Department for Energy Security & Net Zero

New Nuclear National Policy Statement for Nuclear Power Generation

Appraisal of Sustainability Scoping Report

January 2024

Contents

Glossary

Abbreviation	Term
ALC	Agricultural Land Classification
AMR	Advanced Modular Reactor
ANT	Advanced Nuclear Technologies
AONB	Area of Outstanding Natural Beauty
AoS	Appraisal of Sustainability
AQMA	Air Quality Management Area
BAP	Biodiversity Action Plan
BAT	Best Available Techniques
BECCS	Bioenergy with Carbon Capture and Storage
BEIS	Department for Business, Energy and Industrial Strategy
BIM	Building Information Management
BMV	Best and Most Versatile
BNG	Biodiversity Net Gain
CCA	Climate Change Act
CCC	Climate Change Committee
CCR	Carbon Capture Ready
CCS	Carbon Capture and Storage

CCUS	Carbon Capture Usage and Storage
CfD	Contracts for Difference
CHP	Combined Heat and Power
CO2	Carbon Dioxide
CPS	Carbon Price Support
DCO	Development Consent Order
DECC	Department for Energy and Climate Change
DESNZ	Department for Energy Security and Net Zero
Defra	Department for Environment, Farming and Rural Affairs
DfT	Department for Transport
DTI	Department for Trade and Industry
DWSZ	Drinking Water Safeguard Zone
EA	Environment Agency
EIA	Environmental Impact Assessment
EfW	Energy from Waste
EqIA	Equalities Impact Assessment
EMF	Electro-Magnetic Field
EN1-EN6	Overarching NPS (EN-1) and five Technology specific NPS.
EP	Environmental Permitting

EPR	Environmental Permitting Regulations
EPS	Emissions Performance Standards
EQLS	European Quality of Life Survey
ES	Environmental Statement
ETS	Emission Trading Scheme
EU	European Union
EV	Electric Vehicle
FCERM	Flood and Coastal Erosion Risk Management
FRA	Flood Risk Assessment
GDF	Geological Disposal Facility
GDP	Gross Domestic Product
GES	Good Environmental Status
GHG	Greenhouse Gas
GVA	Gross Value Added
GW	Giga Watt
HDD	Horizontal Directional Drilling
HGV	Heavy Goods Vehicle
HIA	Health Impact Assessment
HMT	HM Treasury

HRA	Habitats Regulations Assessment
IED	Industrial Emissions Directive
IPCC	Intergovernmental Panel on Climate Change
kV	Kilo Volt
kWh	Kilo Watt hour
LDD	Local Development Document
LNG	Liquefied Natural Gas
LNR	Local Nature Reserve
LVIA	Landscape and Visual Impact Assessment
LWS	Local Wildlife Site
Mcm	Million standard cubic metres
MCZ	Marine Conservation Zone
MMO	Marine Management Organisation
MNR	Marine Nature Reserves
MNW	Measuring National Wellbeing
MPA	Marine Protected Area
MSFD	Marine Strategy Framework Directive
Mt	Mega tonne
MW	Megawatt

MWe	Megawatt equivalent
NDC	Nationally Determined Contribution
NE	Natural England
NGCC	Natural Gas Combined Cycle
NMVOC	Non-Methane Volatile Organic Compound
NNR	National Nature Reserves
NOx	Nitrogen Oxides
NPPF	National Planning Policy Framework
NPPG	National Planning Policy Guidance
NPS	National Policy Statement
NRW	Natural Resource Wales
NSIP	Nationally Significant Infrastructure Project
NVZ	Nitrate Vulnerable Zone
NZ	Net Zero
ODPM	Office of the Deputy Prime Minister
OECD	Organisation for Economic Co-operation and Development
PPP	Plans, Policies and Programmes
PV	Photovoltaic
RBD	River Basin District

RBMP	River Basin Management Plan
RIGS	Regionally Important Geology Site
RO	Renewables Obligation
SA	Sustainability Appraisal
SAC	Special Areas of Conservation
SAM	Scheduled Ancient Monument
SCI	Sites of Community Importance
SCR	Selective Catalytic Reduction
SEA	Strategic Environmental Assessment
SF6	Sulphur Hexaflouride
SLVIA	Seascape and Landscape Visual Impact Assessment
SMR	Small Modular Reactor
SNCI	Site Nature Conservation Interest
SO2	Sulphur Dioxide
SPA	Special Protection Area
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
TAN	Technical Advice Note

UK	United Kingdom
UKCIP	UK Climate Impacts Programme
UKETS	UK Emissions Trading Scheme
WFD	Water Framework Directive
WfH	Waste from Households
WHS	World Heritage Site

1. Introduction

1.1 The purpose of this document

The scope of an Appraisal of Sustainability (AoS) of the new Nuclear National Policy Statement (NPS) is detailed in this Scoping Report, which has been produced by Atkins Limited on behalf of the Department for Energy Security and Net Zero (DESNZ).

The Scoping Report is being published for consultation and provides the following detail:

- Overview of the background and context of the NPS;
- Overview of the approach to the AoS;
- The relationship between the NPS and other policies, plans and programmes;
- Identification of key sustainability issues arising and implications and opportunities for the NPS and the AoS;
- A series of draft Objectives for the AoS and the framework for appraising likely significant sustainability effects from the NPS; and
- Information on the next steps in the AoS process.

1.2 The background and context to the new Nuclear National Policy Statement

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

There are currently six NPSs relevant to energy (EN-1 to EN-6) applying in England and Wales. EN-1 acts as the overarching NPS to five technology NPSs, with one specific to nuclear (EN-6). EN-6, taken together with current EN-1, provided the primary basis for decisions on nuclear NSIPs until recently. EN-6 lists eight sites considered potentially suitable for new nuclear power stations over 1 GW of single reactor capacity. Of these eight sites, one new nuclear power station (Hinkley Point C) was permitted under EN-6 in November 2012. A further project (Sizewell C) obtained development consent in July 2022 under Section 105 of the Planning Act 2008, rather than EN-6, due to the EN-6's deployment deadline of 2025 now being unachievable for any new nuclear power station. A new nuclear NPS is required to

provide planning policy for the deployment of new nuclear power stations beyond 2025, although the Secretary of State can still grant development consent to nuclear projects under Section 105 of the Planning Act 2008, with the current EN-6 being an important and relevant consideration in the planning process.

Government consulted on the siting criteria and process for a new standalone nuclear NPS not linked to EN-1 in 2017/18. Since then, the government's position on nuclear has evolved as set out in the 10 Point Plan for a Green Industrial Revolution (2020), Energy White Paper (2020) and British Energy Security Strategy (2022). In the latter strategy, the government set out plans for increased deployment of civil nuclear to up to 24GW by 2050 – three times more than now and representing up to 25% of the UK projected electricity demand. Recently, in Powering Up Britain (2023), the government committed to deliver a programme of new nuclear projects beyond Hinkley Point C and Sizewell; to set up Great British Nuclear, with the responsibility to lead delivery of the new nuclear programme; to launch a competitive process to select the best Small Modular Reactor (SMR) technologies, with the first phase commencing in April 2023; and to support the development of Advanced Modular Reactors (AMR) through the Advanced Nuclear Fund to enable deployment of a demonstration project by the early 2030s. A new nuclear fission NPS will be set in the context of these developments, and the needs case for nuclear energy as outlined in the new EN-1.

In a parallel process, the government is currently preparing a new EN-1 and four technology NPSs (EN-2 Natural Gas Generating Infrastructure, EN-3 Renewable Electricity Generation, EN-4 Gas Supply Infrastructure and Gas and Oil Pipelines and EN-5 Electric Networks Infrastructure). This set of NPSs was recently subject to a second public consultation. The government will consider comments received during the further public consultation, and the NPSs will be subject to approval by Parliament before final designation expected to take place before the end of 2023.

Government has now embarked on the preparation of a new nuclear NPS (EN-7) but does not propose to list specific sites as does EN-6. Instead, a criteria-based approach like that of all other technology NPSs (EN-2 to EN-5) will apply, although the current approach to siting could still change pursuant to future policy decisions and public consultation. The government also proposes to remove the deadline for deployment of new nuclear power stations (which was set out in EN-6) and to set policy for Small Modular Reactors (SMRs) and Advanced Modular Reactors (AMRs) alongside nuclear power stations over 1GW of single reactor capacity. Nuclear fusion will not be specifically included in this NPS as there are plans for this to be addressed in a future separate NPS.

It is important to note that some AMR technology will generate heat only or hydrogen only as an output. Such technology is not considered within this NPS. However, AMR technology which produces heat and electrical output (combined heat and power) will be included.

In addition, the government is considering including all nuclear energy generating stations in the national infrastructure planning regime in England, including those that produce only heat or synthetic fuels such as hydrogen, as well as reactors with a generating output less than

NSIP threshold of 50MW in England. The Welsh Ministers have devolved powers to grant consent to energy projects with a generating output of between 10MW and 350MW.

The implications of the need for such amendments to the Planning Act 2008 are currently being considered by DESNZ. Subject to the outcome of the nuclear siting policy consultation and parliamentary time, any amendments to the Planning Act 2008 may not come into effect before the designation of the new nuclear NPS.

A separate process that also has implications for the AoS is the management of higher activity radioactive waste that will be produced by new nuclear power station. The UK Government's policy position is that, before development consents for new nuclear power stations are granted, the government will need to be satisfied that effective arrangements exist or will exist to manage and dispose of the waste they will produce. Geological disposal has been identified as the most appropriate long-term solution for managing higher activity radioactive waste and a suitable location for a Geological Disposal Facility (GDF) will be identified through a consent-based process with government and its agencies working in partnership with communities.

The current version of the Scoping Report has been prepared assuming that SMRs, AMRs and nuclear power stations over 1GW of single reactor capacity will be covered by the new nuclear NPS.

1.3 Appraisal of Sustainability

The main purpose of an AoS is to examine the likely social, economic and environmental effects of designating an NPS. If potential significant adverse effects are identified, the AoS recommends options for avoiding or mitigating such effects. In this way, the AoS helps inform the preparation of the NPS to promote sustainable development.

AoS is a requirement of the Planning Act 2008 and incorporates the Strategic Environmental Assessment (SEA) requirements of the Environmental Assessment of Plans and Programmes Regulations 2004 ("the SEA Regulations"). The AoS thus considers socio-economic effects alongside the environmental effects which are required to be assessed by the SEA Regulations. Chapter 2 provides further legislative and technical context.

The AoS of the new nuclear NPS is being aligned with the AoS that has informed the development of the new EN-1 to EN-5 but it places a stronger focus on nuclear issues to ensure proper coverage of the specificities of the nuclear technologies being promoted.

This report sets out the scoping stage of the AoS to support the preparation of the new nuclear NPS. A number of scoping tasks have been undertaken which result in the development of an AoS Framework of objectives and guide questions against which the new nuclear NPS proposals are assessed.

1.4 Consultation

Consultation on this Scoping Report is aimed at ensuring that the AoS will be comprehensive and robust in supporting the emerging new nuclear NPS by gathering early views on how the AoS should be developed.

A number of organisations are being consulted, including the statutory bodies required under the Environmental Assessment of Plans and Programmes Regulations 2004 (Natural England, Historic England and the Environment Agency in England; Natural Resources Wales and Cadw in Wales; Department of Agriculture, Environment and Rural Affairs (DAERA) in Northern Ireland; and Scottish Natural Heritage and Scottish Environmental Protection Agency).

The Department for Environment, Food and Rural Affairs (DEFRA) and Marine Management Organisation (MMO) are also being consulted to ensure a high level of scrutiny, rigour and comprehensiveness of approach.

Comments are being sought on how the evidence-gathering and proposed AoS framework could be improved or clarified. The following questions may assist consultees in making responses:

- Q1: Have there been any significant omissions of policies, plans or programmes relevant to the scoping of the AoS?
- Q2: Do you agree that the baseline data that have been, or will be collected, are relevant and of sufficient detail to support the AoS?
- Q3: Do you agree with the selection and definition of key sustainability issues?
- Q4: Are there any key baseline data available that are or could be used in support of the issues that have not been identified?
- Q5: Do you agree with the implications and opportunities that have been identified for the emerging NPS?
- Q6: Do the AoS objectives and decision-making questions provide a sound framework against which to assess the sustainability performance of the emerging NPS?
- Q7: Do you agree that aligning the assessment scale of the emerging NPS with that of the AoS of EN-1 to EN-5 is a reasonable approach?
- Q8: Do you have further suggestions regarding the scope of the AoS and its proposed assessment of the new NPS?

Following consultation, any necessary revisions will be made to the AoS framework as appropriate. The final AoS framework will then be used to assess the emerging NPS. An AoS Report will be produced to show how the AoS process influenced the plan, and this report will be published alongside the draft NPS for further consultation.

2. Approach to the Appraisal of Sustainability

2.1 Introduction

As noted, the Planning Act 2008 sets out a requirement that before designating an NPS, the Secretary of State must carry out an AoS. The AoS fulfils two requirements simultaneously:

- The Environmental Assessment of Plans and Programmes Regulations 2004 (as amended), known as the Strategic Environmental Assessment (SEA) Regulations (and which are derived from the Strategic Environmental Assessment Directive - 2001/42/EC)[1], require that before a plan or programme which establishes the framework for development consent is adopted, it should be subject to consultation alongside an environmental report which identifies, describes and evaluates the significant effects which its implementation is likely to have on the environment.
- The Planning Act 2008 requires that NPSs must be the subject of an AoS before they are designated. The scope of such an appraisal is similar to that of an environmental report under the SEA Regulations, but with more emphasis on social and economic impacts, and informed overall with the principles of sustainable development (often summarised as ensuring that development meets the needs of the present without compromising the ability of future generations to meet their own needs).

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

A Habitats Regulations Assessment (HRA) is also being undertaken in a parallel process to the AoS and will provide information for the AoS.

2.2 The AoS process

The AoS process and methods that have been applied are broadly based on a number of published guidance documents (note that there is no specific guidance on preparing an AoS):

- Sustainability Appraisal (SA) of Regional Spatial Strategies and Local Development Documents - Guidance for Regional Planning Bodies and Local Planning Authorities, by

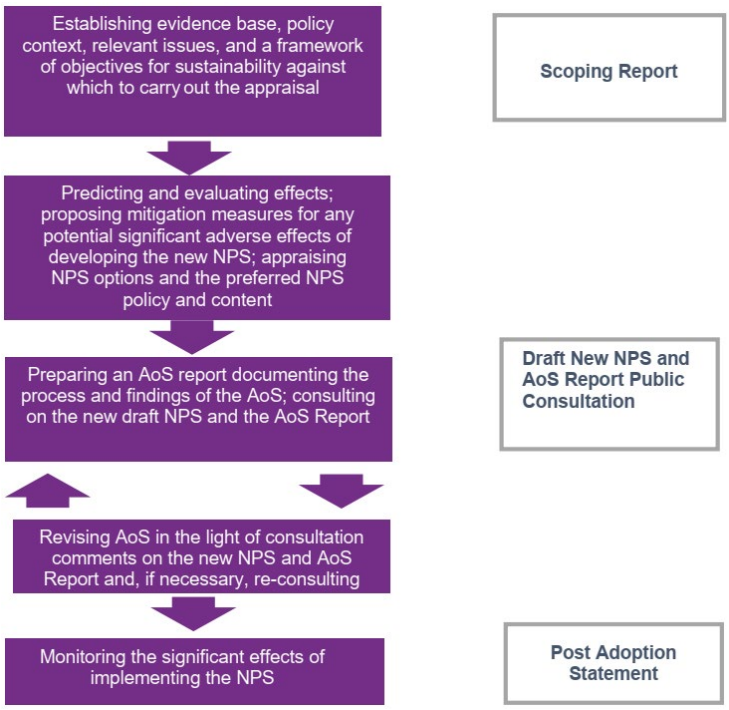
[1] It is to be noted that the processes of SEA and Habitats Regulation Assessment (HRA) are based on European Union (EU) Directives. While the United Kingdom has left the EU, the relevant SEA and HRA Regulations implementing these processes still apply at the time of writing this Scoping Report.

the ODPM, the Scottish Government, the Welsh Government and the Northern Ireland Department of the Environment November 2005;

- A Practical Guide to the Strategic Environmental Assessment Directive, by the ODPM, the Scottish Executive, the Welsh Government and the Northern Ireland Department of the Environment, September 2005;
- England National Planning Policy Framework 2021 and associated Planning Practice Guidance;
- Future Wales – The National Plan 2040 and associated Technical Advice Notes; and
- Scotland National Planning Framework 4 2023

It is to be noted that the processes of SEA and HRA are based on European Union (EU) Directives. While the United Kingdom has left the EU, the relevant SEA and HRA Regulations implementing these processes still apply as of December 2023. Note that under the terms of the Levelling Up and Regeneration Act 2023, a new system of environmental assessment, known as Environmental Outcomes Reports is proposed, to allow the government to replace the Strategic Environmental Assessment and Environmental Impact Assessment processes with a streamlined system that places greater focus on delivering the Government's environmental ambitions.

Figure 2-1: Government's guidance for preparing SEAs and Sustainability Appraisals



Source: Based on ODPM (2005) A practical guide to the Strategic Environmental Assessment Directive and ODPM (2005) Sustainability Appraisal of Regional Spatial Strategies and Local Development Documents

The AoS of the new nuclear NPS will be carried out in a staged approach. Figure 2-1 demonstrates the various preparation stages of the AoS. HRA is being undertaken in parallel

to the AoS and its results incorporated into the AoS as appropriate, first providing information for the Scoping Report and at a later stage informing the AoS Report.

2.3 The geographical and temporal scope of the AoS

The AoS applies to the same geographical area of the NPS – namely England and Wales, although in certain circumstances elements will apply to Scotland and assessments will be made for a variety of expected sustainability effects within this geographical area as well as in Northern Ireland thus covering the whole of the United Kingdom. Consideration will also be made in the AoS of the potential for transboundary effects (i.e. on other surrounding countries to the United Kingdom). Further detail is provided in section 2.4 Technical Scope below.

The temporal scope of the AoS has been aligned with that for each of the technologies promoted by new NPS. Due to different nuclear generation technology having potentially different sustainability effects and potentially being implemented within different timescales / time periods, assessment of each technology will be made separately. Those technologies that are less developed, or which are due to 'come on stream' later in the Plan period, will consequently have a greater level of uncertainty in assessment outcome. Potential phases of new nuclear technology have been identified as follows[2]:

- Third generation (Gen III) reactor - current Gen III reactors are similar to earlier reactors (e.g. Sizewell B) but with enhanced thermal efficiency and a more standardised design. Additional layers of safety features address older, single point-of-failure systems, improving robustness and overall safety. They are typically 1,000-1,4000 MW. Most Gen III reactors use water as a coolant and moderator, of which PWR designs are the most common.Gen III+ have incremental design improvements from previous versions.
- Advanced nuclear technologies (ANT): the next generation of nuclear deigns. They are typically smaller than older designs and are constructed in factory built, modular sections that can be assembled onsite. They range from a few megawatts for off-grid applications, up to hundreds of megawatts. Although a few designs have been demonstrated, commercialisation will require significant further development and investment. They can be categorised into two groups:
    - Small Modular Reactors (SMRs, expected generation from 2030s). Gen III water-cooled designs are the most technologically mature ANTs. The modularity in some cases refers to reactors designed to be connected in clusters.
    - Gen IV Advanced Modular Reactors (AMRs, expected from 2040s). AMRs use novel coolants or fuels (making them Gen IV) and might provide potential heat and/or hydrogen applications. Coolants include helium (referred to as high temperature gas-cooled reactors - HTGR), lead, molten salt and sodium. Some technologies were demonstrated in the 1960s and 70s in the UK.

[2] Nuclear Energy in the UK (2022) POST-PN-0687.pdf (parliament.uk)

The AoS will consider the full lifetime of any individual nuclear generation development which might arise from the new NPS and that includes the construction, operation and decommissioning stages, as well as the safe and secure on-site storage of all spent fuel and intermediate level waste produced from operation and decommissioning until it can be sent for final disposal in a GDF.

For the purposes of the AoS, the following is proposed to be considered for each type of nuclear technology addressed in the new nuclear NPS:

Nuclear Power Stations over 1GW of single reactor capacity

A period of 166 years in relation to any site which is proposed for development of a new nuclear power station over 1GW of single reactor capacity. This period is based on the following assumptions (although it is recognised that there may be some variations within this in particular the period of interim storage of spent fuel could be significantly shorter depending on the availability of a GDF):

- Construction: five-six years
- Operation: Approximately 60 years
- Decommissioning: Approximately 30 years
- Interim storage of spent fuel after last defueling: Approximately 100 years

Small Modular Reactors

A period of 170 years in relation to any site which is proposed for development of a new nuclear power station over 1GW of single reactor capacity. This period is based on the following assumptions (although it is recognised that there may be some variations within this in particular the period of interim storage of spent fuel could be significantly shorter depending on the availability of a GDF):

- Construction: 6 years
- Operation: Approximately 60 years
- Decommissioning: Approximately 20-30 years
- Interim storage of spent fuel after last defueling: Approximately 70 years

Advanced Modular Reactors[3]

A period of 150 years in relation to any site which is proposed for development of a new nuclear power station over 1GW of single reactor capacity. This period is based on the following assumptions (although it is recognised that there may be some variations within this

[3] Note that SMR data has been used as a proxy for AMR timescales due to unavailability of data

in particular the period of interim storage of spent fuel could be significantly shorter depending on the availability of a GDF):

- Construction: four-five years
- Operation: Approximately 60years
- Decommissioning: Approximately 20-30 years
- Interim storage of spent fuel after last defueling: Approximately 60 years

2.4 The technical scope of the AoS

The AoS has a very wide remit and will consider the following topics associated with the SEA regulations which require that the likely significant effects on the environment are assessed, considering the following factors and interrelationship between them:

- Biodiversity;
- Population;
- Human health (covering noise, vibration and light issues among other effects on local communities and public health);
- Fauna and flora;
- Soil;
- Water;
- Air;
- Noise;
- Climatic factors (covering GHG emissions and adaptation to climate change);
- Material assets (covering infrastructure, waste and other assets);
- Cultural heritage including architectural and archaeological heritage; and
- Landscape.

In addition, SA guidance requires the consideration of socio-economic factors alongside the environmental factors identified above.

Building on the SA/SEA themes above, and having considered the nature of the sustainability effects potentially arising from Nuclear NSIP in the UK and in neighbouring countries (see section 5 for further detail), this AoS covers the following topics:

- Biodiversity;
- Geodiversity;
- Greenhouse Gas Emissions;
- Adaptation to a Changing Climate;

- Air Quality and Noise;
- Water Resources and Quality;
- Soil and Contaminated Land;
- Historic Environment;
- Landscapes, Waterscapes and Townscapes;
- Resources and Waste;
- Economic Activity, Opportunities and Deprivation;
- Population Growth and Demographics;
- Communities: Physical Infrastructure; and
- Communities: Physical health and mental wellbeing.

It is important to note here that the AoS of EN-1 concluded that unintended release of radiation from nuclear power stations may result in transboundary effects. However, the regulatory system in existence in the UK ensures that permitted radioactive discharges are within authorised limits and are likely to remain sufficiently localised so as not to impact significantly on neighbouring countries.

In the UK, the nuclear regulatory bodies will need to be satisfied that the radiological and other risks to the public associated with accidental releases of radioactive substances are as low as reasonably practicable and within the relevant radiological risk limit. As part of the site licensing process, a potential operator will be required to demonstrate that the nuclear facility is designed and can be operated such that several levels of protection and defence are provided against significant faults or failures, that accident management and emergency preparedness strategies are in place and that all reasonably practicable steps have been taken to minimise the radiological consequences of an accident. The robustness of the regulatory regime surrounding these installations in the UK thus result in a low probability of an unintended release and therefore any significant transboundary effects. Radioactive releases from nuclear power stations are strictly controlled in accordance with limits laid down in permits issued by the Nuclear Installations Inspectorate and the Environment Agency under the Environmental Permitting (England and Wales) Regulations 2016.

2.5 Habitats Regulations Assessment

As already mentioned, Habitats Regulations Assessment (HRA) will be carried out on the new nuclear NPS alongside the AoS.

In England and Wales, under the Conservation of Habitats and Species Regulations 2017 and The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended)[4] (the 'Habitats Regulations') an 'Appropriate Assessment' is required to be undertaken on proposed plans or projects which are not necessary for the management of the European Site but which are likely to have a significant effect on one or more European Sites either individually, or in combination with other plans or projects.

European Sites include Special Areas of Conservation (SACs), originally designated under European Council Directive 92/43/EEC (referred to as the Habitats Directive), and Special Protection Areas (SPAs), originally designated under the Conservation of Wild Birds Directive (Council Directive 2009/147/EC (which codifies Directive 79/409/EEC)) for rare, vulnerable and regularly occurring migratory bird species and internationally important wetlands. As a matter of government policy[5] listed or proposed Ramsar sites, potential SPAs (pSPA), candidate SACs (cSAC) and sites identified, or required, as compensatory measures for adverse effects on habitats sites, are treated in the same way as European Sites. Hereafter, however, all the above sites are referred to as 'Habitats Sites', as this is in keeping with current terminology used in the National Planning Policy Framework, other National Policy Statements and legislation currently proceeding through the Parliamentary process such as the 'Levelling Up and Regeneration' Act.

It is important to note that the HRA Regulations require assessment of the NPSs as a plan and as such the HRA will be undertaken on that basis; this does not remove the requirement for detailed project level HRA to be undertaken at development consent stage. At this point, there are no specific sites, allocations or any spatial component to the new nuclear NPS. Therefore, the HRA will purely focus on the policy content within the NPS.

[4] Following the changes made to the Conservation of Habitats and Species Regulations 2017 (as amended) by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) in the UK no longer form part of the EU's Natura 2000 ecological network and now form part of the UK's national network of European Sites. In this document they are referred to as Habitats Sites.

[5] Ministry of Housing, Communities and Local Government (2021) National Planning Policy Framework (NPPF). Paragraph 181.

3. Relevant Policies, Plans and Programmes

3.1 Introduction

A key element of the AoS is the identification of other relevant policies, plans, programmes (PPP). This helps to identify relevant environmental and wider sustainability themes and objectives, baseline information and key issues. The new NPS must be prepared to take these PPPs into account as it may influence and be influenced by them.

The SEA Regulations specifically state that information should be provided on:

'An outline of the contents and main objectives of the plan or programme and of its relationship with other relevant plans and programmes' (Schedule 2, paragraph 1)

'The environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation' (Schedule 2, paragraph 5)

3.2 Summary of PPP reviewed

The review of PPP is a valuable element of the AoS process as it assists with the following:

- The identification of environmental, social and economic objectives of other relevant PPP that will guide:
    - the identification of sustainability issues and opportunities pertinent to the new Nuclear NPS;
    - the development of the AoS framework to be used in the assessments of the new Nuclear NPS which will comprise Sustainability Objectives and associated Decision Aid Questions;
- The identification of planning and thematic guidance across sustainability topics which may shape NPS policy approaches as advocated by the AoS; and
- The identification of any clear early potential conflicts or challenges between the PPP and planning and thematic guidance with the emerging NPS policy which is the subject of the AoS process.

The international and national PPP that have been reviewed are listed and details of the review presented in Appendix A.

INTERNATIONAL

Biodiversity

- Convention on Biological Diversity 2010.
- Kumming-Montreal Global Biodiversity Framework (2023).
- Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) 1989.
- Ramsar Convention 1971.
- Convention on the Conservation of Migratory Species of Wild Animals 1979 (Bonn Convention).
- Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA).

Climate Change

- UN Framework Convention on Climate Change 1992, Kyoto Protocol 1997, Paris Agreement 2015 etc.
- UK-EU TAC Agreement 2021.

Heritage

- World Heritage Convention 1972.
- Convention on the Protection of Underwater Cultural Heritage 2001.
- Convention on the Protection of the Archaeological Heritage (1992) – the 'Valetta Convention'.

Landscape

- European Landscape Convention 2000 – the 'Florence Convention'.

Marine Environment

- The OSPAR Convention 1992 (Convention for the Protection of the Marine Environment of the North-East Atlantic).
- The UN Convention for the Law of the Sea 1982 (UNCLOS).
- The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London convention).
- 1996 Protocol to The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Protocol 1996).

Noise

- WHO Guidelines for Community Noise 1999.
- WHO Night Noise Guidelines for Europe 2009.
- WHO Environmental Noise Guidelines for the European Region 2018.

Human Health

- WHO Closing the Gap: Social Determinants of Health 2008.

Transboundary effects

- Espoo Convention on Environmental Impact Assessment in a Transboundary Context 1991.

Public Consultation

- Aarhus Convention 2001.

NATIONAL

Cross – thematic

- Environmental Protection Act 1990.
- Environment Act 2021.
- Clean Growth Strategy 2017.
- UK Sustainable Development Strategy 2005.
- UK Shared Framework for Sustainable Development; One Future – Different Paths 2005.
- The Planning Act 2008.
- Environmental Permitting (England and Wales) Regulations 2016.
- The Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2018.
- Localism Act 2011.
- Environmental Assessment of Plans and Programmes Regulations 2004.
- Planning Practice Guidance – Natural Environment 2019.

Biodiversity

- Wildlife and Countryside Act 1981.
- Countryside and Rights of Way Act 2000 (CROW Act).
- Conservation of Habitats and Species Regulations 2017 as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.
- The Conservation of Offshore Marine Habitats and Species Regulations 2017.
- National Pollinator Strategy 2014-2024.
- The Great Britain Invasive Non-native Species Strategy 2023.
- The Invasive Alien Species (Enforcement and Permitting) Order 2019.
- National Parks and Access to Countryside Act 2006.

- Natural Environment and Rural Communities Act 2006.
- The Economics of Biodiversity: The Dasgupta Review, 2021.
- National Forest Inventory.

Air Quality

- Air Quality Standards Regulations 2010 as amended by The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019.
- Air Quality Strategy: framework for local authority delivery 2023.
- Clean Air Strategy 2019.
- Air Quality Plan for Nitrogen Dioxide in the UK, 2017.

Climate Change

- Climate Change Act 2008 and its 2050 Target Amendment Order, 2019.
- UK Net Zero Strategy 2021.
- The Road to Zero 2018.
- UKCP18.
- Industrial Decarbonisation Strategy 2021.
- National Infrastructure Strategy 2020.
- National Infrastructure Assessment 2018.
- Planning Practice Guidance – Climate Change 2019.
- Climate, people, places and value Design principles for national infrastructure, National Infrastructure Commission, 2021.
- Independent Assessment of UK Climate Risk, Committee on Climate Change 2021.
- UK Climate Change Risk Assessment 2022.
- The third National Adaptation Programme and the fourth strategy for climate adaptation reporting 2023.

Heritage

- Historic Buildings and Ancient Monuments Act 1953.
- Heritage Protection for the 21st Century 2007.
- Ancient Monuments and Archaeological Areas Act 1979.
- Protection of Military Remains Act 1986.
- National Heritage Act 1983 (as amended 2002).
- The Protection of Wrecks Act 1973.
- Government Heritage Statement 2017.
- Planning (Listed Buildings and Conservation Areas) Act 1990.

- National Parks and Access to the Countryside Act 1949.

Landscape

- National Parks and Access to the Countryside Act 1949.
- Norfolk and Suffolk Broads Act 1988.
- Environment Act 1995.
- Countryside and Rights of Way Act 2000 (CROW Act).

Water Environment

- Water Resources Act 1991.
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.
- Flood and Water Management Act 2010.
- Flood Risk Regulations 2009.
- River Basin Management Plans.
- Shoreline Management Plans and Guidance 2006.
- Flood Risk Management Plans.
- Flood and Coastal Erosion Risk Management Policy Statement 2020.
- Salmon and Freshwater Fisheries Act 1975.
- Eels (England and Wales) Regulations 2009.
- Fisheries Act 2020.
- Marine and Coastal Access Act 2009.
- The Marine Works (Environmental Impact Assessment) Regulations 2007.
- UK Marine Policy Statement 2011.
- Relevant marine plans.
- UK Marine Strategy.
- Marine strategy part one: UK updated assessment and Good Environmental Status, 2019.
- Marine Strategy Part 2, 2021.
- Marine strategy part three: UK programme of measures.
- Urban Wastewater Treatment Regulations 1994.
- Water Industry Act 1991.
- Storm Overflow Discharge Reduction Plan.
- Reservoirs Act 1975.
- Water Resources Infrastructure National Policy Statement.

Noise

- Environmental Noise Regulations 2006.
- JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys 2017.
- JNCC Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise 2010.

Air Quality

- Air Pollution: Action in a Changing Climate (Defra, 2010).

Transport

- Decarbonising Transport: A Better, Greener Britain 2021.

Energy

- The Energy White Paper 2020.
- The Ten Point Plan for a Green Industrial Revolution 2020.
- British Energy Security Strategy 2022.
- Nuclear Energy in the UK 2022.
- Energy Innovation Programme (EIP) (2015-2021).
- Net Zero Innovation Portfolio and Advanced Nuclear Fund (2021-2025).
- Powering up Britain: The Net Zero Growth Plan 2023.

Radioactive Waste

- Implementing Geological Disposal – Working with communities 2018.
- Closed Consultation: Managing Radioactive Substances and Nuclear Decommissioning.

DEVOLVED ADMINISTRATIONS / LOCAL

England

Cross - thematic

- Environmental Improvement Plan 2023.
- 25 Year Environment Plan 2018.
- National Planning Policy Framework 2021.
- Environmental Damage (Prevention and Remediation) (England) Regulations 2015 as amended by The Environmental Damage (Prevention and Remediation) (England) (Amendment) Regulations 2019.

Biodiversity and Green infrastructure

- Biodiversity 2020: A strategy for England's wildlife and ecosystem services.
- The Town and Country Planning (Trees Preservation) (England) Regulations 2012.
- The Environmental Targets (Biodiversity) (England) Regulations 2022.
- The Environmental Targets (Woodland and Trees Outside Woodland) (England) Regulations 2022.
- England Trees Action Plan 2021-2024.
- Government Forestry and Woodlands Policy Statement 2013.
- 30x30 Government Commitment 2020.
- Nature Recovery Network, Defra and Natural England 2020.
- Nature for Climate Fund.
- The Green Book, Central government guidance on appraisal and evaluation 2022.
- Introduction to the Green Infrastructure Framework - Principles and Standards for England, Natural England 2021.
- Natural England's Green Infrastructure Standards for England 2023.
- Natural England's climate change risk assessment and adaptation plan 2021 (published 2022). Climate change adaptation reporting: third round.
- Nature Networks Evidence Handbook (NERR081) Natural England 2020.
- The Environmental Benefits from Nature Tool - Beta Test Version, Natural England 2021.
- The Biodiversity Metric 4.0, Natural England 2022.
- Carbon Storage and Sequestration by Habitat, Natural England 2021.
- Climate Change Adaptation Manual. Evidence to support nature conservation in a changing climate, RSPB, Natural England, 2020.

Landscape

- National Character Areas (England), Natural England 2023.
- English National Parks and Broads UK Government Vision and Circular 2010.

Water Environment

- National Flood and Coastal Erosion Risk Management Strategy for England 2020.
- The National Flood and Coastal Erosion Risk Management Strategy for England (FCERM) 2021.
- The Environmental Targets (Water) (England) Regulations 2022.
- The Environmental Targets (Marine Protected Areas) Regulations 2022.

Air Quality

- The Environmental Targets (Fine Particulate Matter) (England) Regulations 2022.

Human Health

- Public Health England – Strategy (2020-2025).
- Contaminated Land (England) Regulations 2006 as amended by the Contaminated Land (England) (Amendment) Regulations 2012.

Soils

- Safeguarding our Soils: a strategy for England 2009.

Waste

- Waste (England and Wales) Regulations 2011 as amended by The Waste (England and Wales) (Amendment) Regulations 2014.
- National Review of Waste Policy in England 2011.
- Waste Management Plan for England 2021.
- Waste Prevention Programme for England 2023.
- Resources and Waste Strategy for England, DEFRA and Environment Agency 2018.
- National Planning Policy for Waste 2014.
- The Environmental Targets (Residual Waste) (England) Regulations 2022.

Noise

- Noise Policy Statement for England 2010.
- Environmental Noise (England) Regulations (2006) as amended by The Environmental Noise (England) Amendment Regulations 2018.

Note that the AoS follows closely the five principles of the Environmental Principles Policy Statement that is set out within section 17(5) of the Environment Act (2021 and it is anticipated that the NPS will be developed in line with these as the UK government has already committed to these principles through international instruments and processes. The five principles are:

- Integration: look at opportunities to embed environmental protection and/or enhancement
- Prevention: prevent environmental harm before it occurs or contain existing damage
- Rectification at source: environmental damage should be addressed at its origin to avoid the need to remedy its effects later
- Polluter pays: the costs of pollution should be borne by those causing it
- Precautionary: where there are threats of serious or irreversible environmental damage, a lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation

The purpose of these principles is to guide ministers and policymakers towards opportunities to prevent environmental damage and enhance the environment, though it is important to note that the principles are not rules and they cannot dictate policy decisions by government ministers.

Wales

Cross – thematic

- Environmental Damage (Prevention and Remediation) (Wales) Regulations 2009.
- Future Wales – The National Plan 2040.
- Environment (Wales) Act 2016.
- Wellbeing of Future Generations (Wales) Act 2015.
- State of Natural Resources Report (SoNaRR) for Wales 2020.
- Environment (Wales) Act 2016.
- Natural Resources Policy (Welsh Government) 2017.
- State of Natural Resources Report (SoNaRR) for Wales 2020.
- Planning Policy Wales (Edition 11, 2021).
- Welsh National Marine Plan 2019.
- One Wales: One Planet – the Sustainable Development Scheme for Wales (2009).
- Welsh Government Rural Communities - Rural Development Programme (2014-2020).
- TAN 5: Nature Conservation and Planning 2009.
- TAN 6: Planning for Sustainable Rural Communities 2010.
- TAN 11: Noise 1997.
- TAN 13: Tourism 1997.
- TAN 15: Development, Flooding and Coastal Erosion 2021.
- TAN 16: Sport, Recreation and Open Space (2009).
- TAN 18: Transport 2007.
- TAN 21: Waste 2014.

Climate Change

- The Climate Change Strategy for Wales (2010).
- Net Zero Wales: Carbon Budget 2 (2021 – 2025).
- Policy Statement on Local ownership of energy generation in Wales – benefitting Wales today and for future generations.

- Prosperity for All: A Climate Conscious Wales (2019).
- Adapting to Climate Change: Guidance for Flood and Coastal Erosion Risk Management Authorities in Wales 2022.

Waste

- The Waste (Miscellaneous Provisions) (Wales) Regulations 2012
- Welsh Government Policy on the Management and Disposal of Higher Activity Waste.

Biodiversity

- The Town and Country Planning (Trees) (Amendment) (Wales) Regulations 2017.
- The Town and Country Planning (Development Management Procedure) (Wales) Order 2012 as amended by The Town and Country Planning (Development Management Procedure) (Wales) (Amendment) Order 2017.
- Woodlands for Wales 2018.

Contaminated Land

- The Contaminated Land (Wales) Regulations 2006 as amended by the Contaminated Land (Wales) (Amendment) Regulations 2012.

Heritage

- Historic Environment Act (Wales) 2016.
- The Welsh Historic Environment Strategic Statement: Action Plan 2010.

Water Environment

- Water Strategy for Wales 2015.
- Flood and Water Management Act 2010.
- National Strategy for Flood and Coastal Erosion Risk Management in Wales 2020.
- Welsh National Marine Plan (Welsh Government 2019).
- Flood Consequence Assessments: climate Change Allowances 2021.
- Shoreline Management Plans applicable in Wales.

Landscape

- Valued and Resilient: The Welsh Government's Priorities for Areas of Outstanding Natural Beauty and National Parks (July 2018).

Energy

- Nuclear Energy in Wales (Third Report of Session 2022-2023).
- Natural Wales Resources Technical Guidance.

Transport

- Llwybr Newydd: the Wales Transport Strategy 2021.

Scotland

Cross – thematic

- Town and Country Planning (Environmental Impact Assessment) (Scotland).
- The Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013.
- National Planning Framework 4 (2023).
- Planning Advice Note (PAN) 3/2010 Community Engagement.
- PAN 33 Development of Contaminated Land (Revised Oct 2000).
- PAN 51 Planning, Environmental Protection and Regulation (Revised 2006).
- PAN 2/2011 Planning and Archaeology.
- PAN 71 Conservation Area Management.
- PAN 60 Planning for Natural Heritage.
- PAN 1/2011 Planning and Noise.
- PAN 61 Waste Management Planning (2001).

Biodiversity

- The Nature Conservation (Scotland) Act 2004 (Authorised Operations) Order 2011.
- Scottish Biodiversity Strategy to 2045 (2022).
- Wildlife and Natural Environment (Scotland) Act 2011 (as amended).
- Scotland's Forestry Strategy 2019-2029.
- Forestry and Land Management (Scotland) Act 2018.
- Forestry (Felling) (Scotland) Regulations 2019.
- Control of Woodland Removal 2012.
- The Town and Country Planning (Tree Preservation Order and Trees in Conservation Areas) (Scotland) Regulations 2010.

Waste

- The Waste (Scotland) Regulations 201.
- Scotland's Zero Waste Plan (2010).
- Management and Disposal of Higher Activity Waste.

Air Quality

- The Air Quality Standards (Scotland) Regulations (2010).
- The Air Quality (Scotland) Amendments Regulations 2016.

Cleaner Air for Scotland – the Road to a healthier future (the Scottish Government 2015).

Contaminated Land

- Contaminated Land (Scotland) Regulations (2000 and 2005).

Noise

- Environmental Noise (Scotland) Regulations (2006) as amended by The Environmental Noise (Scotland) Amendment Regulations 2018.

Climate Change

- Climate Change (Scotland) Act 2009.
- Climate Change (Emissions Reduction Targets) (Scotland) Act 2019.
- Securing a Green Recovery on a Path to Net Zero: climate change plan 2018–2032 – update.
- Climate Ready Scotland Scottish Climate Change Adaptation Programme (2019-2024).

Water Environment

- The Water Environment (Controlled Activities) (Scotland) Regulations 2011.
- The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017.
- Scotland's National Marine Plan 2015.
- The Marine Scotland Act 2010.

Energy

- Scottish Energy Strategy: The Future of Energy in Scotland 2017.

Northern Ireland

Cross – thematic

- Environment Strategy for Northern Ireland 2023.

Marine Environment

- Marine Plan for Northern Ireland 2022.

Climate Change

- The Path to Net Zero Energy: Secure, Affordable, Clean 2021.
- Climate Change Act (Northern Ireland) 2022.
- Management and Disposal of Higher Activity Waste.

A series of tables contained in Appendix A present the review of PPP and document the following:

- The primary objectives of the documents including their environmental protection objectives where appropriate;
- Key indicators and targets of relevance in the documents; and
- How the objectives within the policies, plans and programmes should be taken into consideration in the AoS and NPS processes.

3.3 Environment Themes

The review of PPPs revealed a large number of common themes in terms of their objectives relating to sustainability within the context of strategic development planning. These are listed below:

Biodiversity and the Natural Environment

- Protection of sites designated for nature conservation purposes (including candidate and potential sites);
- Protect and enhance endangered or important species and habitats, including those considered irreplaceable such as Ancient Woodland and Ancient and Veteran trees;
- Contribute to the delivery of biodiversity strategies and plans;
- Increase important habitat;
- Protect, maintain and where possible enhance natural habitat networks and green infrastructure, to avoid fragmentation and isolation of networks;
- Contribute to delivering multi-functional Green Infrastructure – note this will also have implications in addition to biodiversity across a range of themes such as climate change, air quality, water quality, health, wellbeing and so on;
- Support ecosystem resilience;
- Contribute to addressing the problem of Invasive Non Native Species, including eradication and prevention of spread;
- Contribute to the achievement of Biodiversity Net Gain, with a minimum 10% required;
- Contribute to the long-term biodiversity target for species' extinction risk in England which is to reduce the risk of species' extinction by 2042, when compared to the risk of species' extinction in 2022;
- Contribute to the long term target of at least 16.5% of all land in England covered by woodland and trees outside woodland by end of 2050; and
- Contribute to the achievement of Environment Net Gain

Geodiversity & Coastal processes

- Protection of sites designated for geodiversity importance.
- Improve access to sites of geodiversity interest.
- Maintenance of natural shoreline processes / management of shorelines.

Greenhouse Gas Emissions

- Reduce GHG emissions, particularly CO2.
- Maximise the use of renewable energy.
- Minimise embedded carbon in development.
- Encourage green infrastructure to help with carbon sequestration.
- Increase energy efficiency and make use of new technology.
- Minimise use of fossil fuels.
- Contribute to the achievement of Net Zero Carbon target.

Adaptation to a Changing Climate and Flooding

- Prepare for extreme weather events and sea level rise – with worst case scenarios being appropriate for nuclear development.
- Minimise the risk and impact of flooding.
- Avoid development in floodplains when possible.
- Help meet objectives of Flood Risk Management Plans allowing for climate change.
- Utilise Natural Flood Management.

Air Quality & Noise

- Do not cause additional AQMA to be designated.
- Reduce emissions of NO2.
- Reduce emissions from transport (roads in particular).
- Increase use of low emission / zero emission at point of use vehicles.
- Increase convenience and use of sustainable transport modes, including for construction.
- Encourage use of green infrastructure to address pollution distribution and improve local air quality
- Reduce emissions of PM10 and PM2.5.

- Reduce effects of noise (and vibration) on people and the natural environment including underwater.
- By the end of 31st December 2040 the annual mean level of PM2.5 in ambient air must be equal to or less than 10 µg/m³ (in England).

Water Resources

- Protect and improve the quality of groundwater, inland surface water, transitional waters, coastal and marine waters.
- Note specific groundwater protection may be required for certain nuclear facilities.
- Help to meet objectives of the Water Framework Directive (WFD)[6] and the relevant River Basin Management Plan, as well as Shoreline / Estuarine Management Plans and Special Protection Zones.
- Consider how climate change may alter rainfall patterns and water availability.
- Make use of Sustainable Drainage Systems (SuDS).

Land Use, Soil and Agriculture

- Recognise finite nature of soil.
- Prioritise development on brownfield sites.
- Seek to reclaim derelict and contaminated land.
- Protect farmland and soils – particularly those of the best value.
- Ensure appropriate management and storage of soils during construction.
- Change agricultural land use to forestry.

Cultural Heritage

- Conserve and protect historic assets (designated and undesignated) and those of cultural note.
- Increase awareness of buried archaeology / unknown heritage – recognise that some historic assets can be offshore.
- Protect and enhance the setting of cultural heritage assets – this can include at a landscape scale.
- Improve access to historic assets, including buildings and landscapes of value where appropriate.

[6] Water Environment Regulations assessments were formerly called Water Framework Directive assessments; the renaming reflects the fact that EU law as such no longer applies (other than when it has become assimilated into UK law).

- Sympathetic design and use of vernacular architecture when appropriate to enhance the local character and ‘sense of place.’

Landscapes and Townscapes

- Protect those areas designated or recognised for landscape value, including on a local scale.
- Protect and enhance landscape and townscape character and local distinctiveness, including those areas with a sense of wildness and remoteness.
- Protect tranquillity from noise and light pollution.
- Consider how landscape planning can act in a cross cutting fashion e.g. carbon sequestration.
- Foster good design quality for all new development.
- Promote access to good quality landscapes and wellbeing infrastructures including Soundscape opportunities.
- Promote regeneration of previously developed land when appropriate.

Natural Resources and Waste

- Ensure efficient resource use and minimise resource footprint.
- Use secondary and recycled materials.
- Consider opportunities to maximise on-site re-use of materials.
- Employ waste reduction methods to minimise construction and maintenance waste.
- Reduce the amount of waste disposed of at landfill.
- Provide for safe and secure short term nuclear waste storage.
- Promote circular economy.
- Long-term target to ensure that the total mass of residual waste per head of population in England does not exceed 287 kilograms by 31st December 2042.

3.4 Economic Themes

- Improve physical accessibility to jobs through the location of employment sites and transport links close to areas of high unemployment.
- Widen the number and range of accessible employment opportunities and support growth in employment and labour productivity.
- Improve attractiveness for inward investment.
- Improve rail and road journey reliability for business users.
- Support local businesses and local supply chain.
- Support enhancement of local economy and overall prosperity.
- Support development of the skills base through training and apprenticeships.
- Build / encourage opportunities for clusters of related industries, services and research to develop around nuclear facilities.

3.5 Social Themes

- Distinctive development that recognises, reflects and enhances the ‘sense of place’ and ‘sense of community.’
- Self-sufficient, resilient and adaptable communities.
- Communities that will develop roots and connections between people.
- Access to social facilities – community, cultural, health and leisure / recreational.
- Access to transport with an emphasis on active, low carbon and sustainable modes.
- Access to and provision of modern and robust infrastructure.
- Access to Open Space and Green Infrastructure.

- Access to educational, training and employment opportunities.

Consultation Question 1: Have there been any significant omissions of policies, plans or programmes relevant to the scoping of the AoS?

4. Baseline Information

4.1 Introduction

The collation of baseline information is the next step of the AoS. The SEA Regulations require the inclusion of:

- *The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme. (Schedule 2, paragraph 2)*
- *The environmental characteristics of areas likely to be significantly affected (Schedule 2, paragraph 3);*

This chapter (and Appendix C) set out baseline information for the UK to inform the assessment of the emerging nuclear NPS across the three sustainability dimensions: environment, social and economic. The information is an update of that used to inform the AoS of the wider suite of Energy NPSs in a completely separate exercise, with a clearer focus on the production of energy from nuclear fission.

4.2 Summary of national baseline data

The AoS is being undertaken to support the development of a new nuclear NPS, which will have national implications and the approach to the baseline data collation process that has been adopted involves higher level national data for all the four nations of the United Kingdom.

The baseline data provide an overview of the sustainability characteristics of the United Kingdom, with a particular focus on England and Wales. This overview, together with contextual information, is presented in Appendix B.

The most efficient way to collate relevant baseline data is through the use of indicators. This ensures that the data collation is both focused and effective. The identification of relevant indicators has taken place alongside the assessment of other relevant Policies, Plans and Programmes, the identification of Sustainability Issues and development of the AoS framework.

It should be noted that the AoS process does not require the collection of primary data, instead relying on the analysis of existing information. However, where data gaps exist in the data collection activities by the authorities this will be highlighted in the AoS report.

Indicators have been selected for their ability to provide objective data that will, over time, offer an insight into general trends taking place. Throughout the assessment process, the following issues will need to be addressed:

- What is the current situation, including trends over time?
- How far is the current situation from known thresholds, objectives or targets?

- Can particularly sensitive or important elements of the environment, economy or society be potentially affected by NSIP (both positive and negative effects)?
- Are the effects of a large or small scale, reversible or irreversible, permanent or temporary, direct or indirect?
- What are the options available to prevent, reduce or compensate any negative effects arising from NSIP?
- What are the options available to potentiate any positive effects arising from NSIP?
- Will there be any significant cumulative or synergistic effects arising from NSIP over time?

Appendix B sets out the national baseline information that has been collated. The indicators that have been considered are listed in Table 4-1 below.

Table 4-1: Summary of national baseline information

Topic	Baseline Information (indicators)
Greenhouse gas emissions	Distribution of greenhouse gas emissions Contribution of sectors to greenhouse gas emissions
Biodiversity and Ecosystems	Special Protection Areas Special Areas of Conservation Ramsar sites National Nature Reserves and Local Nature Reserves Sites of Special Scientific Interest (England, Scotland, Wales) and Areas of Special Scientific Interest (Northern Ireland) Marine Conservation Zones (England, Wales, Northern Ireland) – note these also align with Highly Protected Marine Areas (HPMAs) Nature Conservation Marine Protected Areas (Scotland) Ancient Woodland Priority Habitat Biosphere Reserves Chalk Rivers (England only)

	Biodiversity Targets Protected Species Nature Recovery Network Climate change adaptation risks and opportunities for biodiversity
Communities – Population, Employment, and Viability	Population Location of major settlements and areas of population Working age population Unemployment Economic Activity Rates
Communities – Supporting Infrastructure	Location of strategic rail links Location of strategic road network Location of airports Location of ports Gas Network HV Electricity Network Offshore Wind Farm Nuclear Power Stations
Health and Well-Being	Radioactivity levels in the environment The Index of Multiple Deprivation (England) The Scottish Index of Multiple Deprivation The Welsh Index of Multiple Deprivation Northern Ireland Multiple Deprivation Measure The Measuring National Well-Being Programme National Trails (England and Wales), Scotland's Great Trails

	Country Parks National Cycle Networks Coastal Paths (See also Air Quality and Noise below)
Historic Environment	World Heritage Sites Scheduled Monuments Historic Battlefields Parks and Gardens Protected Wrecks Listed Buildings Conservation Areas Historic Landscape Characterisation Areas of Archaeological Importance Heritage at Risk Registered Historic Landscape Heritage Coast Roman Roads
Landscape, Townscape, and Seascape	National Parks Areas of Outstanding Natural Beauty (England, Wales, Northern Ireland) and National Scenic Areas (Scotland) Heritage Coasts (England and Wales) Landscape Character Areas National Character Areas (England) Seascape Character Areas (England and Wales) Green Belt

	Local Landscape Character Assessments Local Landscape Sensitivity Assessments
Air Quality and Noise	Air Quality Management Areas Noise Important Areas
Soils, Geology, and Land Use	Sites of Special Scientific Interest (England, Scotland, Wales) and Areas of Special Scientific Interest (Northern Ireland) National Soil Maps Contaminated Land UNESCO Global Geoparks Agricultural Land Classification
Water Quality and Resources	Water Framework Directive (WFD) River Basin Management Plans Bathing Water Quality
Adaptation to Climate Change	Predicted changes to temperature and weather patterns Flood Risk Location of Fluvial and Tidal Floodplains & Shoreline Management Plans Marine Spatial Plans
Resources and Waste	Active Landfill Sites Mineral safeguarding and exploration zones Exploration Licenses

Appendix B is supported by figures set out in Appendix C which show the geographical distribution of some of the key designations and land uses across the UK. Table 4-2 provides a summary of the data presented on these figures. An indication is provided in brackets of whether an information layer only applies to a specific part of the UK.

Table 4-2: Key designations and land use across the UK

Figure	Key designations / land use considered
Figure 1: Biodiversity and Ecosystems	Chalk Rivers (England) Ancient Woodland (England and Wales) Ramsar (England and Wales) RSPB Reserves (England and Wales) Special Protection Areas (England and Wales) Special Areas of Conservation (England and Wales) Sites of Special Scientific Interest (England and Wales) National Nature Reserves (England and Wales) Marine Conservation Zones (England and Wales) Biosphere Reserves (England) Saline Lagoons (Wales)
Figure 2: Material Assets	Nuclear Power Stations (England and Wales) Electricity Substations (England and Wales) Gas sites (England and Wales) Overhead Lines (England and Wales) Roads (England and Wales) Gas Feeder Pipe (England and Wales)
Figure 3: Historic Environment	Protected Wrecks (England and Wales) World Heritage Sites (England and Wales) Scheduled Monuments (England) Registered Battlefields (England) Registered Parks and Gardens (England and Wales)

	Roman Roads (England and Wales) Conservation Areas (England and Wales) Heritage Coasts (England)
Figure 4: Landscape	Areas of Outstanding Natural Beauty (England and Wales) National Parks (England and Wales) Greenbelt (England)
Figure 5: Air Quality and Noise	Air Quality Management Areas (England and Wales) Noise Important Areas (England) Road and Rail Noise Priority Areas (Wales) Quiet Areas (Wales)
Figure 6: Climate Factors	Flood Zone 2 (England) Flood Zone 3 (England and Wales) Flood Risk Areas (England) Surface Water Flooding (Wales) Flood Map for Planning: River and Sea (Wales)
Figure 7 Communities	Bathing Water Areas (England) Coastal Paths (England and Wales) National Trails (England and Wales) National Cycle Network (England and Wales) Country Parks (England and Wales) Registered Common Land (England) Greenspace (England and Wales)
Figure 8	Historic Landfill (England)

Soil	Permitted Waste Sites (England) Agricultural Land Classification (England and Wales)
Figure 9 Water	River, Canal and Surface Water Transfer Waterbodies (England) Groundwater Source Protection Zones (England and Wales) River Waterbodies (Wales) Lake Waterbodies (Wales) Shellfish Waters (Wales)

Note that while the above Figures depict a range of key designations and land use, the scale at which this mapping is presented does not allow for the full granularity of data of relevance. Underpinning many of the above noted aspects are a series of more 'local' designations and land uses which are also sustainability considerations. These include, for example, sites designated as Local Nature Reserves, Sites of Nature Conservation Importance, Local Wildlife Sites, Noise Important Areas, non-designated heritage assets, listed buildings, Conservation Areas, Special Landscape Areas, Areas of Great Landscape Value, areas of contaminated land, Public Rights of Wayand so on which will be considerations in any NSIP planning application.

Since AoS is an iterative process, subsequent stages in its preparation and assessment might identify other issues and priorities that require the sourcing of additional data and/or information and identification of monitoring strategies. This makes the AoS process flexible, adaptable and responsive to changes in the baseline conditions and enables trends to be analysed over time.

The analysis of the baseline and likely evolution without the NPS has highlighted several key issues. These, together with implications and opportunities arising for the NPS, have been summarised in Key issues and opportunities for the NPS in Chapter 5 Key Sustainability Issues.

Consultation Question 2: Do you agree that the baseline data that have been, or will be collected, are relevant and of sufficient detail to support the AoS?

5. Key Sustainability Issues

5.1 Introduction

The identification of sustainability issues is the next step of the AoS methodology. The SEA Regulations require the inclusion of:

any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds and the Habitats Directive (Schedule 2, paragraph 4).

In addition, the AoS has considered socio-economic problems to provide the full sustainability picture. Based on the full sustainability picture, the AoS then works to identify ways in which the emerging NPS will be affected by and or can affect the sustainability issues identified.

5.2 Summary of key sustainability issues, implications and opportunities for the NPS

The identification of key sustainability issues has been based upon the review of relevant PPP (Chapter 3) and the collation of baseline data (Chapter 4). The summary of issues is presented below in Key issues and opportunities for the NPS. Note that due to the geographical scope of the NPS, this summary of key sustainability issues is focused on England and Wales, along with the United Kingdom as a whole as appropriate.

It should be noted that some issues are cross-cutting and affect several topics. For example, climate change can affect biodiversity, water resources, flooding and landscapes. Key issues and opportunities for the NPS shows the linkages to the AoS Objectives identified in the following chapter.

Consultation Question 3: Do you agree with the selection and definition of key sustainability issues?

Consultation Question 4: Are there any key baseline data available that are or could be used in support of the issues that have not been identified?

Consultation Question 5: Do you agree with the implications and opportunities that have been identified for the emerging NPS?

Key issues and opportunities for the NPS

Note that issues relating to effects on equality from implementing the NPS will be specifically addressed in a separate assessment to this AoS. Findings of this separate assessment will be used to inform the development of the NPS.

Key Issue 1 (summary of baseline situation/ information)

Biodiversity – new nuclear development and underlying climate change may put pressure on sites designated for nature conservation and wider green infrastructure, though there are also opportunities for new nuclear development to benefit wider green infrastructure and deliver Biodiversity Net Gain.

Across England and Wales, there are sites designated internationally (SACs, SPAs, Ramsar sites) and nationally (SSSIs) for nature conservation. SACs, SPAs, Ramsar sites and SSSIs are afforded the highest level of protection through statutory designations.

Within England there are a total of 82 SPAs, while Wales has a total of 17. There are also 242 SACs in England and 85 in Wales. Note also that both Scotland and Northern Ireland also have numerous sites designated for nature conservation and there is a potential for these to be affected by proposals considered by the NPS.

Across the whole of the UK, there is an extensive network of priority species and their habitats including those that were identified as being the most threatened and requiring conservation action under the UK Biodiversity Action Plan (UK BAP). Lists of priority species have been drawn up (and are updated) in respect of each of the UK's constituent countries. Many of these species are mobile / migratory. In addition, there are many of Invasive Non-Native species (approx. 3,000 across the UK) which can pose a threat to native species.

A number of SPAs and SACs protect habitat and/or species associated with the marine environment. Currently, there are 46 SPAs with marine components designated partly or wholly within English waters and 10 within Welsh waters. A total of 3 SPAs with marine components are located within both English and Welsh waters.

There are also currently 37 SACs with marine components designated partly or wholly within English waters and 12 designated partly or wholly within Welsh waters. A further 3 SACs with marine components are located within both English and Welsh waters.

As of June 2023, there were 68 Ramsar sites in England, totalling an area of 320,648 ha, while Wales has 7 Ramsar sites, totalling 11,366ha.

In addition to these internationally designated sites, there are over 4000 SSSIs within England and over 1000 in Wales. There are also 89 MCZs designated in England, with 1 MCZ in Welsh waters. Note that MCZs can also include those areas designated as Highly Protected Marine Areas (HPMAs), which while aligned with the same area, have different conservation objectives.

There are substantial numbers of National Nature Reserves (NNR) and Local Nature Reserves (LNR) recorded across England and Wales. There are also numerous areas of Ancient Woodland and priority habitats, together with Sites of Nature Conservation Interest (SNCIs) and locally designated wildlife corridor sites. Although these areas are not afforded the highest statutory protection, they contribute significantly towards nature conservation.

All sites, from those designated with the very highest level of protection, to those areas at the local level, are threatened by a wide range of issues such as habitat loss, human encroachment, poor management practices and invasive species. Changes in air and water quality along with a changing climate can also change distribution of species and habitats within these sites. Increased accessibility or proximity of development to designated sites also has the potential to adversely affect them indirectly, for example through disturbance or pollution deposition.

The wider green infrastructure network across England and Wales incorporates not only sites designated for nature conservation purposes, but also many other multi-functional green spaces and the connections between such locations. This network is highly susceptible to impacts from development including:

- direct land take (which may contribute to fragmentation)
- construction and operational disturbance (noise, vibration, light pollution, etc.)
- emissions / contamination (air, water and soil)

In the marine environment, birds, mammals, fish, pelagic habitats and benthic habitats are affected by impacts such as:

- extraction of, or mortality/injury to, wild species (by commercial fish and shellfish harvesting and recreational fishing and other activities)
- changes to hydrological conditions
- anthropogenic sound
- input of other forms of energy (including electromagnetic fields, light and heat)
- physical loss of benthic habitats (due to permanent change of seabed substrate or morphology and to extraction of seabed substrate).

In recognition of the continued threats and alarming levels of biodiversity decline, there are a range of commitments made at the International, National and Local levels to halt biodiversity loss and reverse those losses made to date – this has resulted in the need for new development to deliver Biodiversity Net Gain (BNG) in the UK, with a minimum 10% set out in the Environment Act 2021. Currently BNG targets only apply to terrestrial and intertidal components of new development. Principles for Marine Net Gain are currently in development by Defra who will provide further guidance in due course.

Three statutory long-term targets have been set in 2022:

- to reduce the risk of species' extinction by 2042, when compared to the risk of species' extinction in 2022.
- at least 70% of protected features in MPAs to be in a favourable condition by 31 December 2042 , with the remaining features to be in a recovering condition.
- by the end of 31st December 2050 at least 16.5% of all land in England is covered by woodland and trees outside woodland.

Key Issue 1: Summary of likely evolution of the baseline without the new Nuclear NPS (direction of condition trend)

Declining

Designated sites are afforded a high level of protection from the effects of development, and face significant pressures due to and ongoing threats from practices in sectors such as industry, agriculture, transport, water supply / wastewater disposal, alongside more general pressures of increased urbanisation and the effects of climate change.

However, while an overall general decline in biodiversity is still anticipated , it is important to note that under the Environment Act 2021, there will be a requirement for any new planning application for development under the Town and Country Planning Act) to deliver at least 10% BNG secured for a minimum duration of 30 years from November 2023. For NSIPs, the requirement will apply later, from November 2025. BNG can be onsite or offsite and a register will be kept of this by government. The requirement for BNG also applies to brownfield sites.

Where development would result in the loss of irreplaceable habitat then this will fall outside of the BNG calculation for the development, and it will have its own bespoke compensation agreed with the relevant planning authority for the irreplaceable area.

It is also the intention of government to promote other activities) to help halt biodiversity loss more generally such as establishing Local Nature Recovery Strategies (as promoted by Defra) and through the 25 Year Environment Plan commitment establish a Nature Recovery Network.

Defra has launched a consultation on Marine Net Gain in June 2023. seeking views on the proposed aims and principles of marine net gain and how to best introduce a net gain approach to infrastructure and development in the marine environment There are provisions in the Environment Act 2021 to allow marine net gain to be made mandatory in the future.

Key Issue 1: Implications and Opportunities for the new Nuclear National Policy Statement

The NPS should aim to protect and enhance all sites of biodiversity importance in the UK and place a particular emphasis on protecting sites designated for nature conservation, as well as candidate and potential sites across marine as well as terrestrial environments. This could be achieved by ensuring that planning / design of new nuclear generation developments and their associated infrastructure avoid sensitive areas and through the adoption of best practice wildlife friendly designs that deliver multi-functional green infrastructure. Where this is not possible, there should be mitigation and compensation for losses.

In parallel with the AoS of the NPS, HRA is being undertaken which will identify the internationally designated nature conservation areas likely to be affected, where possible establish the likelihood of impacts on the integrity of these sites and identify appropriate avoidance and mitigation measures early in the development of the NPS.

The NPS should seek to afford protection to priority species and their habitats. A particular focus should also be placed on minimising impacts on irreplaceable habitat such as ancient woodland and ancient and veteran trees, with a presumption that these areas / features will not be subject to deterioration unless it can be shown that public benefits would outweigh the loss.

The NPS should note the need to consider the movement of mobile / migratory species across the UK and beyond in the development of any new nuclear generation facility. Focus should also be placed on the need to prevent the introduction or spread of Non-Native Invasive Species.

The NPS should explore opportunities for new habitat creation and enhancement associated with nuclear generation developments, e.g. through the use of appropriate locally native species in landscaping plans and the delivery of BNG. The potential for biodiversity creation in brownfield sites should be also taken into account. There should therefore be achievement of BNG, recognising that a minimum target of 10% is required as part of the Environment Act 2021. For statutory protected areas and their features, BNG should be additional to any existing legal and policy requirements applying to such designated sites.

The NPS should also set out the need for development of new nuclear generation facilities to consider and seek to provide improvements to natural capital and ecosystem services (i.e. achievement of wider environmental net gain) when considering how to achieve BNG.

Other opportunities for the NPS include the following:

- integration and enhancement of the wider green infrastructure network contributing to the Nature Recovery Network;
- creation of cohesive habitat networks to help habitats and species adapt to the consequences of climate change;
- enhance biodiversity taking full account of its ability to store or sequester carbon;
- restore biodiversity following construction and decommissioning of nuclear plants; and
- increased accessibility to appropriately designed multi-functional green infrastructure can play a significant role in diverting pressure away from more sensitive sites or areas.

The NPS should ensure that the locations of cooling systems intake and outfall are sited to avoid or minimise adverse impacts on the receiving waters, including 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. The NPS should also note the potential implications of dredging in the freshwater, estuarine or marine environment, as well as the requirement for licensing and liaison with bodies such as the Marine Management Organisation.

Key Issue 1: AoS Objective (see Section 6)

- Enhance biodiversity and ecological networks, deliver biodiversity net gain, protect and support ecosystem resilience and functionality
- Protect and enhance sites designated for their international importance for nature conservation purposes
- (linked to separate HRA process for new Nuclear NPS)

Key Issue 2 (summary of baseline situation/ information)

Geodiversity - new nuclear development may put pressure on designated geodiversity sites

In addition to the three Geoparks designated within England and two in Wales, there are a number of areas designated as SSSI due to having geodiversity, or geodiversity combined with biodiversity importance. These areas are in a mix of conditions, with both favourable and unfavourable occurring. There are also some of the areas in decline, while others are recovering.

There are also a range of Regionally Important Geology Sites (RIGS) and Local Geological Sites across England and Wales.

Geology across England and Wales faces multiple threats from human activities such as new development, pollution, roads, disturbance, farming practices; changes to shoreline management, loss of habitat; and a changing climate.

Key Issue 2: Summary of likely evolution of the baseline without the new Nuclear NPS (direction of condition trend)

Declining

While some of the geodiversity resource is in favourable condition, some is not and all aspects are experiencing threats from development e.g. due to general increasing urbanisation and need for infrastructure, as well as the need to adapt to climate change.

In the absence of the NPS, there is heightened potential for inappropriate greenfield development, though some protection is afforded to important areas of geodiversity such as those designated as SSSI and RIGS.

Key Issue 2: Implications and Opportunities for the new Nuclear National Policy Statement

A co-ordinated strategic approach to the development of new infrastructure is required to limit the potential for inappropriate development on geodiversity sites to occur. Inappropriate development could also lead to changes in shoreline dynamics / coastal processes which may pose an indirect risk to sites of geodiversity importance on the shoreline and in marine waters.

The NPS presents an opportunity to develop strategic principles designed to avoid geodiversity sites and manage the shoreline, control pollution, promote the re-use of previously developed land and tackle some of the causes of climate change, all of which should help to afford protection to the geodiversity resource.

The NPS could also potentially encourage greater access to sites of geodiversity interest on land.

Key Issue 2: AoS Objective (see Section 6)

Protect, enhance and promote geodiversity

Key Issue 3 (summary of baseline situation/ information)

Greenhouse gas emissions – there is an urgent need to further reduce emissions from the energy sector

The release into the atmosphere of greenhouse gases e.g. carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O) and F-gases) resulting from fossil fuel usage, agriculture, land use change and other human activities has been linked with atmospheric warming and global climate change.

As of 2021, UK total net GHG emissions equalled 426.51 million tonnes of CO2 equivalent (MtCO2e). This figure reflects significant cuts to emissions in recent years. Total emissions of direct greenhouse gases (GHG) have decreased by 43.8% between 1990 and 2019 and 2.8% between 2018 and 2019. This decline between 1990 and 2019 is driven predominantly by a decrease in emissions from the energy supply sector – particularly from power stations due to less reliance on coal and greater efficiencies in fuel use e.g. to heat buildings. 2020 saw a further decline of 9.5% compared to the 2019 figure, 49.7% lower than they were in 1990. The coronavirus (COVID-19) pandemic and the resulting restrictions introduced in 2020 across the UK had major impacts on various aspects of society and the economy, which led to a significant decrease in GHG emissions.

In 2021 there was an increase of 5% from the 2020 figure, but still 5.3% lower than in 2019, the most recent pre-pandemic year.

Provisional figures for 2022 show that despite rises in some emissions as the UK continued to recover from the COVID-19 pandemic, 2022 saw another fall in GHG emissions, largely due to a reduction in fuel use to heat buildings. This will largely be because 2022 was considerably warmer than 2021 and higher energy prices may also have been a factor, particularly towards the end of the year. Total GHG emissions are estimated to have decreased by 2.2% compared to 2021. Compared to 2019, the most recent pre-pandemic year, 2022 CO2 emissions are down 7.5% and total GHG emissions are down 7.4%. Total GHG emissions were 48.7% lower than they were in 1990.

CO2 is the largest contributor to global warming in the UK, of which the largest sources are power generation and road transport. Emissions have reduced from 1990 due to fuel switching, structural change, and improvements in end-use efficiency. The second most important source of greenhouse gases is methane (CH4). Annual emissions of CH4 have reduced by over half since 1990. The main sources of CH4 are agriculture, waste disposal, leakage from the gas distribution system and coal mining. Reductions in CH4 emissions in the UK are driven by the increased utilisation of methane from landfills, a large decline in UK coal mining, investment in improvements to the natural gas supply infrastructure to reduce leakage and a reduction in livestock numbers. Emissions of nitrous oxide have also reduced by over half since 1990. Most N2O emissions are generated from the agriculture sector which have decreased primarily due to reduced emissions from synthetic fertiliser application. The smallest percentage reduction in emissions across the time series is for the F gases: HFCs, PFCs, NF3 and SF6. F-gas emissions have decreased since 1995, due mainly to the fall in F gas manufacture in the UK and the installation of abatement equipment at two of the three UK manufacturers. These emission reductions have been to some extent offset by the increases in the use of HFCs as substitutes for ozone depleting substances, particularly in refrigeration and air conditioning .Heightened efforts by government to address climate change resulted in commitments (made in December 2020 under the UK's Nationally Determined Contribution communication to the UNFCCC[7]) to reducing economy-wide GHG emissions by at least 68% by 2030, compared to 1990 levels and the amendment to the Climate Change Act in 2019 to bring all greenhouse gas emissions to Net Zero (100 % reduction compared to 1990 levels) by 2050.

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

The UK Net Zero Strategy sets out that the exact technology and energy mix in 2050 cannot be known now, and the path to net zero will respond to the innovation and adoption of new technologies over time. However, it is expected to rely, among other technologies, on electricity from low carbon generation and storage technologies to meet higher demand for low carbon power in buildings, industry, transport, and agriculture.

Nature Based Solutions (NBS) are a means to achieve negative emissions by biological sequestration. Compared to technology-based solutions to climate challenges, NBS are often more cost-effective, longer lasting, and have multiple synergistic benefits including: reducing net emissions, expanding carbon sinks; providing habitats for biodiversity, benefiting human health and well-being, helping our society and economy adapt to climate change, and making more resilient and nicer places to live and work.

[7] UNFCCC is the United Nations Framework Convention on Climate Change

Key Issue 3: Summary of likely evolution of the baseline without the new Nuclear NPS (direction of condition trend)

Declining

Interventions at the local, regional and country level to increase the production of renewable energy have started to reduce the rate of GHG emissions associated with the energy sector; and such actions outside the NPS are contributing to decarbonisation of energy networks.

However, the underlying trend points towards a slowing of emissions rather than reversal of trends.

Key Issue 3: Implications and Opportunities for the new Nuclear National Policy Statement

The NPS should ensure that reducing CO2 emissions and achieving Net Zero is a core component during the lifetime of any nuclear development. Construction, operation and decommissioning of new nuclear generation power stations should be Net Zero with negative emissions removals employed, both technological and nature-based, for any residual emissions.

The NPS should also ensure that opportunities are taken for maximising tree cover and peatland restoration. Amongst other benefits, careful site location and species selection in new woodland can contribute to carbon sequestration by absorbing increased amounts of CO2 from the atmosphere. Restoration of peatland in unfavourable condition will allow the preservation a large carbon stock and avoid its release to the atmosphere.

There is an opportunity for the NPS to coordinate the proposed strategic energy development locations with sustainable infrastructure connections.

Key Issue 3: AoS Objective (see Section 6)

Consistent with the national target of reducing carbon emissions to Net Zero by 2050

Key Issue 4 (summary of baseline situation/ information)

Adaptation to a changing climate – The UK is already seeing the impact of climate change through increased severe weather events, leading to flooding, heat waves and hotter summers. There is a need for nuclear development to be climate change resilient.

The UK's Climate Projections show that the UK as a whole is likely to continue to experience hotter, drier summers, warmer, wetter winters and rising sea levels. This is likely to have a significant effect on a range of environmental conditions, including the water environment and there is an urgent need to develop climate resilience.

Along with an increase in extreme weather events, it is anticipated that a changing climate will lead to an increase in risk to people and place, including risks to health and well-being from

increase in extremes of temperatures; risk to people, communities and buildings from flooding; risk to viability of coastal communities from sea level rise; risk to health and social care delivery from extreme weather and risk to health from changes in air quality.

A changing climate is likely to result in increased frequency and intensity of severe weather events. At present, significant proportions of the UK population are at risk from flooding, although the degree of risk varies, with a range of factors affecting potential risk. Increased flooding and increased flood risk are recognised as being some of the main potential threats from a changing climate due to potential direct risk to properties and infrastructure, as well as potential direct risk to human life and indirect risk to mental wellbeing. In addition, extreme weather events could include increased risk of higher summer temperatures, or severe cold spells.

Across England and Wales, areas of potential flood risk from both rivers and coastal sources have been identified and are noted in a series of flood hazard maps and flood management plans. Flood Zones 2 and 3 are located across England and Wales. Very significant numbers of properties are currently at flood risk – for example, in England alone this is in excess of 5.2 million properties.

Key Issue 4: Summary of likely evolution of the baseline without the new Nuclear NPS (direction of condition trend)

Declining

Climate change is recognised as a global concern with England and Wales, as with the rest of the UK, anticipated to experience hotter, drier summers; warmer, wetter winters; and rising sea levels. These trends are anticipated to continue, and potentially exacerbate, irrespective of interventions from outside the NPS.

Key Issue 4: Implications and Opportunities for the new Nuclear National Policy Statement

The NPSs needs to recognise that changes in temperature and rainfall patterns, along with more frequent extreme weather events (for example leading to drought or flood), create the situation where a greater degree of resilience will have to be incorporated into nuclear energy infrastructure.

The NPS should recognise the challenges that a changing climate will bring and aim to reduce the impacts. More frequent and extreme weather events leading to flooding as well as issues such as sea level rise and coastal change and erosion should be considered in any design.

The NPS should seek to ensure that new development minimises any negative effects arising from flooding and avoids where possible areas of highest flood risk.

Flood risk and coastal change can have significant impacts on species and sites and should be considered in any design. The implementation of multi-functional green-blue infrastructure including SuDS and other similar appropriate measures or new approaches should be

considered and encouraged where feasible. This should include Natural Flood Management and other means of increasing flood storage capacity.

There are multiple benefits associated with nature-based solutions such as tree planting or peat restoration, including climate change adaptations. Strategic policies present the opportunity to promote this as a means of delivering urban cooling, wildlife benefits, contributing to flood reduction and supporting carbon sequestration

The NPS should address the risks to the viability and diversity of terrestrial and freshwater habitats and species from multiple climate hazards.

The NPS should address the risks to natural carbon stores and sequestration from multiple hazards leading to increased emissions.

The NPS should address the risks to people and the economy from climate-related failure of the power system.

The NPS should address risks to soil health from increased flooding and drought.

Recognition also needs to be made of health implications from a changing climate and the NPS can drive a strategic response to health stressors associated with climate change.

Key Issue 4: AoS Objective (see Section 6)

Maximise adaptation and resilience to climate change

Enhance biodiversity and ecological networks, deliver biodiversity net gain, protect and support ecosystem resilience and functionality

Improve health and well-being and safety for all citizens and reduce inequalities in health

Key Issue 5 (summary of baseline situation/ information)

Air Quality – the United Kingdom experiences pockets of poor air quality, principally derived from concentrations of urban and industrial activity, major road infrastructure and congestion

Air pollution affects public health, the natural environment and the economy.

Air quality has improved in the UK over the last sixty years as a result of the switch from coal to gas and electricity for heating of domestic and industrial premises, stricter controls on industrial emissions, higher standards for the composition of fuel and tighter regulations on emissions from motor vehicles. However, poor air quality – particularly from motor vehicles – remains a significant issue for community health and for biodiversity, especially in/downwind of urban areas and major transport networks. It is also to be noted that the use of solid fuels (including for ‘lifestyle’ fuel such as wood burners in homes) are a major contributor to poor air quality in towns, particularly during winter months.

The association of poor air quality with urban/industrial areas and major road infrastructure is reflected in the typical location for Air Quality Management Areas (AQMA), many of which have been designated due to high NO2 and PM10 levels. Across England, there are a total of 532 AQMA, while within Wales there were 44, all principally in those areas of greatest population, or areas of particular road congestion and these have impacts both on human health and biodiversity. Scotland and Northern Ireland also have extensive areas designated as AQMA, again mainly relating to the road network.

Approximately 85% of Sites of Special Scientific Interest (SSSI's) in England have nitrogen deposition rates above levels at which harm is expected (environmental thresholds), these exceedances will influence the ability of protected sites to reach favourable conservation status / favourable condition. An estimated 95% of nitrogen sensitive habitat is thought to be exceeding its critical load. Nitrogen emissions have been identified as a significant pressure or threat to 62% of England's International (European) protected sites.

The Environment Act 2021 stipulates air quality (PM2.5) as priority quality long term target.

Key Issue 5: Summary of likely evolution of the baseline without the new Nuclear NPS (direction of condition trend)

Improving

At the national level air quality is generally improving as industrial practices, energy sources and tighter environmental legislation have contributed to reductions in pollutants.

Increased uptake of electric vehicles is also anticipated to further reduce concentrations of pollutants.

However, parts of England and Wales (typically within urban areas) still experience localised pockets of poor air quality due to motor vehicles– interventions outside the NPS such as the ban on petrol and diesel cars by 2035 will address most of these issues over time. This though will also place an increased demand on the electricity supply network.

Key Issue 5: Implications and Opportunities for the new Nuclear National Policy Statement

The NPS should aim to protect and enhance air quality and should seek to reduce NO2, PM2.5 and PM10 emissions to within statutory limits now and in the future.

The NPS should aim to ensure that no Air Quality Management Area (AQMA) is worsened or proposed new nuclear generation development does not lead to new AQMA, particularly due to increases in road traffic / transport associated with the construction, operation and decommissioning of nuclear power stations, noting that emissions during operation would likely be relatively low and only associated with ancillary activities, not the main generation of power.

The NPS should aim to comply with future more strict government targets for air quality, particularly seeking to deliver health benefits from improved air quality, as well as considering ecological receptors.

The NPS could encourage the development or enhancement of green infrastructure, which can help to reduce pollutant distribution and improve air quality in a local context.

Key Issue 5: AoS Objective (see Section 6)

Protect and enhance air quality on local, regional, national and international scale

Improve health and well-being and safety for all citizens and reduce inequalities in health

Enhance biodiversity and ecological networks, deliver biodiversity net gain, protect and support ecosystem resilience and functionality

Key Issue 6 (summary of baseline situation/ information)

Water environment –pollutant discharges from a range of sectors including energy pose considerable risks to the quality of water across the UK. Additional water demand from new nuclear development alongside additional demand from other sectors would likely put further pressure on water resources.

There are considerable pressures on water resources (terrestrial and marine) with resulting major impacts on many of the waterbodies across the UK, both in terms of quantity and quality. For the purposes of taking a holistic approach to management of water resources and to address the pressures on the water environment, under the Water Framework Directive (WFD), the UK has been divided into a series of River Basin Districts (RBD).

As with most water bodies in England, there is a range of significant water management issues manifested across RBD, with pollution from infrastructure being of note. It is worth noting that not a single river in England has received a 'clean bill of health' in terms of chemical contamination[8]

There are also a series of Drinking Water Safeguard Zones (DWSZ) across England and Wales, as well groundwater Source Protection Zones (SPZ) and designated bathing waters.

There was a small decrease in the overall number of water bodies awarded high or good surface water status between 2009 and 2018. In 2018, 35% of surface water bodies assessed under the WFD in the UK were in high or good status. This reflects very little change from 36% of surface water bodies assessed in 2009 and 37% in 2013. It is anticipated that overall water quality will improve as the UK aims to ensure that the objectives of the WFD (all aquatic ecosystems and terrestrial ecosystems and wetlands to reach good chemical and ecological status by 2027). Climate change and a growing population will further increase pressure on freshwater water resources.

There are also a network of Marine Protected Areas (which compliment and are aligned to wider designations such as SAC and SPA) around the UK, with 178 MPAs in English waters

[8] House of Commons Environmental Audit Committee – Water Quality in Rivers Fourth Report of Session 2021-22

covering 51% of inshore and 37% of offshore waters. Protecting MPA species and habitats will contribute to healthier marine ecosystems, and the maintenance and restoration of valuable ecosystem services. In addition, the first 3 Highly Protected Marine Areas were designated in June 2023. These are designated to protect the marine ecosystem of the area (including all marine flora and fauna, all marine habitats and all geological or geomorphological interests, including all abiotic elements and supporting ecosystem functions and processes, in the seabed, water column and the sea surface).

The Marine Strategy Regulations 2010 marked a significant step forward in the protection and management of the UK's coastal waters through requiring actions to be taken to achieve Good Environmental Status (GES). As at 2019, the UK has largely achieved its aim of GES for contaminants. Concentrations of hazardous substances in the Celtic Seas and the Greater North Sea and their biological effects are generally meeting agreed target thresholds which means they are at levels that should not cause harm to sea life (89% for contaminant concentrations and 96% for biological effects). The few failures are caused by highly persistent legacy chemicals such as PCBs in biota and marine sediments mainly in coastal waters and often close to polluted sources.

Key Issue 6: Summary of likely evolution of the baseline without the new Nuclear NPS (direction of condition trend)

Stable / Declining

Surface water quality is predicted to remain stable; marine water quality contaminant concentrations are generally stable or improving, However, ongoing pressures such as a growing population, intensive agricultural production, industrial growth, increasing urbanisation (alongside discharge of waste water) and a growing transport network, alongside a legacy of underinvestment in infrastructure remain and climate change may further compromise the ability to make improvements.

Key Issue 6: Implications and Opportunities for the new Nuclear National Policy Statement

It is likely that energy infrastructure development will be typically located in rural and coastal areas on land which has a strong relationship with ground, surface, estuarine and coastal water bodies. As such, the NPS should seek to prevent pollution of water bodies (including groundwater, inland surface water, transitional waters, coastal and marine waters) during construction, operation and decommissioning of any proposed new nuclear generation development.

During construction, protection of the water environment could be achieved via the appropriate use of Sustainable Drainage Systems (SuDS), green infrastructure or other appropriate measures and new approaches in infrastructure drainage design to enhance water quality and reduce pollution and flood risk. Risk to all types of water bodies (not just main rivers) is to be considered during any development design and careful management of construction activities (such as extensive topsoil stripping) made. Consideration should also be made of how the

water environment might change due to impact of climate change on rainfall patterns and water availability.

Physical modifications should be considered for waterbodies (riverbanks, shorelines, seabed etc.) for the construction of new nuclear facilities. Specific protection measures for groundwater are also likely in relation to new nuclear generation.

Nuclear generation of energy has typically involved the requirement for large quantities of water to be abstracted for cooling purposes and this water also needs to be discharged back to the environment. The NPS should seek to protect marine receiving waters from the impacts of any discharges, recognising the stringent controls enforced by the UK's regulatory regime. The NPS should also note the potential implications of dredging in the freshwater, estuarine or marine environment, as well as the requirement for licensing and liaison with bodies such as the Marine Management Organisation.

Adoption of the objectives and approaches set out in Water Resource Management Plans, Shoreline / Estuarine Management Plans, WFD and Marine Strategy Regulations should be made and all opportunities to help meet the objectives of these should be taken when possible. Approaches specific to the marine environment set out in Marine Plans and in relation to designated such as Marine Protected Areas should also be adhered to.

The siting of nuclear facilities in clusters due to the NPS could have significant effects on the water environment in local areas, although the nature of these impacts will depend on the technology type, the number of reactors deployed and the precise location of the development.

Key Issue 6: AoS Objective (see Section 6)

Protect and enhance the water environment

Enhance biodiversity and ecological networks, deliver biodiversity net gain, protect and support ecosystem resilience and functionality

Key Issue 7 (summary of baseline situation/ information)

Soil and Contaminated Land – soil is a non-renewable resource and is vulnerable to erosion, degradation and contamination. Historic land uses have contributed to contamination across large areas. There is a need to address contamination to enable beneficial re-use of previously developed land and protect soil resources from pressure for greenfield development

Soil across England and Wales is graded, with those areas considered Best and Most Versatile (BMV) being noted as Grade 1, 2 and 3a. BMV soils are under pressure in many areas from new development.

Soil sealing (the covering of the soil surface with impervious material or the changing of its nature so that it becomes impermeable) is associated with development and is a primary

cause of soil loss and development of greenfield sites can also lead to loss to valuable agricultural land (where such land exists) which generally cannot be mitigated.

Many areas of land in the UK have also been contaminated by past industrial and other human activities, including former factories, storage depots and landfills, with potentially contaminated sites contaminated by a wide range of harmful substances such as oils and tars, heavy metals, asbestos and chemicals.

While many special sites of contamination have been identified, by its nature, it is often very difficult to know where land has been contaminated previously or is currently suffering ongoing contamination. Contamination can spread considerable distances from its original source. As such the number of known sites of contamination is likely to be only a very small fraction of the overall number of potentially contaminated sites. Given the present and historic levels of industrial, commercial and transportation activity across England and Wales, in addition to the high levels of urbanisation, it is suggested that the number of areas of contaminated land could be considerable.

Key Issue 7: Summary of likely evolution of the baseline without the new Nuclear NPS (direction of condition trend)

Declining

It is likely that greenfield sites will experience increasing pressure for development in preference to the complexities of redeveloping previously developed and potentially contaminated sites. This could reduce available high quality soil resources and fail to realise the potential of existing development capacity within existing urban and previously developed areas.

Changing weather patterns due to climate change will also have implications for soil health, as well as its ability to produce food, help protect against flooding etc.

Key Issue 7: Implications and Opportunities for the new Nuclear National Policy Statement

The NPS must protect soils as far as practicable as they are essential natural capital and perform a range of important ecosystem services and functions.

The NPS should recognise that soils are essentially finite and declining in extent and should seek to make best use of areas that are already urbanised (or subject to energy / industrial uses) and provide an opportunity for regeneration / improvements to land quality in such areas. Nuclear development on areas of the highest quality agricultural soils should be avoided where possible and soil and agricultural holdings protected through avoidance of impacts such as contamination or severance.

Dealing with the past pollution / contamination legacy is a major issue and should be addressed at all opportunities due to its ongoing environmental impact.

Minimising impacts on soil health and addressing the need for topsoil stripping, topsoil storage and effects on soil moisture across sites of significant size should also be key considerations for the NPS.

Clustering of nuclear facilities could have particular implications for soil resource in a local area.

Key Issue 7: AoS Objective (see Section 6)

Protect soil resources, promote use of brownfield land and avoid land contamination

Key Issue 8 (summary of baseline situation/ information)

Historic Environment – there is a substantial cultural heritage resource across the UK and in its surrounding seas; however, there is considerable variation in the condition and integrity of assets. There is a need for a strategic perspective that promotes contextual understanding and supports regeneration where this contributes to conservation and enhancement

The cultural heritage assets of the greatest recognition across England and Wales are the 22 World Heritage Sites. These sites received this designation due to their globally important cultural or natural interest. Their management plans note that this is to be understood, protected and sustained.

In addition, there are approximately 24,000 Scheduled Monuments across England and Wales, that are considered to have nationally important cultural heritage features. A large number these sites are at particular risk of being lost through neglect, decay or deterioration. It is also worth noting that some historic assets are in the marine environment – for example there are 57 protected wreck sites in English waters.

Similarly, many of the approximately 430,000 listed buildings and 10,500 Conservation Areas across the UK are at risk due to increasing pressure from development, neglect, decay or deterioration.

In addition, Areas of Ancient Woodland, i.e. those areas that have been continuously wooded since at least 1600AD are scattered across the United Kingdom. These areas have a significant contribution to the cultural heritage of an area and are also of importance to biodiversity and landscape.

Beyond these assets, there are also a large number of registered parks and gardens across the UK which are of historic importance, as well as a number of undesignated assets or unknown archaeological remains which could have national, regional or local value.

The importance of the protection of the historic environment is increasingly being recognised at a national and regional level, with the loss of heritage resources (which are essentially finite and irreplaceable) being difficult to mitigate. Development affects the historic environment

through loss, damage or changes to setting for instance from visual intrusion, increased traffic, noise, or air pollution.

Key Issue 8: Summary of likely evolution of the baseline without the new Nuclear NPS (direction of condition trend)

Stable/Declining

Designated heritage assets benefit from protection that will continue without the NPS.

Key Issue 8: Implications and Opportunities for the new Nuclear National Policy Statement

Additional energy related development may be inappropriately located or designed and therefore pose a risk to the cultural heritage assets as well as their settings. Without a co-ordinated strategic approach to development and infrastructure there is an increased potential for such risks to result. As well as those sites of the very highest value such as World Heritage Sites, similar potential impacts can be identified in respect of the range of scheduled monuments, Listed Buildings, Conservation Areas and locally listed cultural heritage assets.

New nuclear energy related development may result in pressure on areas of importance for their cultural heritage and aesthetic quality. Development proposals must carefully consider such that impacts on heritage assets and their settings are minimised. The NPS should respond to context such that preservation is pursued where appropriate, but pro-active management and redevelopment can be supported where this secures viable futures for cultural heritage resources that are currently threatened.

It is important to note that the nature of cultural heritage features means that not all are known at present; in particular, buried archaeological remains. Such features could be affected directly by mechanical action or indirectly e.g. through dewatering for construction and this means consideration would be required of potential changes in groundwater levels, flows and chemistry on preserved organic and palaeoenvironmental remains. As such the NPS should recognise there may be a requirement for detailed and extensive assessment work such as Heritage Impact Assessment of any proposed sites for development.

It is also the case that the historic environment can be impacted by construction on the foreshore or seabed and this should also be recognised.

As such, any energy related development should be as sensitively designed as possible to recognise and be sympathetic to the existing cultural character and quality and opportunities for improving settings should be examined. Opportunities for improving access, understanding or enjoyment of the historic environment and heritage assets as part of the design and implementation of any new nuclear generation development should also be taken where possible.

Key Issue 8: AoS Objective (see Section 6)

Protect and enhance cultural heritage assets and their settings, and the wider historic environment

Protect and enhance the character and quality of the landscapes, townscapes and waterscapes and protect and enhance visual amenity

Key Issue 9 (summary of baseline situation/ information)

Landscapes, Waterscapes & Townscapes – there are marked contrasts in the quality, character and distinctiveness of landscapes and townscapes across the UK. There is a need to fully protect the highest quality locations, whilst driving best practice principles through all nuclear power developments to protect valuable scape environments.

There are 13 National Parks and 38 AONBs within England and Wales, as well as 46 Heritage Coasts. As of November 2023, AONB has been renamed to National Landscapes in England and Wales.

Scotland has 2 National Parks and 40 National Scenic Areas.

Landscape characteristics are assessed across the UK through several methods, including sub-division of England into Landscape Character Areas and use of the LANDMAP tool in Wales.

There are also significant areas designated as Green Belt, with “a fundamental aim to prevent urban sprawl by keeping land permanently open. This designation serves five main purposes of checking unrestricted sprawl in large built up areas; prevents neighbouring towns from merging; assists safeguarding the countryside from encroachment; preserves the setting and special character of historic towns and assists in urban regeneration, by encouraging the recycling of derelict and other urban land”9.

While there are areas of great natural beauty and tranquillity across England and Wales, it is also important to recognise that there are significant parts that are characterised by urban development, major infrastructure and other noise and visual intrusion (including light pollution). This is largely associated with, but no confined too, the main urban areas and loss of tranquillity and dark skies is a growing concern.

Nevertheless, across the UK there are significant elements of green infrastructure that includes for example, parks, open spaces, playing fields, woodlands and private gardens, as well as agricultural and upland areas. This, alongside ‘blue infrastructure’ of rivers, canals, streams and other water bodies can act in a multi-functional way across a range of issues by supporting, for example, biodiversity, carbon storage, natural drainage and flood storage and health and wellbeing. The contribution the sea makes to this resource is also significant.

[9] National Planning Policy Framework (2021), Paragraphs 137 to 138

Increased urbanisation and general development has acted to erode the connectivity of this green and blue infrastructure, resulting in a decrease in its integrity.

The townscapes across England and Wales includes substantial cultural heritage assets. There are many areas benefitting from associated designations, which include World Heritage Sites, Conservation Areas and local listings (refer to the cultural heritage key issue description). In many areas, 20th and 21st century redevelopment and regeneration have introduced a juxtaposition of modern architecture with historic fabric, delivering distinctiveness within the townscape.

However, there are also areas where the quality and integrity of townscape has been eroded by successive and often piecemeal regeneration activities and there is a need to promote enhanced design through all energy development proposals.

Key Issue 9: Summary of likely evolution of the baseline without the new Nuclear NPS (direction of condition trend)

Stable

Many of the most exceptional landscape and townscapes benefit from protection through designations that will persist in the absence of the NPS. In general terms, modern design principles are promoting a renewed focus on the quality of design and this trend is likely to continue.

Key Issue 9: Implications and Opportunities for the new Nuclear National Policy Statement

The NPS should seek to preserve, conserve and enhance the character of the wider landscape and waterscape by ensuring that its integrity and valuable natural open space is not lost. Particular attention to be paid to those areas designated or recognised for their landscape value, such as AONBs, Heritage Coasts and National Parks. Consideration should also be made within the NPS of the need to protect those areas noted for landscape value at a local scale.

The NPS should recognise the difficulty of achieving landscape protection due to the nature, size and land-take required for large nuclear facilities and recognise that particular areas which may be attractive for nuclear generation e.g. coastal or rural areas, may also have significant high-quality landscape and seascape attributes.

Opportunities for landscape enhancement should be explored, e.g. through sympathetic design, enhancements to existing landscape areas and characteristics, such as considering new planting or habitat recreation opportunities in keeping with the aims of the Nature Recovery Network (see Biodiversity issue).

Increased development linked to new nuclear generation may pose a risk to tranquillity through increased disturbance (including light and noise) . There is therefore a need to protect the special quality of those areas of relative tranquillity which can be experienced in many parts of

England and Wales, including those with a sense of wildness and remoteness. Without a strategic approach to new nuclear development and infrastructure, degradation of the special qualities of the most special areas such as National Parks and AONBs may result.

As such, the NPS should aim to ensure that nuclear energy developments and associated infrastructure consider relevant effects from the very earliest stages of planning, avoiding sensitive areas where possible and respecting particular landscape, waterscape or townscape settings.

Careful consideration should be given to design quality in both an urban and rural setting, promoting placemaking principles and seeking to inject character and distinctiveness where possible and where this enhances valued sense of place. Design, where possible, should respond positively to the local characteristics, including vernacular architecture when appropriate. Effective landscape planning which should be encouraged by the NPS also provides opportunities for other issues such as the need to enhance biodiversity and achieve BNG, enhance the Nature Recovery Network, enhance access to natural greenspace and deliver wider environmental gains.

Key Issue 9: AoS Objective (see Section 6)

Protect and enhance the character and quality of the landscapes, townscapes and waterscapes and protect and enhance visual amenity

Key Issue 10 (summary of baseline situation/ information)

Resources and Waste – population and economic growth continues to be associated with increased resource use and waste generation. There is an urgent need to reverse trends in order to move towards a circular economy where resource efficiency is maximised and waste generation curbed.

The UK generated 222.2 million tonnes of total waste in 2018, and it is estimated that 40.4 million tonnes of this was commercial and industrial (C&I) waste (2020).

In 2021, 26,411,000 tonnes of Waste from Households (WfH) were generated in the UK with an overall recycling rate of 44.6%. In England, the recycling rate was 44.1%, in Wales it was 56.7% (2021). Around 14,644,000 tonnes of the UK's municipal waste went to landfill in 2018.

Total UK commercial and industrial waste, comprising inert, non-hazardous arising which result from trade or businesses, was 36.1 million tonnes in 2018[10]. Around 80% of this total was generated in England. This was split between the commercial and industrial sectors by 27.5 and 13.6 million tonnes respectively.

New nuclear energy generation development will impact on and interact with a wide range of resources such as use of construction materials (aggregate, concrete, etc.), waste generation and disposal etc. Construction will contribute to increases in the levels of waste generated, if

[10] Last available figures – these figures are under review by Defra.

building materials are not efficiently used / reused. With more waste being produced, trip kilometres to transport such waste for disposal will result in greater transport trip generation and increased emissions of air pollutants or greenhouse gases.

Within the UK, radioactive wastes are classified according to the type and quantity of radioactivity they contain and how much heat is produced. Waste is categorised as High Level, Intermediate Level and Low Level, with how the waste is managed dependent on its category.

Note that issues relating to the disposal of nuclear waste in a long term disposal facility will not be addressed via this NPS. Nevertheless, it is important to note that Developing a Geological Disposal Facility (GDF) for the permanent disposal of higher activity radioactive wastes is a strategic imperative of government.

Since the 2011 nuclear siting NPS the following are the key developments in nuclear waste management:

- a new process to identify a suitable location for a GDF was launched in England in 2018 and in Wales in 2019. Both are consent-based processes that requires the developer, Nuclear Waste Services, to work in partnership with communities that enter the process;
- four communities are engaged in the process and some early geological investigations have taken place in some areas;
- the UK Government has legislated in the Energy Act 2023 for a more proportionate regulatory framework at the end stages of decommissioning when hazards and risks are low;
- The UK Government and devolved administrations published a consultation in March 2023 to update policies on managing radioactive substances and nuclear decommissioning. This is includes proposals to allow the disposal of intermediate level waste in near surface disposal facilities. The UK Government and devolved administrations expect to publish the final policy early in 2024.

Key Issue 10: Summary of likely evolution of the baseline without the new Nuclear NPS (direction of condition trend)

Declining

Continued growth will contribute towards a trend of increased waste and resource use. Interventions outside the planning system are helping to shift towards greater efficiencies in resource use and adherence to the waste hierarchy, with wider aspirations to work toward a circular economy but underlying waste generation volumes are anticipated to increase cumulatively. Clearly with further development of nuclear power generation, it can be expected that the level of waste arising in all categories of nuclear waste will rise.

Key Issue 10: Implications and Opportunities for the new Nuclear National Policy Statement

The NPS should seek to reduce consumption of resources such as construction materials, e.g. through encouraging the use of recycled or secondary materials and allow a 'Circular Economy' to develop.

The NPS can also help reduce the consumption of fuel by helping to provide electricity output to help facilitate a shift to more sustainable forms of transport such as Low and Zero Emission Vehicles.

The NPS should address the issue of nuclear waste generated by new nuclear power stations through emphasising government's commitment to the safe and sustainable management of radioactive waste. Developers should be required to demonstrate that they have considered and accounted for the long-term management of nuclear waste and spent fuel including storage, transportation, and disposal methods.

The NPS should recognise the government's policy that higher activity waste and spent fuel (for which no further use is envisaged) should be disposed of in a Geological Disposal Facility (GDF) and state that new nuclear power stations should make provision for the eventual disposal of their radioactive waste and spent fuel in a GDF. Developers should be required to engage with the government's GDF programme and ensure that their waste management plans align with the future availability of a GDF.

Key Issue 10: AoS Objective (see Section 6)

Promote sustainable use of resources and natural assets

Key Issue 11 (summary of baseline situation/ information)

Economic activity, opportunity and deprivation – there are marked spatial contrasts in economic activity rates across the UK and the challenge is to achieve more equitable access to opportunity as a means of tackling deprivation.

The economy across the UK has been subject to challenging conditions since 2020 due to a complex interaction of impacts from Covid-19 and other external factors such as the war in Ukraine, subsequent energy cost increases and a 'cost of living' crises. Since the Covid-19 pandemic, unemployment rates have begun to increase. As of March 2023, the unemployment rate in England was 3.8% and in Wales 4.8%. However, there is still some uncertainty on how unemployment will be affected in the long-term.

As of March 2023, economic activity rates were 79.6% in England and 75.6% in Wales. Economic activity rates have not varied significantly in the UK since 1992.

Gross domestic product (GDP) has been estimated to have increased by 0.1% in the first quarter of 2023, this follows a 0.1% increase in the previous quarter too. The level of quarterly

GDP in the first quarter of 2023 is now 0.5% below the pre-pandemic level (taken as Quarter 4 of 2019)[11].

These issues will undoubtedly play a major role in deprivation and economic outcomes across the UK, with those areas of current deprivation most likely to have the worst economic recovery and future outcome. The Indices of Multiple Deprivation show that the majority of the most deprived areas in the UK are located within urban centres of population.

The south east, south west and east of England are the least deprived areas in the UK, though these regions also have significant areas of high deprivation and the 'cost of living' can be particularly challenging. Deprivation increases in urban areas, with towns and cities generally being more deprived than rural areas, though the nature of the rural economy and society can mask pockets of high deprivation. Coastal communities can also often feel 'forgotten' or neglected. The north west and north east are the most deprived areas of England. Middlesbrough, Knowsley, Kingston upon Hull, Liverpool and Manchester are the five local authority districts with the largest proportions of highly deprived neighbourhoods in England.

The south east and north east coast are the most deprived areas in Wales. Deprivation is most concentrated in the south east, around the urban areas of Cardiff, Newport, Swansea and Bridgend. The smaller towns within the valleys of the south east, such as Caerphilly and Merthyr Tydfil are similarly deprived. Comparatively the rural areas of Wales are considerably less deprived, though again, pockets of deep deprivation exist.

These areas of deprivation have relatively lower income, less access to services, higher unemployment and increased crime rates. There has been little variance in the locations of the most deprived areas of the UK over the last 20 years, with certain areas being in a state of persistent deprivation. It is important to note that there are also pockets of deprivation surrounded by less deprived places in every region of the UK.

Key Issue 11: Summary of likely evolution of the baseline without the new Nuclear NPS (direction of condition trend)

Uncertain

The headline statistics generally show an upward trend in employment and GVA by job; and a falling trend in unemployment. However, there are clear spatial disparities between the value of jobs, which can be a proxy for the quality of job opportunities available.

It is also recognised through the governments 'levelling up' agenda that not everyone in the UK shares equally – it is government policy to ensure that everyone is given an opportunity to avail of opportunities, with the aim that people live longer, more fulfilled lives, benefiting from sustained rises in living standards and well-being.

[11] Office for National Statistics (2023) *GDP quarterly national accounts, UK: January to March 2023.* Available: https://www.ons.gov.uk/economy/grossdomesticproductgdp/bulletins/quarterlynationalaccounts/januarytomarch2023

Nevertheless, it will remain challenging to 'level up' the whole country. In addition, the impact of Covid-19, the war in Ukraine and other global economic 'head winds' such as persistent high inflation on these trends remains uncertain. It is considered that while the UK may avoid falling into recession, overall growth in the economy, at least in the short term of 2023-2024, will be low.

Key Issue 11: Implications and Opportunities for the new Nuclear National Policy Statement

Businesses and jobs rely on the use of energy, with economic output and associated jobs dependent on a robust, reliable and affordable energy system.

In addition, it is anticipated that the construction, operation and decommissioning of nuclear energy infrastructure can be expected to have positive socio-economic effects at local and regional levels.

The pattern of deprivation across England and Wales is geographically complex, incorporating stark contrasts between wealthy and severely deprived communities.

The NPS also provides opportunities to increase training and apprenticeships in local areas, as well as encouraging / strengthening local supply chains. Similarly, the highly specialised and technical nature of nuclear energy means that the NPS provides opportunities to encourage development of 'clusters' of related industries and services, research and development and so on.

Key Issue 11: AoS Objective (see Section 6)

To promote a strong economy with opportunities for local communities

Key Issue 12 (summary of baseline situation/ information)

Population growth and demographics – the UK has a growing population, with a general underlying trend towards an ageing population, though there are areas with younger population profiles. These demographic characteristics contribute to a complex pattern of highly-contrasting communities, with differing requirements for economic and social infrastructure.

The population of England in mid-2019 was 56,536,419 which accounts for 84% of the UK's population. The population of Wales in mid-2019 was 3,105,410 which accounts for 5% of the UK's population. The UK population growth is anticipated being greatest in England (6.5%) and lowest in Wales (1.4%). The highest regional growth rate in households is projected to take place in the South West, while the North East is projected to have the slowest rate, with the northern regions of England as a whole projected to grow at a slower rate than all other regions in England over the next 10 years.

Local authorities with the highest proportions of older people in the UK are most commonly found in coastal areas of southern and eastern England.

The population of the UK is spread unevenly, with the population density ranging from 5,700 people per square kilometre across London to fewer than 50 people per square kilometre in the most rural local authorities of the UK.

The south east of England, in particular London and the surrounding areas are highly populated. Large urban areas are located along the south coast, including Brighton, Southampton, Portsmouth and Bournemouth. The midlands and north west are also locations of large urban areas, including Birmingham, Leicester, Nottingham, Greater Manchester and Liverpool. The east, north east and south west of England contain fewer major settlements, however large urban areas are located in these regions, including Newcastle, Sunderland, Leeds and Bristol.

The most populated area of Wales is the south coast, where the large urban areas of Cardiff, Newport, Bridgend and Swansea are located. The north coast has fewer major urban settlements, however areas of population are present in Rhyl, Colwyn Bay and Bangor. Central and western Wales have smaller towns and villages distributed throughout the regions.

Key Issue 12: Summary of likely evolution of the baseline without the new Nuclear NPS (direction of condition trend)

Increasing

Population growth is projected to continue to increase across the UK and the overall trend is towards an ageing population.

Key Issue 12: Implications and Opportunities for the new Nuclear National Policy Statement

Both England and Wales (along with the UK as a whole) are expected to see population growth in the coming years, with a growth in the proportion of residents of an older age. In England as a whole, the older population is projected to increase from 18.2% to 20.7% of the total population between mid-2018 and mid-2028.

This general population growth will be uneven across the country, with a focus on larger urban areas most likely in relation to population growth (though the move to home working induced by COVID-19 may have implications for smaller towns, villages and rural areas). Smaller villages and rural areas may experience an increasingly older demographic (as would less deprived areas), though again, the implications of COVID-19 are still unclear in this regard.

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 the United Kingdom can meet increased demand. Government 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.

Key Issue 12: AoS Objective (see Section 6)

Improve health and well-being and safety for all citizens and reduce inequalities in health

Key Issue 13: (summary of baseline situation/ information)

Communities: Supporting Physical Infrastructure – infrastructure investment is delivered by a range of providers across the UK and can often be reactive. Significant new infrastructure, or upgrades to existing infrastructure, are planned across a range of sectors. This includes the Energy sector - 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 the UK can meet increased demand. Government 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.

There is a well-established electricity generation and distribution network across the United Kingdom, which is being increasingly utilised for an expanding EV charging network. As would be expected, greatest provision of electricity network capacity is to the more urbanised areas. This network is increasingly supplied by renewable sources.

The strategic rail network in England is well developed. All major cities are connected as are the majority of significant towns. Extensive rail networks are located around large conurbations such as London and Greater Manchester, with the major cities in the midlands being well connected. Remote, rural and coastal areas are less well served by rail. Both the north and south coast of Wales are well connected by rail, linking the major coastal cities such as Cardiff and Swansea in the south, and Llandudno, Bangor and Holyhead in the north. Few major branch lines extend from these links, and the central and western regions of Wales are comparatively poorly severed by rail.

England is covered by a comprehensive network of motorways and A roads. All major cities are served by motorways, whilst towns and larger villages are connected by A routes. Areas not serviced by these connections are generally rural and in areas of low population.

The south and north coast of Wales are the only areas with motorway connections. The remaining regions are serviced by the A road network which links the major towns and villages. Comparatively the central and upland regions are less provisioned with strategic network links.

Major airports are located in proximity to many of the significant urban centres such as London (various), Manchester, Birmingham, Bristol, Liverpool, Leeds and Newcastle, with smaller airports at Southampton, Exeter, Bournemouth, Southend and Norwich. Note that the airport at Sheffield Doncaster has ceased operations as of November 2022. There are also a large number of smaller airfields and airfields relating to defence or specific industrial

establishments, such as that at Hawarden in North Wales serving Airbus. In Wales, there is one major airport at Cardiff.

As would be expected, there is significant wastewater infrastructure across the area, though, as with other areas there are legacy and capacity issues with some elements. For example, many areas still have both a combined and separate sewer systems for collecting all wastewater and sewage and under heavy storm conditions, the sewer capacity can be exceeded. Consequently, these areas have above average risk for sewer incapacity and also has several frequent spilling storm overflows.

Provision of gas networks is variable across the country.

Across the UK, the areas with ultrafast broadband connectivity are mainly located in urban residential areas, though it should be noted that there are pockets within many urban areas where only standard broadband is available.

Key Issue 13: Summary of likely evolution of the baseline without the new Nuclear NPS (direction of condition trend)

Improving

There are various infrastructure investment plans and programmes being developed and implemented and these should continue to enhance the supporting transport, utilities and digital infrastructure to support growth levels.

Key Issue 13: Implications and Opportunities for the new Nuclear National Policy Statement

In addition to the generation of nuclear power and its distribution, the NPS will need to consider the effects of construction, operation and decommissioning on the transport network, including road, rail, air and sea, and will need to explore how new nuclear generation development can provide support for, or opportunities for, utilisation of electric vehicles and more sustainable modes of transport, including for freight.

Key Issue 13: AoS Objective (see Section 6)

Promote sustainable transport and minimise detrimental impacts on strategic transport network and disruption to basic services and infrastructure

To promote a strong economy with opportunities for local communities

Key Issue 14 (summary of baseline situation/ information)

Communities: Physical health and mental wellbeing – in general terms there are significant differences in measures of good physical and mental health as well as life expectancy across England and Wales. Many indicators reflect the spatial distributions of economic activity and income, age, deprivation, race and similar - there is a need to

tackle spatial inequalities in health regards. There is also a growing appreciation of the importance of supporting good mental health and generating a sense of well-being as a means of promoting healthy communities. There is a role for the environment in enabling people to feel connected to place; and growing evidence that physical activity and access to nature and opportunities for community interaction is an important contributor to mental health and well-being.

It is worth noting that different groups or different areas of the UK feel differently about their lives and have different experiences, however data that compares different UK geographies has not yet been released.

It is still unclear what impact the Covid-19 pandemic has had on measurements of health and well-being across the UK, however it is clear that the labour market shocks associated with the pandemic have been felt more by young people and the lowest paid. Young people and those on low incomes have also been hit hardest by the 'cost of living' crises and other economic shocks.

According to data from the Measuring National Well-being Programme (MNW), the average ranking of life satisfaction of people aged 16 years and over in the UK was 24.3 out of 35 in 2018/19.

The MNW programme data also showed that in Quarter 4 of 2022, 32.1% of adults in the UK rated how worthwhile they feel the things they do in life are, as very high.

When the MNW programme asked adults to rate how happy they were, 29.4% rated their happiness as very high. Similarly, across the UK life satisfaction was ranked as very high by 23.3% of adults.

Key Issue 14: Summary of likely evolution of the baseline without the new Nuclear NPS (direction of condition trend)

Stable / Uncertain

There is uncertainty over issues such as COVID-19 and general global economic uncertainty. These factors will all have major implications for health outcomes for the wider population but particularly for those in more deprived or vulnerable groups. Population profiles are also likely to continue to get older – this will likely result in changes to overall health outcomes with an increased number of long-term conditions and place an increasing burden on health provision and facilities.

Key Issue 14: Implications and Opportunities for the new Nuclear National Policy Statement

Indirectly, health and wellbeing levels could be improved through secondary effects of policies that help to create healthy environments. This involves the protection of existing and creation of new open spaces, contributing to a strengthened multi-functional green infrastructure network; and policy approaches designed to reduce air and water pollution, decreasing noise

pollution and reducing traffic congestion. Good design principles can combine with broader green infrastructure as key factors in fostering active travel, recreation and healthy lifestyles.

The NPS should seek to ensure continued access to and provision of quality greenspace along with improvement of the physical environment in general. Ensuring continued or enhanced access to employment, educational, recreational / leisure and health services and facilities, along with adequate provision, should also be a priority.

Improved walking and cycling facilities, along with open spaces and outdoor recreational facilities are vital to ensuring people have opportunities to undertake informal and formal physical activity outdoors in a safe manner. This will help to increase physical activity levels and improve general health and wellbeing.

The NPS needs to ensure that nuclear energy developments are safe, both in terms of accidents and engendering a perception of safety.

Key Issue 14: AoS Objective (see Section 6)

Improve health and well-being and safety for all citizens and reduce inequalities in health

6. Appraisal of Sustainability Framework

6.1 Introduction

This chapter sets out the AoS Framework proposed to be used to assess the new nuclear NPS. The AoS Framework is comprised of sustainability objectives and related guide questions. The use of objectives and guide questions is explained further below.

6.2 Development of sustainability objectives and guide questions

The use of objectives is not a requirement of the SEA Regulations, but their use is a recognised method of assessing the effects of a plan or programme. This technique is also proposed in the published relevant guidance.

The sustainability objectives have been defined using:

- The review of PPP;
- The baseline data collation; and
- The identification of sustainability issues and opportunities.

Defining objectives prior to preparation of the new nuclear NPS gives an early indication of the sustainability issues and opportunities that will require attention in the NPS making process. The AoS objectives have been worded so that they reflect one single desired direction of change for the theme concerned and while mutually supportive, do not overlap other objectives. The objectives include both externally imposed sustainability objectives and other objectives that have been devised specifically in relation to the context of the new nuclear NPS.

Each sustainability objective is supported by guide questions intended to cover the range of sustainability issues and opportunities associated with the sustainability objectives. The guide questions will assist the overall assessment process and help to ensure that significant effects (both positive and negative) are identified. As such, the guide questions provide a clarification of the intended interpretation of each objective to support the direction of change sought through implementation of the NPS and capture the various effects associated with the development, operation and decommissioning of the various nuclear technologies covered by the NPS.

6.3 The AoS Framework

The AoS Framework is set out below at Table 6-1.

Consultation question 6: Do the AoS objectives and decision-making questions provide a sound framework against which to assess the sustainability performance of the emerging NPS?

No	AoS Objective	Guide Questions
1	Consistent with the national target of reducing carbon emissions to Net Zero by 2050	Will the new Nuclear NPS… • Reduce carbon emissions of the national portfolio of major energy infrastructure? • Reduce direct and indirect emissions of all greenhouse gases, including carbon dioxide, during construction, operation and decommissioning? • Maximise supply of energy from low carbon/renewable energy sources / use of low carbon/renewable energy? • Maximise opportunities for making use of waste heat? • Use carbon removals to offset residual emissions from energy such as Bioenergy with Carbon Capture & Storage (BECCS) and Nature Based Solutions? • Create new carbon sinks/removals through natural sequestration including that by natural habitats, green-blue Infrastructure and soils?
2	Maximise adaptation and resilience to climate change* *Adaptation is about taking steps to live with the effects of climate change such as	Will the new Nuclear NPS… • Promote future proofing against the effects and risks of climate change (e.g. flooding, sea level rise, coastal erosion and change in weather patterns)? • Encourage design for successful adaptation to the predicted changes in weather conditions and frequency of extreme weather events (freezing, heat waves, intense storms)? • Address the climate induced risks of cascading failures from interdependent infrastructure energy networks? • Lead to major infrastructure development that is flood resilient over its lifetime, considering the effects of climate change, without increasing the flood risk elsewhere and identifying opportunities to reduce the risk overall? • Avoid inappropriate development in areas at risk from flooding and coastal erosion?

	building quay walls and flood barriers. Resilience is the ability of a system to adsorb and bounce back after an adverse event.	• Manage the risks of flooding and coastal erosion, particularly through working with natural processes? • Ensure provision of appropriate compensatory measures is in place when there is no other option to land take from areas of flood plain? • Contribute to the improvement green infrastructure networks to support adaptation to the potential effects of climate change?
3	Enhance biodiversity and ecological networks, deliver biodiversity net gain, protect and support ecosystem resilience and functionality	Will the new Nuclear NPS… • Protect and enhance nationally designated sites such as SSSIs, National Nature Reserves, Marine Conservation Zones, Marine Protection Areas and Highly Protected Marine Areas, including those of potential or candidate designation? • Protect and enhance valued habitat and populations of protected/scarce species on locally designated sites, including Key Wildlife Sites, Local Wildlife Sites and Local Nature Reserves? • Protect the structure and function/ecosystem processes, including in the marine environment? • Protect and enhance the Nature Recovery Network? • Protect and enhance priority habitats, and the habitat of priority species? • Minimise impacts on priority species, including in the marine environment? • Minimise habitat fragmentation and severance of migration and commuter routes? • Minimise pollution (air, soils, water) that could impact biodiversity? • Minimise alteration to geomorphological processes (such as coastal erosion) that could impact biodiversity? • Promote new habitat creation or restoration and linkages with existing habitats? • Protect and enhance the wider green infrastructure network? • Increase the resilience of biodiversity to the potential effects of climate change?

		• Deliver a minimum 10% net gain in biodiversity for any new major infrastructure development? • Contribute to the achievement of long-term targets for Marine Protection Areas, species at risk of extinction and tree cover?
4	Protect and enhance sites designated for their international importance for nature conservation purposes *(linked to separate HRA process for new Nuclear NPS)*	Will the new Nuclear NPS… • Avoid the direct loss of, or indirect harm to, 'Habitats Sites' (SPAs, SACs and Ramsar sites), including those of potential designation (candidate SPAs, proposed SACs, Sites of Community Importance (SCI) and proposed Ramsar sites) both onshore and offshore? • Support continued improvements to the condition status of the UK's national site network?
5	Protect and enhance cultural heritage assets and their settings, and the wider historic environment	Will the new Nuclear NPS… • Conserve and enhance designated heritage assets and their settings (World Heritage Sites, Scheduled Monuments, Listed Buildings and structures, Registered Parks and Gardens, Registered Battlefields and Conservation Areas), as well as maritime assets such as protected wrecks? • Conserve and enhance non-designated and / or locally listed heritage assets (including newly discovered heritage assets and archaeology) and their settings? • Address heritage assets at risk, or protect them from further threats? • Avoid significant harm to heritage assets, for example from the generation of noise, pollutants and visual intrusion? • Ensure appropriate archaeological assessment prior to development? • Maintain or improve the interpretation, understanding and appreciation of the historic environment?

		• Increase public access to heritage assets?
6	Protect and enhance the character and quality of the landscapes, townscapes and waterscapes and protect and enhance visual amenity	Will the new Nuclear NPS… • Ensure avoidance of development in National Parks and AONBs? • Support the integrity of any areas designated for landscape value and natural beauty, including in conjunction with the provisions of any relevant Management Plan (e.g. National Parks, AONBs, Heritage Coasts and local landscape designations)? • Conserve and enhance the intrinsic character or setting of local landscapes or townscapes or waterscapes? • Minimise noise and light pollution from construction and operational activities on residential amenity and on sensitive locations, receptors and views? • Prevent reduced tranquillity /preserve tranquillity? • Conserve, protect and enhance natural environmental assets (e.g. parks and green spaces, common land, woodland / forests etc) where they contribute to landscape and townscape quality?
7	Protect and enhance the water environment	Will the new Nuclear NPS… • Protect ground, surface, estuarine and coastal water quality in line with Water Framework Directive and Marine Strategy Framework requirements? • Result in changes to groundwater distribution and flow? • Safeguard the availability of water resources (surface and groundwater)? • Minimise the use of water resources / water consumption? • Protect the integrity of coastal and estuarine processes? • Reduce operational and accidental discharges to the water environment?

		• Protect the quality of the seabed and its sediments, and avoid significant effects on seabed morphology and sediment transport processes?
8	Protect and enhance air quality on local, regional, national and international scale	Will the new Nuclear NPS… • Minimise emissions of dust and other air pollutants that affect human health or biodiversity? • Improve air quality within AQMAs and avoid the need for new AQMAs? • Promote enhancements to green infrastructure networks to help improve air quality?
9	Protect soil resources, promote use of brownfield land and avoid land contamination	Will the new Nuclear NPS… • Assist in facilitating the re-use of previously developed land? • Avoid development upon the best and most versatile agricultural land? • Ensure the protection of soil resources and reduce soil quality degradation? • Seek to remediate contaminated land?
10	Protect, enhance and promote geodiversity	Will the new Nuclear NPS… • Protect and enhance geodiversity resource? • Protect or enhance SSSIs designated for their geological interest? • Avoid the degradation and removal, wherever possible, of RIGS? • Protect geodiversity on the shoreline and marine waters? • Support access to, interpretation and understanding of geodiversity?
11	Improve health and well-being and safety for all citizens and	Will the new Nuclear NPS…

	reduce inequalities in health	• Prevent accidental radioactive discharges or exposure to radiation, including interim storage of waste that may adversely affect the health of local communities ? • Lead to concerns / perception of increased risk? • Minimise issues that can affect communities and their facilities including air, noise and light pollution, as well as vibration? • Result in the loss of recreational and amenity land or loss of access? • Provide for facilities that can promote more social interaction and a more active lifestyle and enjoyment of the countryside and coasts? • Promote initiatives that enhance safety and personal security for all? • Reduction of inequalities between different groups in society?
12	Promote sustainable transport and minimise detrimental impacts on strategic transport network and disruption to basic services and infrastructure	Will the new Nuclear NPS… • Prevent adverse changes to strategic transport infrastructure road/rail/airport? • Prevent loss or disruption to basic services and infrastructure (e.g. telecommunications, electricity, gas)? • Promote transportation of goods and people by low/zero carbon transport modes? • Reduce travel distances to work and reduce the need for out commuting?
13	Promote a strong economy with opportunities for local communities	Will the new Nuclear NPS … • Support enhanced security, reliability and affordability of the national energy supply? • Support creation of both temporary and permanent jobs and increase skills, particularly in areas of need? • Have wider socio-economic effects such as changes to the demographics, community services, house prices and land values?

		• Have disproportionate effects on specific groups? • Delivery of infrastructure to support economic investment in the local economy?
14	Promote sustainable use of resources and natural assets	Will the new Nuclear NPS… • Provide for safe and secure interim storage of nuclear and other wastes where necessary? • Reduce consumption of materials, energy and resources? • Promote sustainable waste management practices in line with the waste hierarchy? • Encourage the use of recycled and / or secondary materials? • Encourage the development of a circular economy? • Promote the use of low carbon materials and technologies? • Produce waste by-products that require appropriate management? • Promote the use of local suppliers that use sustainably-sourced and locally produced materials?

6.4 Applying the AoS Framework

The next stage will be to assess the new nuclear NPS and its alternatives against the AoS Framework.

The AoS Framework will be used to identify likely significant effects including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, secondary and cumulative effects (including synergistic effects).

Criteria to determine environmental significant effects are set out in the SEA Regulations (Schedule 1 (2)) and comprise characteristics of the effects and of the area likely to be affected:

(a) the probability, duration, frequency and reversibility of the effects;

(b) the cumulative nature of the effects;

(c) the transboundary nature of the effects;

(d) the risks to human health or the environment (for example, due to accidents);

(e) the magnitude and spatial extent of the effects (geographical area and size of the population likely to be affected);

(f) the value and vulnerability of the area likely to be affected due to—

(i) special natural characteristics or cultural heritage;

(ii) exceeded environmental quality standards or limit values; or

(iii) intensive land-use; and

(g) the effects on areas or landscapes which have a recognised national, Community or international protection status.

No equivalent criteria exist for significant effects associated with the social and economic dimensions of the AoS but criteria (a) to (e) above are equally applicable.

To allow for the identification of different levels of effects when assessing the NPS policy proposals, a scoring system will be used to differentiate in terms of magnitude and significance of effects. The scoring system proposed below is aligned with that used recently for the AoS of EN-1 – EN-5 to ensure compatibility between assessments and will be based on the following, with each effect allocated a score. Note that scores can be a mix of beneficial and adverse.

Table 6-2: Key to appraising significance of predicted effects

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

It is to be noted that the scores derived will be considered 'in the round' in light of the assessment aid questions and a judgement made as to an appropriate summary score for that aspect of the NPS being considered. Should there be a significant effect identified, such significance will override all other non-significant scores. This summary score will be reported in the main AoS Report against the related AoS objective, with appropriate commentary. The commentary provided will explain the rationale behind the summary score on the scale above. Any recommendations will be noted, as will references to appropriate mitigation that will seek to maximise beneficial effects, while minimising (or avoiding) any potential adverse effects identified.

Consultation Question 7: Do you agree that aligning the assessment scale of the emerging NPS with that of the AoS of EN-1 to EN-5 is a reasonable approach?

6. Next steps

Following the receipt of the consultation comments, they will be reviewed and modifications made to the scope of the AoS as necessary. Stage B of the AoS process comprises the assessment of the new nuclear NPS and alternatives. An AoS will be produced alongside the draft NPS for consultation.

Consultation Question 8: Do you have further suggestions regarding the scope of the AoS and its proposed assessment of the new NPS?

This publication is available from: www.gov.uk/government/consultations/approach-to-siting-new-nuclear-power-stations-beyond-2025

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