of the proposed development to noise sensitive premises (including residential properties, schools and hospitals) and noise sensitive areas (including certain parks and open spaces);
- The proximity of the proposed development to quiet places and other areas that are particularly valued for their soundscape or landscape quality;
- The proximity of the proposed development to sites where noise may have an adverse impact on protected species or other wildlife, including migratory species; and
- The potential presence of unexploded ordnance on the seabed.

Applicant assessment

5.12.6 Where noise impacts are likely to arise from the proposed development, the applicant should include the following in the noise assessment:

- A description of the noise generating aspects of the development proposal leading to noise impacts, including the identification of any distinctive tonal characteristics, if the noise is impulsive, whether the noise contains particular high or low frequency content or any temporal characteristics of the noise;
- Identification of noise sensitive receptors and noise sensitive areas that may be affected;
- The characteristics of the existing noise environment;
- A prediction of how the noise environment will change with the proposed development;
 - In the shorter term, such as during the construction period;
 - In the longer term, during the operating life of the infrastructure; and
 - At particular times of the day, evening and night (and weekends) as appropriate, and at different times of year.

- An assessment of the effect of predicted changes in the noise environment on any noise-sensitive receptors, including an assessment of any likely impact on health and quality of life / wellbeing where appropriate, particularly among those disadvantaged by other factors who are often disproportionately affected by noise-sensitive areas;
 - If likely to cause disturbance, an assessment of the effect of underwater or subterranean noise²³⁰; and
 - All reasonable steps taken to mitigate and minimise potential adverse effects on health and quality of life.
- 5.12.7 The nature and extent of the noise assessment should be proportionate to the likely noise impact.
- 5.12.8 Applicants should consider the noise impact of ancillary activities associated with the development, such as increased road and rail traffic movements, or other forms of transportation.
- 5.12.9 Operational noise, with respect to human receptors, should be assessed using the principles of the relevant British Standards²³¹ and other guidance. Further information on assessment of particular noise sources may be contained in the technology specific NPSs. In particular, for renewables (EN-3) and electricity networks (EN-5) there is assessment guidance for specific features of those technologies. For the prediction, assessment and management of construction noise, reference should be made to any relevant British Standards²³² and other guidance which also give examples of mitigation strategies.
- 5.12.10 Some noise impacts will be controlled through environmental permits and parallel tracking is encouraged where noise impacts determined by an environmental permit interface with planning issues (i.e. physical design and location of development). The applicant should consult the EA and / or the SNCB, and other relevant bodies, such the MMO or NRW, as necessary, and in particular regarding assessment of noise on protected species or other wildlife. The results of any noise surveys and predictions may inform the ecological assessment. The seasonality of potentially affected species in nearby sites may also need to be considered.
- 5.12.11 In the marine environment, applicants should consider noise impacts on protected species, as well as other noise sensitive receptors, both

²³⁰ Noise below ground level.

²³¹ For example BS 4142, BS 6472 and BS 8233.

²³² For example BS 5228.

at the individual project level and in-combination with other marine activities.

5.12.12 Applicants should submit a detailed impact assessment and mitigation plan as part of any development plan, including the use of noise mitigation and noise abatement technologies during construction and operation.

Mitigation

5.12.13 The Secretary of State should consider whether mitigation measures are needed both for operational and construction noise over and above any which may form part of the project application. In doing so the Secretary of State may wish to impose mitigation measures. Any such mitigation measures should take account of the NPPF or any successor to it and the Planning Practice Guidance on Noise.

5.12.14 Mitigation measures may include one or more of the following:

- Engineering: reducing the noise generated at source and/or containing the noise generated;
- Lay-out: where possible, optimising the distance between the source and noise-sensitive receptors and/or incorporating good design to minimise noise transmission through the use of screening by natural or purpose-built barriers, or other buildings;
- Administrative: using planning conditions/obligations to restrict activities allowed on the site at certain times and/or specifying permissible noise limits/noise levels, differentiating as appropriate between different times of day, such as evenings and late at night, and taking into account seasonality of wildlife in nearby designated sites; and
- Insulation: mitigating the impact on areas likely to be affected by noise including through noise insulation when the impact is on a building.

5.12.15 The project should demonstrate good design through selection of the quietest or most acceptable cost-effective plant available; containment of noise within buildings wherever possible, taking into account any other adverse impacts that such containment might cause (e.g. on landscape and visual impacts; optimisation of plant layout to minimise noise emissions; and, where possible, the use of landscaping, bunds or noise barriers to reduce noise transmission).

5.12.16 A development must be undertaken in accordance with statutory requirements for noise. Due regard must be given to the relevant sections of the Noise Policy Statement for England²³³, the NPPF, and the government's associated planning guidance on noise. In Wales the relevant policy will be PPW and the TANs, as well as the Welsh Government's Noise and Soundscape Action Plan.

Secretary of State decision making

5.12.17 The Secretary of State should not grant development consent unless they are satisfied that the proposals will meet the following aims, through the effective management and control of noise:

- Avoid significant adverse impacts on health and quality of life from noise;
- Mitigate and minimise other adverse impacts on health and quality of life from noise; and
- Where possible, contribute to improvements to health and quality of life through the effective management and control of noise.

5.12.18 When preparing the Development Consent Order, the Secretary of State should consider including measurable requirements or specifying the mitigation measures to be put in place to ensure that noise levels do not exceed any limits specified in the development consent. These requirements or mitigation measures may apply to the construction, operation, and decommissioning of the energy infrastructure development.

5.13 Socio-Economic Impacts

5.13.1 The construction, operation and decommissioning of energy infrastructure may have socio-economic impacts at local and regional levels. Parts 2 and 3 of this NPS set out some of the national level socio-economic impacts²³⁴.

Applicant assessment

5.13.2 Where the project is likely to have socio-economic impacts at local or regional levels, the applicant should undertake and include in their

²³³ See <https://www.gov.uk/government/publications/noise-policy-statement-for-england>

²³⁴ For infrastructure in Wales see Wales' Socio-Economic Duty (referenced in the Wales Policy Considerations).

application an assessment of these impacts as part of the ES (see Section 4.3).

- 5.13.3 The applicant is strongly encouraged to engage with relevant local authorities during early stages of project development so that the applicant can gain a better understanding of local or regional issues and opportunities.
- 5.13.4 The applicant's assessment should consider all relevant socio-economic impacts, which may include:
- The creation of jobs and training opportunities. Applicants may wish to provide information on the sustainability of the jobs created, including where they will help to develop the skills needed for the UK's transition to Net Zero;
 - The contribution to the development of low-carbon industries at the local and regional level as well as nationally;
 - The provision of additional local services and improvements to local infrastructure, including the provision of educational and visitor facilities;
 - Any indirect beneficial impacts for the region hosting the infrastructure, in particular in relation to use of local support services and supply chains;
 - Effects (positive and negative) on tourism and other users of the area impacted;
 - The impact of a changing influx of workers during the different construction, operation and decommissioning phases of the energy infrastructure. This could change the local population dynamics and could alter the demand for services and facilities in the settlements nearest to the construction work (including community facilities and physical infrastructure such as energy, water, transport and waste). There could also be effects on social cohesion depending on how populations and service provision change as a result of the development; and
 - Cumulative effects - if development consent were to be granted for a number of projects within a region and these were developed in a similar timeframe, there could be some short-term negative effects, for example a potential shortage of construction workers to meet the needs of other industries and major projects within the region.

- 5.13.5 Applicants should describe the existing socio-economic conditions in the areas surrounding the proposed development and should also refer to how the development's socio-economic impacts correlate with local planning policies.
- 5.13.6 Socio-economic impacts may be linked to other impacts, for example visual impacts considered in Section 5.10 but may also have an impact on tourism and local businesses. Applicants are encouraged, where possible, to demonstrate that local suppliers have been considered in any supply chain.
- 5.13.7 Applicants should consider developing accommodation strategies where appropriate, especially during construction and decommissioning phases, that would include the need to provide temporary accommodation for construction workers if required.

Mitigation

- 5.13.8 The Secretary of State should consider whether mitigation measures are necessary to mitigate any adverse socio-economic impacts of the development. For example, high quality design can improve the visual and environmental experience for visitors and the local community alike.

Secretary of State decision making

- 5.13.9 The Secretary of State should have regard to the potential socio-economic impacts of new energy infrastructure identified by the applicant and from any other sources that the Secretary of State considers to be both relevant and important to its decision.
- 5.13.10 The Secretary of State may conclude that limited weight is to be given to assertions of socio-economic impacts that are not supported by evidence (particularly in view of the need for energy infrastructure as set out in this NPS).
- 5.13.11 The Secretary of State should consider any relevant positive provisions the applicant has made or is proposing to make to mitigate impacts (for example through planning obligations) and any legacy benefits that may arise as well as any options for phasing development in relation to the socio-economic impacts.
- 5.13.12 The Secretary of State may wish to include a requirement that specifies the approval by the local authority of an employment and skills plan detailing arrangements to promote local employment and skills development opportunities, including apprenticeships, education,

engagement with local schools and colleges and training programmes to be enacted.

5.14 Traffic and Transport

- 5.14.1 The transport of materials, goods and personnel to and from a development during all project phases can have a variety of impacts on the surrounding transport infrastructure and potentially on connecting transport networks, for example through increased congestion. Impacts may include economic, social and environmental effects.
- 5.14.2 Environmental impacts may result particularly from trips generated on roads which may increase noise and air pollution as well as greenhouse gas emissions.
- 5.14.3 Disturbance caused by traffic and abnormal loads generated during the construction phase will depend on the scale and type of the proposal.
- 5.14.4 The consideration and mitigation of transport impacts is an essential part of government's wider policy objectives for sustainable development as set out in Section 2.5 of this NPS.

Applicant assessment

- 5.14.5 If a project is likely to have significant transport implications, the applicant's ES (see Section 4.3) should include a vision for transport and an assessment of potential transport impacts.
- 5.14.6 The DfT's Transport Analysis Guidance (TAG)²³⁵ and Welsh Governments WelTAG²³⁶ provides guidance on modelling and assessing the impacts of transport schemes.
- 5.14.7 National Highways and Highways Authorities are statutory consultees on NSIP applications including energy infrastructure where it is expected to affect the strategic road network and / or have an impact on the local road network. Applicants should consult with National Highways and Highways Authorities as appropriate on the assessment, including any reasonable future tested scenarios and mitigation to inform the application to be submitted.

²³⁵ Guidance on transport appraisals is at see <https://www.gov.uk/guidance/transport-analysis-guidance-tag#full-publication-update-history>

²³⁶ See <https://gov.wales/welsh-transport-appraisal-guidance-weltag>

- 5.14.8 The applicant should prepare a travel plan adopting a vision-led approach to identify demand management and monitoring and fall-back measures that proactively mitigate transport impacts²³⁷ by providing details of proposed measures to improve access by active, public and shared transport to:
- Reduce the need for parking associated with the proposal;
 - Contribute to decarbonisation of the transport network; and
 - Improve user travel options by offering genuine modal choice.
- 5.14.9 The assessment should also consider any possible disruption to services and infrastructure (such as road, rail and airports).
- 5.14.10 If additional transport infrastructure is needed or proposed, it should always include good quality walking, wheeling and cycle routes, and associated facilities (changing/storage etc.) needed to enhance active transport provision.
- 5.14.11 Applicants should discuss with network providers the possibility of co-funding by government for any third-party benefits. Guidance has been issued²³⁸ which explains the circumstances where this may be possible, although the government cannot guarantee in advance that funding will be available for any given uncommitted scheme at any specified time.

Mitigation

- 5.14.12 Where mitigation is needed, possible demand management measures must be considered. This could include identifying opportunities to:
- Reduce the need to travel by consolidating trips;
 - Locate development in areas already accessible by active travel and public transport;
 - Provide opportunities for shared mobility;
 - Re-mode by shifting travel to a sustainable mode that is more beneficial to the network;
 - Retime travel outside of the known peak times; and

²³⁷ See <https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements>

²³⁸ See <https://www.gov.uk/government/publications/transport-investment-strategy>, For Wales, refer to the guidance note regarding Transport Grants or any successor to it: see <https://gov.wales/sites/default/files/publications/2020-01/local-transport-grants-guidance-2020-to-2021.pdf>

- Reroute to use parts of the network that are less busy.

5.14.13 If feasible and operationally reasonable, such mitigation should be required, before considering requirements for the provision of new inland transport infrastructure to deal with remaining transport impacts. All stages of the project should support and prioritise a modal shift of freight from road to more environmentally sustainable alternatives, such as rail, cargo bike, maritime and inland waterways, as well as making appropriate provision for and infrastructure needed to support the use of alternative fuels including charging for electric vehicles.

5.14.14 Regard should always be given to the needs of freight at all stages in the construction and operation of the development including the need to provide appropriate facilities for HGV drivers as appropriate²³⁹.

5.14.15 The Secretary of State may attach requirements to a consent where there is likely to be substantial HGV traffic that:

- Control numbers of HGV movements to and from the site in a specified period during its construction and possibly on the routing of such movements;
- Make sufficient provision for HGV parking²⁴⁰, and associated high quality drive facilities either on the site or at dedicated facilities elsewhere²⁴¹, to support driver welfare, avoid 'overspill' parking on public roads, prolonged queuing on approach roads and uncontrolled on-street HGV parking in normal operating conditions; and
- Ensure satisfactory arrangements for reasonably foreseeable abnormal disruption, in consultation with network providers and the responsible police force.

5.14.16 The Secretary of State should have regard to the cost-effectiveness of demand management measures compared to new transport infrastructure, as well as the aim to secure more sustainable patterns of transport development when considering mitigation measures.

²³⁹ See Future of Freight, DfT, June 2022 at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1085917/future-of-freight-plan.pdf

²⁴⁰ See DfT WMS on planning reforms for lorry parking at: See

<https://www.gov.uk/government/speeches/planning-reforms-for-lorry-parking>

²⁴¹ For England, see <https://www.gov.uk/government/publications/strategic-road-network-and-the-delivery-of-sustainable-development>

5.14.17 Applicants should consider the DfT policy guidance “Water Preferred Policy Guidelines for the movement of abnormal indivisible loads” when preparing their application²⁴².

5.14.18 If an applicant suggests that the costs of meeting any obligations or requirements would make the proposal economically unviable this should not in itself justify the relaxation by the Secretary of State of any obligations or requirements needed to secure the mitigation.

Secretary of State decision making

5.14.19 A new energy NSIP may give rise to substantial impacts on the surrounding transport infrastructure and the Secretary of State should therefore ensure that the applicant has sought to mitigate these impacts, including during the construction phase of the development and by enhancing active, public and shared transport provision and accessibility.

5.14.20 Where the proposed mitigation measures are insufficient to reduce the impact on the transport infrastructure to acceptable levels, the Secretary of State should consider requirements to mitigate adverse impacts on transport networks arising from the development, as set out below.

5.14.21 Development consent should not be withheld provided that the applicant is willing to enter into planning obligations for funding new infrastructure or requirements can be imposed to mitigate transport impacts²⁴³. In this situation the Secretary of State should apply appropriately limited weight to residual effects on the surrounding transport infrastructure.

5.14.22 The Secretary of State should only consider refusing development on highways grounds if there would be an unacceptable impact on highway safety, residual cumulative impacts on the road network would be severe, or it does not show how consideration has been given to the provision of adequate active public or shared transport access and provision.

5.15 Resource and Waste Management

5.15.1 Government policy on hazardous and non-hazardous waste is intended to protect human health and the environment by producing less waste and by using it as a resource wherever possible. Where

²⁴² See <https://www.gov.uk/government/publications/movement-of-abnormal-loads-by-water>

²⁴³ With attribution of costs calculated in accordance with the DfT's guidance.

this is not possible and disposal is required as a last resort, waste management regulation ensures that waste is disposed of in a way that is least damaging to the environment and to human health.

5.15.2 Sustainable waste management is implemented through the waste hierarchy²⁴⁴, which sets out the priorities that must be applied when managing waste. These are (in order):

- Prevention;
- Preparing for reuse;
- Recycling;
- Other recovery, including energy recovery; and
- Disposal.

5.15.3 Disposal of waste should only be considered where other waste management options are not available or where it is the best overall environmental outcome.

5.15.4 All large infrastructure projects are likely to generate some hazardous and non-hazardous waste. The EA's Environmental Permit regime incorporates operational waste management requirements for certain activities. When an applicant applies to the EA for an Environmental Permit, the EA will require the application to demonstrate that processes are in place to meet all relevant Environmental Permit requirements.

5.15.5 Specific considerations regarding radioactive waste are set out in Section 2.11 and Annex B of EN-6²⁴⁵. The present section will apply to non-radioactive waste for nuclear infrastructure as for other energy infrastructure.

Applicant assessment

5.15.6 Applicants must ensure that all proposals align with circular economy objectives. In England, applicants must demonstrate that development

²⁴⁴ The waste hierarchy is set out in The Waste (England and Wales) Regulations 2011.

²⁴⁵ See

https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwig2afg8uSOAxVDQEEAHZC-AuwQFnoECBgQAQ&url=https%3A%2F%2Fassets.publishing.service.gov.uk%2Fmedia%2F66841cb303469096e1840599%2Fnpns-nuclear-power-generation-en-6-volume-2-annexes.pdf&usg=AOvVaw1Z2w88bMG_e4brU3KCI4JG&opi=89978449

proposals are in line with Defra's policy statement on the role of EfW in treating residual waste.

- 5.15.7 The applicant should set out the arrangements that are proposed for managing any waste produced and prepare a report that sets out the sustainable management of waste and use of resources throughout any relevant demolition, excavation and construction activities.
- 5.15.8 The arrangements described and a report setting out the sustainable management of waste and use of resources should include information on how re-use and recycling will be maximised in addition to the proposed waste recovery and disposal system for all waste generated by the development. They should also include an assessment of the impact of the waste arising from development on the capacity of waste management facilities to deal with other waste arising in the area for at least five years of operation.
- 5.15.9 The applicant must consider the Circular Economy and how to ensure that their project aligns with the government's circular economy ambitions. In Wales applicants are encouraged to refer to 'Towards Zero Waste: Our Waste Strategy for Wales'²⁴⁶.
- 5.15.10 If the applicant's assessment includes dredged material, the assessment should also include other uses of such material before disposal to sea, for example through re-use in the construction process.
- 5.15.11 The UK is committed to transitioning to a circular economy, a future where resources are kept in use for longer, and waste is reduced; we accelerate the path to net zero, we see investment in critical infrastructure and green jobs, our economy prospers, and nature thrives. Where possible, applicants are encouraged to source materials from recycled or reused sources and use low carbon materials, sustainable sources and local suppliers. Construction best practices should be used to ensure that material is reused or recycled onsite where possible.
- 5.15.12 Applicants are also encouraged to prepare a construction materials management plan to inform the use of construction best practices in relation to storing materials in an adequate and protected place on site to prevent waste, or degeneration of valuable materials, for example, from accidental damage or excessive weathering. The use of Building Information Management tools (BIM, or similar) to record the materials used in construction can help to reduce waste and realise further value

²⁴⁶ See <https://gov.wales/towards-zero-waste-our-waste-strategy>

in future decommissioning of facilities, by identifying materials that can be recycled or reused.

Secretary of State decision making

5.15.13 The Secretary of State should consider the extent to which the applicant has proposed an effective system for managing hazardous and non-hazardous waste arising from the construction, operation and decommissioning of the proposed development.

5.15.14 The Secretary of State should be satisfied that:

- Any such waste will be properly managed, both on-site and off-site;
- The waste from the proposed facility can be dealt with appropriately by the waste infrastructure which is, or is likely to be, available. Such waste arisings should not have an adverse effect on the capacity of existing waste management facilities to deal with other waste arisings in the area; and
- Adequate steps have been taken to give consideration to the circular economy, minimise the volume of waste arisings, and of the volume of waste arisings sent for recovery or disposal, except where that is the best overall environmental outcome.

5.15.15 Where necessary, the Secretary of State should use requirements or obligations to ensure that appropriate measures for waste management are applied.

5.15.16 The Secretary of State may wish to include a condition on revision of waste management plans at reasonable intervals when giving consent.

5.15.17 Where the project will be subject to the Environmental Permitting regime, waste management arrangements during operations will be covered by the permit and the considerations set out in Section 4.12 will apply.

5.15.18 The Secretary of State should have regard to any potential impacts on the achievement of resource efficiency and waste reduction targets set under the Environment Act 2021 and circular economy objectives.

5.16 Water Quality and Resources

- 5.16.1 Infrastructure development can have adverse effects on the water environment, including groundwater, inland surface water, transitional waters²⁴⁷, coastal and marine waters.
- 5.16.2 During the construction, operation, and decommissioning phases, development can lead to increased demand for water, involve discharges to water, and cause adverse ecological effects resulting from physical modifications to the water environment. There may also be an increased risk of spills and leaks of pollutants to the water environment. These effects could lead to adverse impacts on health or on protected species and habitats (see Section 4.3) and could result in surface waters, groundwaters or protected areas²⁴⁸ failing to meet environmental objectives established under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 and the Marine Strategy Regulations 2010²⁴⁹.

Applicant assessment

- 5.16.3 Where the project is likely to have effects on the water environment, the applicant should undertake an assessment of the existing status of, and impacts of the proposed project on, water quality, water resources and physical characteristics of the water environment, and how this might change due to the impact of climate change on rainfall patterns and consequently water availability across the water environment, as part of the ES or equivalent (see Section 4.3 and 4.10).
- 5.16.4 The applicant should make early contact with the relevant regulators, including the local authority, the EA and Marine Management Organisation, where appropriate, for relevant licensing and environmental permitting requirements. Applicants should make early contact with the EA, NRW and water companies²⁵⁰ with their proposed water requirements to understand whether water is available and if new water infrastructure is required. If insufficient water is available for

²⁴⁷ As defined in the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, transitional waters are bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by freshwater flows.

²⁴⁸ Protected areas are areas which have been designated as requiring special protection under specific legislation for the protection of their surface water and groundwater or for the conservation of habitats and species directly depending on water.

²⁴⁹ See <https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status>; See

<https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-the-water-framework-directive>

²⁵⁰ Or the relevant regional water resources group, who have been set up to bring together water companies operating in each of England's regions and other major water users.

abstraction the EA and NRW will be unable to authorise an abstraction licence.

5.16.5 Where appropriate, applicants should manage surface water during construction by treating surface water runoff 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.

5.16.6 Applicants should avoid locating potentially polluting activities in the most sensitive locations for groundwater, in particular Source Protection Zone 1 (SPZ) and close to nationally important drinking water supplies. Applicants should consider implementing protective measures to control the risk of pollution to groundwater, for example, through the use of protective barriers.

5.16.7 The ES should in particular describe:

- The existing quality of waters affected by the proposed project and the impacts of the proposed project on water quality, noting any relevant existing discharges, proposed new discharges and proposed changes to discharges;
- Existing water resources²⁵¹ affected by the proposed project and the impacts of the proposed project on water resources, noting any 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;
- Existing physical characteristics of the water environment (including quantity and dynamics of flow) affected by the proposed project and any impact of physical modifications to these characteristics;
- Any impacts of the proposed project on water bodies or protected areas (including shellfish protected areas) under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 and source protection zones (SPZs) around potable groundwater abstractions;
- How climate change could impact any of the above in the future; and
- Any cumulative effects.

²⁵¹ See the Water Resources planning guideline: See <https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline>

Mitigation

- 5.16.8 The Secretary of State should consider whether mitigation measures are needed over and above any which may form part of the project application. A construction management plan may help codify mitigation at that stage.
- 5.16.9 If insufficient water is available for abstraction, the applicant will need to find alternative sources of water to be able to proceed, whether this is developing their own source or collaborating with the water industry or other water abstractors to develop a joint source.
- 5.16.10 The risk of impacts on the water environment can be reduced through careful design to facilitate adherence to good pollution control practice. For example, designated areas for storage and unloading, with appropriate drainage facilities, should be clearly marked.
- 5.16.11 The impact on local water resources can be minimised through planning and design for the efficient use of water, including water recycling. If a development needs new water infrastructure, significant supplies or impacts other water supplies, the applicant should consult with the local water company and the EA or NRW.

Secretary of State decision making

- 5.16.12 Activities that discharge to the water environment are subject to pollution control. The considerations set out in Section 4.12 on the interface between planning and pollution control therefore apply. These considerations will also apply in an analogous way to the abstraction licensing regime regulating activities that take water from the water environment, and to the control regimes relating to works to, and structures in, on, or under controlled waters²⁵².
- 5.16.13 The Secretary of State will need to give impacts on the water environment more weight where a project would have an adverse effect on the achievement of the environmental objectives established under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.
- 5.16.14 The Secretary of State must also consider duties under other legislation including duties under the Environment Act 2021 in relation to environmental targets and have regard to the policies set out in the government's Environmental Improvement Plan.

²⁵² Controlled waters include all watercourses, lakes, lochs, coastal waters, and water contained in underground strata.

- 5.16.15 The Secretary of State should be satisfied that a proposal has regard to current River Basin Management Plans and meets the requirements of the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (including regulation 19). The specific objectives for particular river basins are set out in River Basin Management Plans. The Secretary of State must refuse development consent where a project is likely to cause deterioration of a water body or its failure to achieve good status or good potential, unless the requirements set out in regulation 19 are met. A project may be approved in the absence of a qualifying Overriding Public Interest test only if there is sufficient certainty that it will not cause deterioration or compromise the achievement of good status or good potential.
- 5.16.16 The Secretary of State should also consider the interactions of the proposed project with other plans such as Water Resources Management Plans and Shoreline Management Plans.
- 5.16.17 The Secretary of State should consider proposals to mitigate adverse effects on the water environment and any enhancement measures put forward by the applicant and whether appropriate requirements should be attached to any development consent and/or planning obligations are necessary.

6 Glossary

This glossary sets out the most frequently used terms in this NPS. There is a glossary in each of the energy NPSs. The glossary set out in each of the technology specific NPS may also be useful when reading this NPS.

ACTs	Advanced Conversion Technologies
AD	Anaerobic Digestion
AoS	Appraisal of Sustainability
Associated development	Associated development as defined in section 115 of the Planning Act 2008
BAT	Best Available Technique
BECCS	Bioenergy with Carbon Capture and Storage
BEIS	Department for Business, Energy and Industrial Strategy
Biomass	Material of recent biological origin derived from plant or animal matter
CAA	Civil Aviation Authority
CCA	Climate Change Act 2008
CCC	Climate Change Committee
CCGT	Combined Cycle Gas Turbine
CCS	Carbon Capture and Storage
CCR	Carbon Capture Readiness
CCUS	Carbon, Capture, Utilisation and Storage
CfD	Contracts for Difference
CHP	Combined Heat and Power
CM	Capacity Market
CNS	Communications, navigation and surveillance infrastructure
Co-firing	Use of two fuel types (e.g. coal and biomass) in a thermal generating station
CO ₂	Carbon dioxide
COMAH	Control of Major Accident Hazards

Critical national priority/CNP

A policy set out at Section 4.2 of EN-1 which applies a policy presumption that, subject to any legal requirements (including under section 104 of the Planning Act 2008), it is likely that the urgent need for CNP Infrastructure to achieving our energy objectives, together with the national security, economic, commercial, and net zero benefits, will outweigh any other residual impacts not capable of being addressed by application of the mitigation hierarchy, in all but the most exceptional circumstances. CNP Infrastructure is defined as nationally significant low carbon infrastructure. Low carbon infrastructure means:

- For electricity generation, and all onshore and offshore enabling electricity generation that does not involve fossil fuel combustion (that is, renewable generation, including anaerobic digestion plants, provided they meet existing definitions of low carbon; and nuclear energy generation), 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 project, because all new grid projects have a role in, that are required to 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 production and distribution, and carbon dioxide distribution;
- For energy infrastructure which are directed into the NSIP regime under section 35 of the Planning Act 2008, and fit within the normal definition of “low carbon”, such as interconnectors, Offshore Hybrid Assets, or ‘bootstraps’ to support the onshore network which are routed offshore; and
- Lifetime extensions of nationally significant low carbon infrastructure, and repowering of projects.

DACCS	Direct Air Carbon Capture and Storage
DESNZ	Department for Energy Security and Net Zero (established in February 2023) focussing on the energy portfolio from the former Department for Business, Energy and Industrial Strategy (BEIS).
DECC	Department of Energy and Climate Change, replaced by BEIS in 2016
Defra	Department of Environment, Food and Rural Affairs
DfT	Department for Transport
“Dispatchable” power	Sources of electricity that can be supplied (turned on or off) by operators at the request of power grid operators, in contrast to intermittent power sources that cannot be similarly controlled.
DNO	Distribution Network Operator
DR	Decarbonisation Readiness
EA	Environment Agency
EEZ	Exclusive Economic Zone
EfW	Energy from Waste – combustion of waste material to provide electricity and/or heat
EIA	Environmental Impact Assessment
Electricity networks infrastructure	Electricity transmission systems (long distance transfer through 400kV and 275kV lines) and distribution systems (lower voltage lines from 132kV to 230V from transmission substations to the end-user). This may be overhead, underground or offshore though offshore transmission is only subject to the Planning Act 2008 in circumstances identified in EN-5 at 1.6.4; and Associated infrastructure e.g. substations.
English Waters	Waters adjacent to England up to the 12nm seaward limits of the territorial sea and in a REZ, except the Welsh zone or any part of a REZ in relation to which the Scottish Ministers have functions
EPS	Emissions Performance Standards
ES	Environmental Statement
ESO	National Grid Electricity Systems Operator

FRA	Flood Risk Assessment
GB	Great Britain
Generic Impacts	Potential impacts of any energy infrastructure projects, the general policy for consideration of which is set out in Part 5 of EN-1
GGSS	Green Gas Support Scheme
GHG	Greenhouse Gas
Grid	Electricity networks infrastructure, see above
Gt	Gigatonne = one billion tonnes
GVA	Gross Value Added
GW	Gigawatt = one billion watts
Habitats Regulations	The Conservation of Habitats and Species Regulations 2017 and the Conservation of Offshore Marine Habitats and Species Regulations 2017
Habitats site	Any site which would be included within the definition at regulation 8 of the Conservation of Habitats and Species Regulations 2017 for the purpose of those regulations, including candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation, Special Protection Areas and any relevant marine sites.
HRA	Habitats Regulations Assessment
HSE	Health and Safety Executive
LNG	Liquefied Natural Gas
LPAs	Local Planning Authorities
MCZs	Marine Conservation Zone: areas that protect a range of nationally important, rare or threatened habitats and species. MCZs are established under section 116(1) of the Marine and Coastal Access Act 2009
MHCLG	Ministry for Housing, Communities and Local Government
Mitigation hierarchy	A term to incorporate the avoid, reduce, mitigate, compensate process that applicants need to go through to protect the environment and biodiversity
MMO	Marine Management Organisation established under the Marine and Coastal Access Act 2009

MoD	Ministry of Defence
MPA	Marine Protected Area is a term used to describe the network of habitat sites, SSSIs and MCZs in the English and Welsh marine environment
MPS	UK Marine Policy Statement
MW	Megawatt = one million watts
Nameplate capacity	The rated output of the unit/station at the generator, and therefore includes station own use (parasitic power), and any other consumption/loss prior to despatch to the grid, local network, industrial site or similar transmission system
National Landscapes	Areas legally designated as areas of outstanding natural beauty under the National Parks and Access to the Countryside Act 1949 and Countryside and Rights of Way Act 2000
NDC	Nationally Determined Contribution
NESO	National Energy System Operator
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NRW	Natural Resources Wales
NSIP	Nationally Significant Infrastructure Project
OCGT	Open Cycle Gas Turbine
OHA	Offshore Hybrid Asset
Offshore transmission	<p>Offshore transmission is used in the NPS to cover the following types of infrastructure:</p> <ul style="list-style-type: none"> • Electricity transmission connections between offshore electricity generation projects and the onshore transmission system. • interconnectors – an electricity interconnector is a subsea high voltage transmission cable capable of conveying electricity between two markets, often countries; • Offshore Hybrid Assets – a novel type of electricity asset that combines offshore wind with point-to-point interconnection. They are split into two types: <ul style="list-style-type: none"> ○ Non-Standard Interconnectors – where wind in another country connects to an interconnector;

- Multi-Purpose Interconnectors – where GB wind connects to an interconnector.
- Offshore elements of the ‘onshore’ transmission system – assets which reinforce the onshore transmission network but are located offshore. An example of this is a ‘bootstrap’ which is a link between two points on the onshore transmission network by way of a subsea/ offshore cable. This infrastructure is also sometimes referred to as ‘wet’ onshore transmission infrastructure, and is classified by Ofgem as offshore transmission.

OHL	Overhead electricity line carried on poles or pylons
OLS	Obstacle Limitation Surfaces
PSZs	Public Safety Zones
REZ	The Renewable Energy Zone
RHI	Renewable Heat Incentive
SEA	Strategic Environmental Assessment (under the Environmental Assessment of Plans and Programmes Regulations 2004)
SMPs	Shoreline Management Plans
SNCBs	Statutory Nature Conservation Bodies: bodies responsible for advising the government on, and the administration of, nature conservation. Bodies include Natural England (NE, England), Natural Resources Wales (NRW, Wales), NatureScot (NS, Scotland) and the Joint Nature Conservation Committee (JNCC, UK wide).
Substation	An assembly of equipment in an electric power system through which electric energy is passed for transmission, transformation, distribution, or switching
TAN	Technical Advice Notes regarding planning in Wales
Technical feasibility	Whether it is possible to build and operate a proposed development according to its design parameters
Thermal Generating Station	Electricity generating station that uses a heat source (combustion of fuel or nuclear) to create steam that drives a generating turbine or which uses gas directly to drive a generating turbine
TSO	Transmission System Operator

TTAs	Tactical Training Areas
UKCS	United Kingdom Continental Shelf
UK ETS	UK Emissions Trading Scheme
Vision-led approach	An approach to transport planning based on setting outcomes for a development based on achieving well-designed, sustainable and popular places, and providing the transport solutions to deliver those outcomes as opposed to predicting future demand to provide capacity (often referred to as 'predict and provide').
Weight	Within this NPS the hierarchy of weight is 1) limited 2) moderate 3) great 4) significant 5) substantial
Welsh Waters	Waters adjacent to Wales up to the 12nm seaward limits of the territorial sea and the Welsh Zone of the REZ as defined by section 158 of the Government of Wales Act 2006

This publication is available from: www.gov.uk/government/consultations/planning-for-new-energy-infrastructure-revisions-to-national-policy-statements

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ISBN 978-1-5286-6066-2

E03485970 11/25