DEPARTMENT OF ENERGY & CLIMATE CHANGE

Appraisal of Sustainability of the revised draft Nuclear National Policy Statement: Non-Technical Summary

Planning For New Energy Infrastructure

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Appraisal of Sustainability of the revised draft Nuclear National Policy Statement

The Appraisal of Sustainability (AoS), incorporating Strategic Environmental Assessment, of the revised draft Nuclear National Policy Statement (NPS) has been undertaken at a strategic level. It considers the effects of the proposed policy at a national level and the sites to be assessed for their suitability for the deployment of new nuclear power stations by 2025. These strategic appraisals are part of an ongoing assessment process that started in March 2008 and, following completion of this AoS, will continue with project level assessments when developers make applications for development consent in relation to specific projects. Applications for development consents to the Infrastructure Planning Commission will need to be accompanied by an Environmental Statement having been the subject of a detailed Environmental Impact Assessment.

The AoS Reports are presented in the following documents:

AoS Non-Technical Summary

Main AoS Report of draft Nuclear NPS

Introduction
Approach and Methods
Alternatives
Radioactive Waste
Findings
Summary of Sites
Technical Appendices

Annexes to Main AoS Report: Reports on Sites

Site AoS Reports
Technical Appendices

All documents are available on the website of the Department of Energy and Climate Change at www.energynpsconsultation.decc.gov.uk

This document is the **Appraisal of Sustainability of the revised draft Nuclear NPS: Non-Technical Summary** and is subject to consultation alongside the revised draft Nuclear NPS for a period 14 weeks from the date of publication.

This document has been produced by the Department of Energy and Climate Change based on technical assessment undertaken by MWH UK Ltd with Enfusion Ltd, Nicholas Pearson Associates Ltd, Studsvik UK Ltd and Metoc plc.

Contents

Non-Technical Summary

S.1 Introduction

S.1.1 This is a Non-Technical Summary (NTS) of the Appraisal of Sustainability (AoS) of the revised draft Nuclear National Policy Statement[1] (NPS). The AoS has been undertaken to inform the preparation of the revised draft Nuclear NPS. The AoS Report is provided in three parts: this Non Technical Summary; the Main AoS Report; and Annexes A to H which report the individual appraisals for each of the potentially suitable sites included in the revised draft Nuclear NPS. This NTS explains the following:

Background to the NPS and AoS

- the new planning regime and the role of NPSs;
- the objectives and structure of the revised draft Nuclear NPS;
- the main options considered for developing the revised draft Nuclear NPS;
- the overall approach to the AoS, and an outline of the methods and framework used in the appraisal process;
- an outline of the Strategic Siting Assessment (SSA) process;
- the challenges that were addressed in undertaking the appraisal;
- an outline of the consultation that took place during the development of the appraisal;
- an outline of the alternatives that have been considered in relation to 'Need', 'Processes' and 'Locations';
- a summary of the current situation in relation to sustainability, and the likely future situation without a Nuclear NPS; and
- the revision of the draft NPS and AoSs;

Key findings of the AoS

- an overview of the NPS findings as a whole;
- summaries of findings against the identified sustainable development themes;

[1] DECC (2010) *Appraisal of Sustainability for the Revised Draft Nuclear National Policy Statement: Main report*. This document and its appendices can be found at http://www.energynpsconsultation.decc.gov.uk

- summaries of the appraisal findings for the eight sites listed in the revised draft Nuclear NPS:
- a summary of potential interactions and cumulative effects; and
- key findings of the appraisal;

Monitoring and next steps

- an outline of how the AoS informed the preparation of the revised draft Nuclear NPS;
- an outline of proposals for monitoring the predicted effects of the revised draft Nuclear NPS; and
- discussion of next steps for the revised AoS and revised draft NPS.

The Appraisal of Sustainability and the revised draft Nuclear National Policy Statement are subject to public consultation. For more information on this consultation and how to make comments, go to www.energynpsconsultation.decc.gov.uk

S.2 Background to the National Policy Statements and Appraisals of Sustainability

The Planning Act (2008) and National Policy Statements (NPSs)

S.2.1 The Government wants a planning system for major infrastructure which is rapid, predictable and accountable. Planning decisions should be taken within a clear policy framework making these decisions as predictable as possible. The final Energy NPSs will be a blueprint for decision-making on individual applications for development consent for the relevant types of infrastructure. The final NPSs will clearly set out Government's policy insofar as it relates to planning applications for major infrastructure and will give investors the certainty they need to bring forward proposals to maintain security of supply and ensure progress towards decarbonisation.

S.2.2 In line with the Planning Act 2008, the revised draft energy NPSs are drafted on the basis that once they are designated the Infrastructure Planning Commission will be the decision making body. The Government announced in June 2010 its intention to amend the Planning Act 2008 and abolish the IPC. In its place, the Government envisages that a Major Infrastructure Planning Unit (MIPU) will be established within the Planning Inspectorate. Once established, the MIPU would hear examinations for development consent and would then make a recommendation to the Secretary of State. It would not itself determine applications; decisions would be taken by the relevant Secretary of State.

S.2.3 These proposed reforms require primary legislation. Until such time as the Planning Act 2008 is amended, the IPC will continue as set out in that Act. As a result, the NPSs will provide the framework for decisions by the IPC on applications for development consent for major infrastructure projects, and under the new

arrangements will provide the framework for recommendations by the MIPU to the Secretary of State.

S.2.4 There are six Energy NPSs that relate to energy infrastructure projects. An Overarching Energy NPS (EN-1) sets out the need, high level objectives, policy and regulatory framework for new energy infrastructure consistent with sustainable development and addressing climate change. The policy set out in EN-1 will apply to all applications subject to any modifications of the policy made in the five technology specific NPSs, which should be read in conjunction with EN-1. The five technology specific NPSs are:

- EN-2 Fossil Fuel Electricity Generating Infrastructure;
- EN-3 Renewable Energy Infrastructure;
- EN-4 Gas Supply Infrastructure and Gas and Oil Pipelines;
- EN-5 Electricity Networks Infrastructure; and
- EN-6 Nuclear Power Generation.

S.2.5 These six NPSs provide the planning policy for the IPC when it is considering applications for nationally significant energy infrastructure. They establish the need for such development , and direct the IPC as to how to assess the impacts of major energy infrastructure proposals. Developers will need to ensure that their applications for development consent are consistent with the requirements of the relevant NPS.

S.2.6 The Nuclear NPS is different from the other energy NPSs because it includes a list of potentially suitable sites for new nuclear power stations. The Nuclear NPS only has effect in relation to applications for these sites. In the event that a developer submits an application for development consent on other sites not listed in the final Nuclear NPS, the application would be considered by the IPC who would make a recommendation to the Secretary of State. The revised draft Nuclear NPS with potentially suitable sites is the subject of this AoS.

What is the revised draft Nuclear NPS?

S.2.7 The Nuclear NPS will provide the primary basis for planning decisions by the IPC on applications for development consent for a new nuclear power station on one of the listed sites. Together with EN-1, it sets out the role of nuclear power and the planning policy which applications for new nuclear power stations should be considered in accordance with. It lists the sites, nominated as part of the Strategic Siting Assessment (SSA), which have been assessed to be potentially suitable for the deployment of new nuclear power stations by the end of 2025.

S.2.8 New nuclear power stations may have negative and positive impacts on the environment and local communities. The significance of these impacts depends upon the characteristics of the local area and the detailed design of the nuclear power station. Under the new planning regime, the developer will need to provide an Environmental Statement to accompany their application for development consent.

Any new nuclear power station will be subject to nuclear site licencing and environmental discharge permits, and the operator will have to comply with the safety, security and environmental conditions set by the regulators.

S.2.9 Parts 4 and 5 of EN-1 set out the general principles that should be applied in considering development consent applications across the range of energy technologies. The Nuclear NPS sets out additional policy for the IPC when considering an application for nuclear development. Annex C of the Nuclear NPS sets out a site assessment for each of the listed site providing further site specific issues that need to be considered for development consent and site licensing. It indicates what detailed studies might be needed to evaluate the significance of the potential impact or issue, and suggests possibilities for mitigating adverse effects. This may help scope the information that needs to be provided in the Environmental Statement and should speed up the decision-making process for building new nuclear power stations.

How has the Government developed the revised draft Nuclear NPS?

S.2.10 The Government considered a number of options for developing a Nuclear NPS commencing with assessment of high level options including whether a Nuclear NPS is needed, and if so, then how should it be developed. This hierarchy of options for the NPS was subject to consultation and this is described later in Section 6 of this NTS. The hierarchy of options considered the need for a Nuclear NPS, then the processes by which the Nuclear NPS should be developed, and finally the location of potentially suitable sites. These options, and the findings identified, are summarised in Section 7 of this NTS.

S.2.11 The revised draft Nuclear NPS sets out Government policy on the role of new nuclear power in the energy mix, the Government's view that effective arrangements will exist for managing and disposing of radioactive waste from new nuclear power stations, and a list of sites in England and Wales which the Government considers to be potentially suitable for the deployment of new nuclear power stations before the end of 2025. The list of sites has been assessed through a Strategic Siting Assessment (SSA) process with exclusionary and discretionary criteria.

S.2.12 Nominations for sites were invited and eleven were received by the end of March 2009[2]; these were taken forward for the SSA process. Sites were assessed against exclusionary and discretionary criteria and were also appraised using the AoS and HRA processes. Ten of the eleven sites were assessed as potentially suitable[3] and the Government also commissioned an Alternative Sites Study to identify any other potential sites. The Government publicly consulted upon those ten sites between November 2009 and February 2010. Following the public consultation the Government has concluded that the nominated sites at Braystones and Kirksanton are not potentially suitable and confirms that Dungeness is not potentially suitable.

S.2.13 The following figure (S.2.1) shows the location of the eight potentially suitable sites included in the revised draft Nuclear NPS which are the only sites which the

[2] Bradwell, Braystones, Dungeness, Hartlepool, Heysham, Hinkley Point, Kirksanton, Oldbury, Sellafield, Sizewell and Wylfa.
[3] All of the nominated sites except Dungeness were considered potentially suitable and listed in the initial draft Nuclear NPS.

Government has assessed to be potentially suitable for the deployment of new nuclear power stations by the end of 2025.

Figure S.2.1 Potentially Suitable Sites

S.2.14 Most of the public consultation responses on the site AoS reports related to details of the characterisations of the areas around the potentially suitable sites. Any relevant corrections and clarifications have been made in the revised AoS site reports (Annexes A to H) and incorporated into this revised Main AoS Report, including the Non Technical Summary. The key revision to the appraisal is consideration of the changes to cumulative effects in the north west of England because of the removal of Braystones and Kirksanton as potentially suitable sites.

S.2.15 A key characteristic of nuclear power generation is the requirement to safely manage the radioactive waste that is produced by the nuclear power stations. The Government considers that it is technically possible and desirable to dispose of new higher-activity radioactive waste in a geological disposal facility and that this would be a viable solution and the right approach for managing waste from new nuclear power stations. It also considers that waste can and should be stored in safe and secure interim storage facilities until a geological disposal facility (GDF) becomes available.

S.2.16 This AoS has considered the arrangements for the management of radioactive waste. The findings of this appraisal have helped inform DECC's assessment of waste management and disposal arrangements for the revised draft Nuclear NPS.

S.3 Appraisal of Sustainability and other assessments

S.3.1 The Planning Act 2008[4] requires that an AoS must be carried out before an NPS can be designated. The main purpose of an AoS is to examine the likely social, economic and environmental effects of designating the 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.

S.3.2 The AoS of the revised draft Nuclear NPS incorporates an assessment in accordance with the requirements of the European Directive[5] on Strategic Environmental Assessment (the "SEA Directive") which aims for a high level of environmental protection and to promote sustainable development. It applies to certain plans that are likely to have significant effects on the environment. The AoS considers socio-economic effects in the same way as environmental effects are required to be assessed by the SEA Directive. The AoS has appraised the revised draft Nuclear NPS, including those generic impacts of energy infrastructure described in the draft Overarching Energy NPS (EN-1).

S.3.3 An SEA helps inform strategic decisions to inform the preparation of plans by identifying and assessing their potential significant effects. The environmental assessment process continues with project level Environmental Impact Assessment[6] (EIA). Under the new planning regime, developers will still have to submit an Environmental Statement reporting the EIA with their application for a new nuclear power station to the IPC for development consent. EIA is a process that provides information to planners, other regulators, and the public about the likely significant effects of the proposed project on the environment. By integrating the EIA process and the emerging design of a development as early as possible, potential adverse impacts can be best mitigated.

S.3.4 The revised draft Nuclear NPS has also been assessed in accordance with the European Habitats Directive[7]. The main aim of the Habitats Directive is to promote the maintenance of biodiversity for those habitats and species of European importance. The findings of the Habitats Regulations Assessments (HRA) is reported separately[8] and have been incorporated into the appraisal of biodiversity within the AoS report.

S.3.5 In a similar way to SEA, HRA is a process that progresses from strategic to project level assessments. Project level HRA is informed more precisely by the nature,

[4] The Planning Act 2008 http://www.opsi.gov.uk/acts/acts2008/ukpga_20080029_en_1
[5] Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment
[6] Directive 85/337/EEC as amended by 07/11/EC, 03/35/EC the assessment of effects of certain public and private projects on the environment
[7] Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora
[8] DECC (2010) *Habitats Regulations Assessment of the revised draft Nuclear NPS: Main Report,* www.energynpsconsultation.decc.gov.uk

scale or location of a development and thus its potential adverse effects. In order to avoid adverse effects on the integrity of sites of European importance, avoidance and mitigation measures would be proposed and these could be refinements to the nature, scale or location of the proposed development.

S.4 Approach and methods for the Appraisal of Sustainability

AoS process

S.4.1 The approach to the AoS was modelled on the Government's guidance[9] for preparing SEAs and Sustainability Appraisals, as there is no guidance yet on preparing an AoS. This is a staged approach as outlined in the following figure:

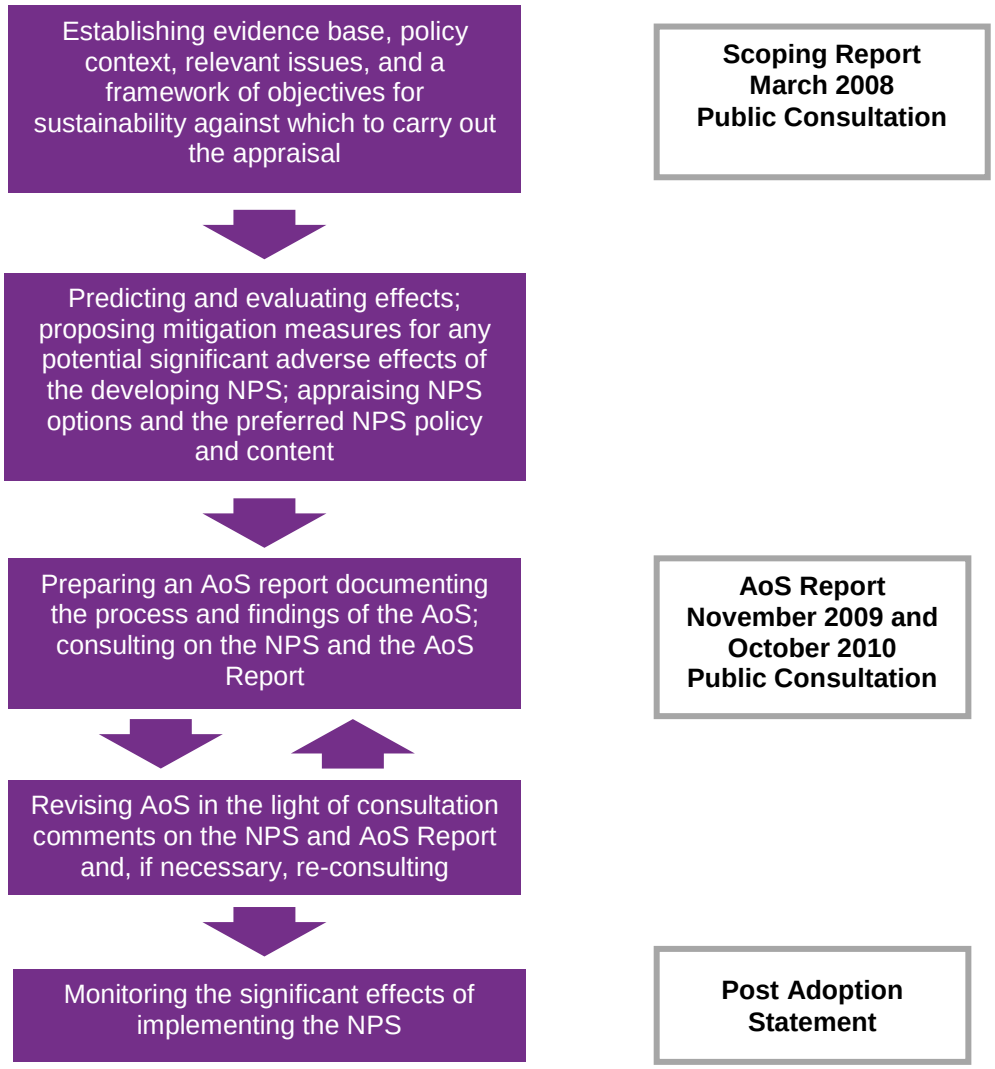

Figure S.4.1 Government's guidance for preparing SEAs and Sustainability Appraisals

[9] ODPM (2005) *A practical guide to the Strategic Environmental Assessment Directive* and ODPM (2005) *Sustainability Appraisal of Regional Spatial Strategies and Local Development Documents*

Policy context and baseline characterisation

S.4.2 Relevant plans, programme and environmental protection objectives, together with key baseline information at international and national levels were detailed for each topic in Appendix A and B of the Scoping Report (March 2008). Relevant key strategic plans and programmes include the following[10]:

- Habitats Directive (1992), Birds Directive (1979), Ramsar Convention (1971), UK Biodiversity Action Plan (1994) *(SEA topic: biodiversity, fauna, flora)*
- Convention on Nuclear Safety (1994), EURATOM Directive protecting health from ionising radiation (1996), UK Egan Review (2004), Sustainable Communities (2003) *(SEA topics: population, human health)*
- Soil Strategy for England (2009) *(SEA topic: soil)*
- Water Framework Directive (2000), UK Water Resources Strategy (2001), UK Strategy for Flood & Coastal Erosion Risk Management (2005) *(SEA topic: water)*
- Kyoto Protocol (1997), Air Quality Framework Directive (1996), UK Climate Change Act (2008) UK Climate Impacts Programme (2009) *(SEA topics: Air, climatic factors)*
- Hazardous Waste Directive (1991) *(SEA topic: material assets)*
- UK Historic Environment (2001) (SEA topic: cultural heritage)
- UK protected landscapes: National Parks, Areas of Outstanding National Beauty, historic coasts *(SEA topic: landscape)*
- Integrated Pollution Prevention & Control Directive (1996), OSPAR Radioactive Substances Strategy, UK Sustainable Development Strategy (2006) *(SEA topics: interrelationships)*
- Aarhus Convention (1998) (SEA consultation)
- River Basin Management Plans
- Renewable Energy projects

S.4.3 The key policy context for each topic is discussed in section 2 of the relevant appendix (A1-A11) at the strategic level. The key policy context for each site is set out in section 3 of each Site AoS Report (Annexes A-H) for the regional and local levels. The scope of the AoS considered the environmental, social and economic effects of the revised draft Nuclear NPS. The UK Sustainable Development (SD)

[10] This is not an exhaustive list. Further details about relevant plans and programmes can be found in BERR (2008) *Consultation on Strategic Environmental Assessment Scoping Report for Proposed National Policy Statement for New Nuclear Power – Appendices and Figures*, URN 08/680AN http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file45241.pdf and BERR (2008) *Applying the proposed Strategic Siting Assessment Criteria: a study of the potential environmental and sustainability effects – Appendices,* URN 08/926ANN http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file47140.pdf

Strategy (2005) sets out five guiding principles to help achieve sustainable development, the goal of which is defined as "*to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life, without compromising the quality of life of future generations*". The Strategy further identifies four priority areas for immediate action: sustainable consumption and production; climate change and energy; natural resource protection and environmental enhancement; and sustainable communities.

S.4.4 Detailed baseline data at international and national levels was set out for each relevant topic in Appendix B of the Scoping Report (March 2008)[11] and included baseline trend data where available. Baseline data at regional and local levels for each potentially suitable site for new nuclear power stations is provided in Appendix 4 to each Site AoS report (Annexes A-H) and informed the characterisation for each site described in section 4 of each Site AoS Report. This is also set out according to relevant topics and provides the baseline against which the appraisals were carried out.

S.4.5 Key issues and opportunities for sustainability were detailed in Appendix C of the Scoping Report (March 2008). Key considerations identified included noting that many internationally designated sites for biodiversity are located in estuarine and coastal locations. New nuclear power stations are likely to be in coastal or estuarine locations because of requirements for cooling water. New nuclear power stations will add to the legacy of radioactive waste. This is discussed further in the following sections 9 (the current situation) and 10 (the likely future situation) of this NTS.

Appraisal framework

S.4.6 The scope of this AoS was identified through analysis of relevant baseline information, the policy context of key policies, plans and programmes, the relevance to the developing revised draft NPS, and responses to the scoping consultation carried out in March 2008. The appraisal itself was carried out using a set of sustainability objectives as a way of identifying and evaluating the potential significant effects of the revised draft NPS on communities and the environment. These objectives for appraisal, organised into topics and themes for sustainable development, were developed through consideration of the plans and programmes relevant to the revised draft Nuclear NPS, the requirements of the SEA Directive, and the responses to scoping consultation.

S.4.7 The SEA Directive suggests a range of topics for assessing a plan including biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage, landscape and the inter-relationships between these factors. All these topics were considered to be variously relevant to appraising the developing draft Nuclear NPS and the AoS objectives for these topics were grouped into Sustainable Development (SD) themes to help with appraising different aspects of the revised draft NPS.

[11] BERR (2008) *Consultation on Strategic Environmental Assessment Scoping Report for Proposed National Policy Statement for New Nuclear Power – Appendices and Figures*, URN 08/680AN http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file45241.pdf The information can also be found in BERR (2008) *Applying the proposed Strategic Siting Assessment Criteria: a study of the potential environmental and sustainability effects – Appendices, http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file47140.pdf*

S.4.8 The AoS objectives used were as follows:

Table S.4.1 Sustainable Development theme and AOS objectives

Sustainable Development (SD) theme and AoS objectives (numbers in brackets refer to the numbers listed for the AoS Objectives in the Scoping Report March 2008)
SD Theme: Climate Change (Mitigation)
• to minimise greenhouse gas emissions (13)
SD Theme: Biodiversity and Ecosystems
• to avoid adverse impacts on the integrity of wildlife sites of international and national importance (1)
• to avoid adverse impacts on valuable ecological networks and ecosystem functionality (2)
• to avoid adverse impacts on Priority Habitats and Species including European Protected Species (3)
SD Theme: Communities – population, employment, and viability
• to create employment opportunities (4)
• to encourage the development of sustainable communities (5)
• to avoid adverse impacts on property and land values and avoid planning blight (10)
SD Theme: Communities – supporting infrastructure
• to avoid adverse impacts on the function and efficiency of the strategic transport infrastructure (8)
• to avoid disruption to basic services and infrastructure (9)
SD Theme: Human Health and Well-Being
• to avoid adverse impacts on physical health (6)
• to avoid adverse impacts on mental health (7)
• to avoid the loss of access and recreational opportunities, their quality and user convenience (11)
SD Theme: Cultural Heritage
• to avoid adverse impacts on the internationally and nationally important features of the historic environment (22)
• to avoid adverse impacts on the setting and quality of built heritage, archaeology and historic landscapes (23)
SD Theme: Landscape
• to avoid adverse impacts on nationally important landscapes (24)
• to avoid adverse impacts on landscape character, quality and tranquillity,

diversity and distinctiveness (25)
SD Theme: Air Quality
• to avoid adverse impacts on air quality (12)
SD Theme: Soils, Geology, Land Use
• to avoid damage to geological resources (19)
• to avoid the use of greenfield land and encourage the re-use of brownfield sites (20)
• to avoid the contamination of soils and adverse impacts on soil functions (21)
• to avoid damage to geological resources (24)
SD Theme: Water Quality and Resources
• to avoid adverse impacts on surface water hydrology and channel geomorphology (including coastal geomorphology) (15)
• to avoid adverse impacts on surface water quality (including coastal and marine water quality) and assist achievement of Water Framework Directive objectives (16)
• to avoid adverse impacts on the supply of water resources (17)
• to avoid adverse impacts on groundwater quality, distribution and flow and assist achievement of Water Framework Directive objectives (18)
SD Theme: Flood Risk
• to avoid increased flood risk (including coastal flood risk) and seek to reduce risks where possible (14)
Climate Change (Adaptation) is cross-cutting and has the potential to affect several of the above objectives for sustainable development, in particular biodiversity and flood risk.
Radioactive and associated hazardous waste is cross-cutting and has the potential to affect many of the above objectives for sustainable development. As this topic is unique to new nuclear power stations, consideration of the likely significant effects is dealt with as a separate chapter in the AoS.

S.4.9 Often topics are inter-related, for example, new flood defences may change movements of sediments and thus affect the ecology of a nearby wetland. Therefore, a number of sub-objectives or guide questions were identified through the scoping process for each of the AoS objectives to structure the appraisal.

S.4.10 The potential effects of the revised draft Nuclear NPS may be positive or negative and where potential significant adverse effects were identified, mitigation measures have been suggested. Each topic was appraised using the professional judgment of the report contributors and available information. Any gaps in information or uncertainty about the appraisal have been recorded. Outline proposals for monitoring the predicted effects have been suggested for when the NPS is designated.

S.4.11 The nature and significance of predicted potential effects were recorded using symbols and colours and a grading system as shown in the following table:

Key: Significance and Categories of Potential Strategic Effects		
Major positive	++	Development would resolve an existing sustainability problem; effect considered to be of regional/national/international significance
Minor positive	+	No sustainability constraints and development acceptable; effect considered to be of regional/national/international significance
Neutral	0	Neutral effect
Minor Negative	-	Potential sustainability issues, mitigation and/or negotiation possible; effect considered to be of regional/national/international significance
Major Negative	--	Problematical and improbable because of known sustainability issues; mitigation or negotiation difficult and/or expensive; effect considered to be of regional/national/international significance
Uncertainty **?**		Where the significance of an effect is particularly uncertain, for example because insufficient information is available at the plan stage to fully appraise the effects of the development or the potential for successful mitigation, the significance category is qualified by the addition of the symbol?

S.4.12 The other revised draft Energy NPSs have been subject to AoS with a similar approach and the AoS frameworks have been shown to be compatible.

Geographical and temporal scope of the appraisal

S.4.13 The revised draft Nuclear NPS lists sites in England and Wales which are potentially suitable for deployment by the end of 2025. Therefore the focus of the AoS was on the effects associated with England and Wales, although consideration was given to any significant effects for the rest of the UK and any transboundary effects. The designated Nuclear NPS will remain until withdrawn or suspended by the Government and be kept under review to ensure that it remains valid.

S.4.14 The Nuclear AoS includes appraisal of both the effects of the whole revised draft NPS and the specific effects of potentially suitable sites. Generic design characteristics for new nuclear power stations were considered for the appraisal since the detailed design will be addressed at the project EIA stage. The timescales for appraisal were as follows:

- construction - 6 years;
- operation - approximately 60 years;
- decommissioning - approximately 30 years; and
- interim storage of waste: approximately 100 years after operation ceases[12].

[12] The site lifetime of 166 years assumes 6 years for construction, 60 years for operation and 100 years for interim storage of spent fuel after the last defueling. It is possible to envisage a scenario in which onsite interim storage might be-required for

Significant transboundary effects

S.4.15 It was concluded that significant transboundary effects are unlikely. Due to the robustness of the UK's regulatory regime, there is a very low probability of an unintended release of radiation and routine radioactive discharges from new nuclear power stations will need to be within authorised limits. The revised draft Nuclear NPS and its accompanying AoS and HRA reports have been sent to EU Member States.

S.5 The Appraisal of Sustainability and the Strategic Siting Assessment processes

S.5.1 The AoS is an ongoing process that develops as responses to consultation are considered and as the revised draft Nuclear NPS itself is developed. From the scoping stage in March 2008, the process leading to the preparation of the Nuclear NPS proposed an integration of the processes of plan making and appraising sustainability. This includes the SSA process for identifying potentially suitable sites for new nuclear power stations; the SSA criteria were subject to appraisal using the AoS framework of objectives for sustainability[13]. An overview of the interactions of the NPS, SSA and AoS processes are shown in the following diagram:

around 160 years from the start of the power station's operation, to enable an adequate cooling period for fuel discharged following the end of the power station's operation. In making its assessment that onsite interim storage might be needed for 160 years, the Government took a conservative approach, to ensure that local communities are aware that it is possible that onsite interim storage might be required for this length of time. Following the public consultation, the Government has revised its position. The Government recognises that onsite interim storage might be required beyond 2130, particularly in the event that a GDF is not available to take the waste, but the Government does not expect onsite interim storage to be required for as long as 160 years. Further detail is set out in The Government Response to the consultation on the draft National Policy Statements for Energy, DECC, 2010, www.energynpsconsultation.decc.gov.uk

[13] BERR (July 2008) *Applying the proposed Strategic Siting Assessment Criteria: a study of the potential environmental and sustainability effects*

S.6 Addressing challenges in undertaking the AoS

S.6.1 The revised draft Nuclear NPS is a national level policy document and its impacts will be felt overall at the national level but also most particularly at the local levels where new nuclear power stations are built. The revised draft Nuclear NPS is different because it includes both strategic and spatial aspects. In order to address the main difficulty of keeping the appraisal strategic for a national plan and maintaining the appraisal for the sites at a strategic level, the appraisal recognised two levels of significance of likely effects – at the national and at the local levels. It was important not to duplicate the project level assessments (EIA and HRA) that the IPC will consider in their decision making at the development consent application stage. Any uncertainties in the findings of the appraisal or gaps in the information were recorded in the detailed appraisal matrices. Recommendations were made from the AoS to the revised draft NPS to highlight to the IPC where they should consider more detailed studies, such as specific habitat or species surveys, to address uncertainties at the project level stage.

S.7 How have we consulted on the development of the AoS?

S.7.1 The AoS for the revised draft Nuclear NPS has been developed through a number of stages that reflect consultation responses and changes in legislation and guidance. A summary of the consultation is set out in the following table:

Table S.7.1 Summary of consultation

AoS Development	Consultation
The SEA Scoping Report[14] (March 2008)	Early consultation with the statutory consultees[15] and others on the scope and level of detail proposed for the SEA (now AoS).
The Environmental and Sustainability Study[16] (July 2008)	The potential environmental and sustainability effects of applying the SSA criteria were examined and this was included as part of the public consultation on the proposed SSA criteria.
The Update Report[17] (January 2009)	Reporting changes made to the SSA criteria as a result of consultation; explaining change to AoS as a result of the Planning Act 2008.
(April to June 2009)	Ongoing liaison with statutory environmental bodies, relevant regulators, and other Government departments.
AoS of the draft Nuclear NPS[18] (November 2009)	Formal consultation with statutory bodies and the public on the initial draft Nuclear NPS and the AoS.
The revised AoS Report	Formal consultation with statutory bodies and the public on the

[14] BERR (Mar 2008) *Consultation on Strategic Environmental Assessment for proposed National Policy Statement for new nuclear power*, URN 08/680QAN, http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file45240.pdf
[15] CCW, Cadw, Environment Agency, English Heritage, Natural England, SEPA, SNH, DoENI. DH, HPA and NII were also included.
[16] BERR (July 2008) *Applying the Proposed Strategic Siting Assessment Criteria: A study of the potential environmental and sustainability effects*, URN08/962, http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file47137.pdf
[17] DECC (Jan 2009) *Applying the Strategic Siting Assessment Criteria: an update to the study of the potential environmental and sustainability effects* http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file49869.pdf
[18] DECC (2009) *Appraisal of Sustainability of the draft Nuclear National Policy Statement: Main Report*, http://data.energynpsconsultation.decc.gov.uk/documents/aos/mainreport.pdf. This incorporated an Environmental Report in accordance with the European SEA Directive 2001/42/EC

(October 2010)	revised draft Nuclear NPS and revised AoS Report

S.8 What alternatives have we considered?

S.8.1 In line with good policy and plan making objectives, and in accordance with the SEA Directive that requires consideration of reasonable alternatives, a phased approach to the appraisal of realistic alternatives[19] was taken for the revised draft Nuclear NPS as follows:

- Need – do we need the Nuclear NPS?
- Process – how should the Nuclear NPS be developed?
- Location – where should the new nuclear power stations be built?

S.8.2 The first two phases of assessment for developing the draft Nuclear NPS (covering the 'Need' and 'Process' alternatives) were appraised using the AoS Framework of objectives organised into the headline Sustainable Development topics as follows: climate change, security of energy supply, the economy, health and safety, radioactive waste, the natural environment and the built environment. This was done to reflect the strategic level of the decision making.

S.8.3 The third phase ('Location' alternatives) was appraised using the Sustainable Development themes discussed in section S.3 of this NTS. The sites that passed the exclusionary criteria in the SSA process were appraised in detail using the AoS objectives and decision-aiding questions.

S.8.4 It is noted that the two levels of sustainable development assessment used are compatible with each other. The links between the two sets of criteria are set out in Section 2 of the Main AoS report. The assessment of alternatives is explained further in the following sections:

Need – do we need the Nuclear NPS?

S.8.5 The AoS considered three possible high level options:

- a **Nuclear NPS** in line with Government policy that includes guidance for the IPC on potentially suitable sites;
- an **NPS that prohibits nuclear -** the construction of new nuclear power stations is prohibited; and
- **No NPS** which is the "business as usual" scenario where nuclear power stations could still come forward but without any guidance for the IPC or list of potentially suitable sites.

S.8.6 The three options were appraised at a high level against the Sustainable Development themes: climate change, security of energy supply, the economy, health and safety, radioactive waste, the natural environment and the built environment. The AoS findings identified that in terms of CO_2, NOx and particulate matter emissions, the construction and operation of new nuclear power stations in

[19] The Appraisal of Sustainability of the Overarching Energy NPS also considers a number of alternatives. For more information see www.energynpsconsultation.decc.gov.uk

accordance with a Nuclear NPS would result in lower emissions during operation than would result from CCGT power stations built under the NPS that prohibits Nuclear option and any CCGT power stations which came forward under the No NPS option.

S.8.7 The assessment concluded that the preferred alternative is the option of a Nuclear NPS in line with Government policy. This is based on the case for nuclear power in relation to other alternatives, and the effect it will have on the long-term ability of the UK to meet its emission reduction targets and maintain its security of supply.

Process – how should the NPS be developed?

S.8.8 The format and detail of the NPS can influence the number, location and timing of new nuclear power stations through the policy guidance and framework for decision making that it sets out for the IPC. Four potential process options for the Nuclear NPS were identified in the Scoping Report (2008) as follows:

- a Nuclear NPS with siting criteria;
- a Nuclear NPS with a list of sites;
- a Nuclear NPS with siting criteria and a list of sites; and
- a Nuclear NPS with siting criteria and a list of sites restricted to those in the vicinity of existing nuclear power stations

S.8.9 The option for a NPS with siting criteria and a list of sites was appraised as the preferred option since it would be more likely to reduce uncertainty for the IPC and thus reduce the time for a planning application to be determined. This would allow for earlier new nuclear build and better contribute to meeting the Government's climate change, security of energy supply and other sustainability objectives. In addition, the list of sites would have undergone a strategic level assessment which could reduce the likelihood of adverse sustainability effects occurring and provide a means of enabling such effects to be avoided or mitigated.

S.8.10 The revised draft Nuclear NPS uses the Strategic Siting Assessment (SSA) process to identify the location of sites potentially suitable for new nuclear power stations that could be deployed by 2025. The criteria (exclusionary and discretionary) used for the SSA were subject to appraisal in the first half of 2008 using the AoS framework of objectives. This appraisal was reported in the Environmental and Sustainability Report[20], published in July 2008, and made available alongside the consultation on the SSA process and criteria.

S.8.11 The 2008 Environmental and Sustainability Study concluded that:

- the proposed SSA criteria were broadly in line with sustainability and environmental objectives;

[20] BERR (July 2008) *Applying the proposed Strategic Siting Assessment Criteria: a study of the potential environmental and sustainability effects*

- the discretionary nature of some criteria means that adverse environmental effects cannot be ruled out at the strategic level; and

- local level impacts are not addressed by the SSA but it is made clear that these would be addressed by the nuclear regulators and others at the project level assessments.

Location - where should new nuclear power stations be built?

S.8.12 11 sites were nominated by the end of March 2009 and assessed against exclusionary and discretionary criteria, as well as a site level AoS and HRA. In each case the appraisal identified any likely strategically significant effects, for example, on international or nationally protected nature conservation. The appraisal also identified likely significant effects at the local and regional levels, for example, cumulative effects for community prosperity through long term employment.

S.8.13 DECC considered the emerging AoS findings, together with a HRA assessment, other information provided by the nominators, various technical specialists, the regulators and the statutory environmental authorities, in order to inform their assessment of nominated sites and to help inform the development of the draft Nuclear NPS.

S.8.14 The Government also commissioned an Alternative Sites Study[21] to identify other potential alternative sites. The study drew on a number of information sources to identify sites that might be "*worthy of further consideration*" by the Government to determine whether these sites were likely to meet the SSA criteria. Three sites were identified through this process; Druridge Bay in Northumberland, Kingsnorth in Kent, and Owston Ferry in Lincolnshire. A site AoS and site HRA were undertaken for each of these sites[22]. Having considered evidence from the public consultation, in addition to evidence from inter alia, the Spring 2009 opportunity for public comments, regulators, the Appraisal of Sustainability and Habitats Regulations reports, the Government has concluded that the sites identified by the Alternative Sites Study are not potentially suitable because they are not credible candidates for the deployment of new nuclear power stations by 2025.

S.8.15 One nominated site, Dungeness, did not pass the discretionary criteria on international sites of ecological importance and there were also concerns about flood risk and coastal processes. The Government therefore concluded that ten sites were potentially suitable[23] and these were included in the initial draft Nuclear NPS which was published in November 2009 for public consultation. As a result of the responses received during that consultation, the Government has concluded that Braystones and Kirksanton are not potentially suitable and confirms that Dungeness is not potentially suitable. The revised draft Nuclear NPS lists eight sites identified as potentially suitable for the deployment of new nuclear power stations by 2025.

[21] Atkins Ltd for DECC (2009) *A consideration of alternative sites to those nominated as part of the Government's Strategic Siting Assessment process for new nuclear power stations*, http://data.energynpsconsultation.decc.gov.uk/documents/atkins.pdf
[22] These are available at www.energynpsconsultation.decc.gov.uk
[23] Braystones, Bradwell, Hartlepool, Heysham, Hinkley Point, Kirksantion, Oldbury, Sellafield, Sizewell and Wylfa

S.8.16 The individual Site AoS reports set out the sustainability characteristics of the potentially suitable sites and include key issues that were recommended for the revised draft NPS to include as particular considerations for the IPC to take into account when determining individual planning applications for new nuclear power stations. The findings of the revised site level AoSs are available as Annexes A to H of the Main AoS report (for the eight sites included in the revised draft NPS), and a summary of their findings is presented later in this Non Technical Summary. The nominated sites considered in the revised AoS of the revised draft NPS are as follows:

- Bradwell (Annex A);
- Hartlepool (Annex B);
- Heysham (Annex C);
- Hinkley Point (Annex D);
- Oldbury (Annex E);
- Sellafield (Annex F);
- Sizewell (Annex G); and
- Wylfa (Annex H).

S.8.17 The revised AoS reports for the sites at Braystones, Dungeness and Kirksanton are also available at www.energynpsconsultation.decc.gov.uk.

S.9 What is the current situation and issues for sustainability?

S.9.1 Increased development and current lifestyles have resulted in a growing demand for electricity. Current Government energy policy is set towards meeting its climate change objectives, becoming a low carbon economy and ensuring energy security. The current situation and key issues for sustainable development and the revised draft Nuclear NPS may be summarised by sustainable development theme as follows:

- *Climate Change*: The climate of the UK is changing and increased emissions of greenhouse gases (GHGs) from human activities into the atmosphere is widely recognised as one of the main contributors to global warming. Climate change represents a significant risk to ecosystems, the economy and human populations and could lead to a number of significant changes to environmental conditions. These changes are likely to exacerbate current environmental trends across the UK, such as the continued loss of natural habitats and biodiversity and increased pressure on water resources. The Government is committed under the Kyoto Protocol to reduce emissions of GHGs by 12.5% below 1990 levels by 2012.
- *Biodiversity*: The UK Government's commitment to the Convention on Biological Diversity (1992) is delivered through the UK Biodiversity Action Plan

that aims to contribute to a significant reduction of the current rate of biodiversity loss. The Government has set a target for 95% of land and sea features designated in the UK as SSSI, SPA or SAC to be in either favourable condition or recovering by 2010. As of 2008, the conditions of features were below the target at generally between 60% and 80%.

- *Sustainable Communities*: The Egan Review (2004) sets out key objectives for ensuring that opportunities to access employment are considered. In certain areas road traffic is already at high stress levels and is predicted to grow for a variety of reasons, but typically as a result of general development. UK transport policy is designed to encourage more sustainable travel choices. Waste in the UK continues to grow but national policy continues to focus on the waste hierarchy in order to reduce waste and improve the efficient use of resources. The security of energy supplies in the UK is a major issue.

- *Health*: The Index of Multiple Deprivation (IMD) shows that the south east and east of England are the least deprived areas in the UK. Generally, areas of health concerns relate to increasing levels of obesity and geographical inequalities in the UK. Other key issues for energy infrastructure include the suitability of housing and the extent of fuel poverty. The increase of life expectancy contributes to the demand for electricity. The importance of access to open space for recreational activities is recognised by the Government in current planning policy. The UK has a strict regulatory regime to protect people and the environment with regard to radiological (nuclear) factors.

- *Cultural Heritage and Landscape*: Important landscape, cultural and historic features are protected in the UK and it was noted that loss of the heritage resource is difficult to mitigate. Generally across Europe there is a recognition that landscape diversity and quality is deteriorating. In the UK, areas where landscape character is neglected are generally close to major population and transport routes.

- *Air Quality*: in the UK air quality has generally improved since 1997 when the first Air Quality Strategy was adopted. One of the dominant sources of sulphur dioxide in the UK is power generation from the burning of fossil fuels; the largest source of nitrogen oxide is traffic. Compared to fossil fuel generating stations, nuclear power stations do not emit significant quantities of carbon dioxide, sulphur dioxide, nitrogen oxides or particulates.

- *Soils and Geology*: The EU has proposals for a Soil Framework Directive (2007) that aims to prevent further degradation of soil and preserve its functions. Soils, geology and the use of land are protected by various policies in the UK.

- *Water Quality and Resources; Flood Risk*: Water includes consideration of environmental and human health protection and the sustainable use of resources; all aspects of water are interconnected and often interact with other factors such as biodiversity. The EU Water Framework Directive (2000) aims to prevent further deterioration of aquatic ecosystems and associated wetlands. The UK Water Strategy (2008) aims to improve the water environment and ensure sustainable water management. Generally water quality in the UK is

expected to increase or remain unchanged and fit with the target to achieve good ecological status by 2027. Increases in population coupled with the predicted effects of climate change will increase pressure on water resources and increase flood risk. The UK Strategy for Flood and Coastal Erosion Risk Management (2005) provides key policy context on managing risk and increasing resistance and resilience. Large parts of England are at risk from flooding from rivers and the sea. About 5 million people live in floodplains or areas identified as being at risk of coastal flooding in England and Wales.

S.10 What is the likely future situation without a Nuclear National Policy Statement?

S.10.1 Nuclear generation is a proven, low carbon technology. In the absence of new nuclear power stations, it is likely that gas fired generation would be largely built instead which would increase carbon dioxide emissions[24]. The Government believes that to ensure the UK's future energy is secure, clean and affordable, the UK needs a mix consisting of renewables, fossil fuels with CCS and nuclear. Key sustainability topics relevant to the Nuclear NPS, such as climate change, energy and communities are all closely interrelated with complex interactions.

S.10.2 At each of the eight potentially suitable sites, if new nuclear power stations were not developed it is not certain what infrastructure (if any) might be developed at that particular site. Therefore it is difficult to predict the effects of the likely future situation at those sites without a Nuclear NPS.

S.11 The key likely significant effects of the revised draft Nuclear National Policy Statement

Overview

S.11.1 The revised draft Nuclear NPS has the potential for effects on communities and the environment nationally and at the regional or local level. Some effects are common to new nuclear power stations, for example, effects associated with the requirement for water for cooling. However, the significance of such effects depends upon the detailed design together with the characteristics and sensitivities of the local communities and environment.

S.11.2 This section S11 summarises the findings of the AoS of the revised draft Nuclear NPS according to the Sustainable Development themes and objectives for sustainability (e.g. environmental characteristics, likely effects and possible mitigations). Section S12 summarises the key findings of the AoS for each site. The AoS identified certain key recommendations that were generally applicable to the revised draft NPS as follows:

The AoS recommended that the revised draft NPS should guide the IPC to the findings of the site level AoSs to help scope the studies needed for the project level EIAs and any Sustainability Assessments. The AoS recommended that the revised draft NPS should advise the IPC that the significance of effects can only be

[24] See Chapter 3 of the main Appraisal of Sustainability report for more information

determined through site level studies and that a requirement for an Environmental Management Plan as part of the EIA will help ensure that any commitments to mitigating any significant impacts will be implemented.

Climate Change (mitigation)

S.11.3 Nuclear power is a low carbon energy source and associated with lower greenhouse gas emissions when compared to fossil fuels. The AoS identified that there are likely to be positive effects on this sustainability objective and the significance of these effects will increase with the number of nuclear power stations in operation. Climate change adaptation is cross-cutting and covered where relevant within the following sections on biodiversity and flood risk.

The AoS made no key recommendations and the AoS identified overall that there are likely to be significant positive effects that will contribute to meeting the UK climate change commitments.

Biodiversity and Ecosystems

S.11.4 The AoS identified that all the sites included in the revised draft Nuclear NPS will have likely significant strategic adverse effects on national and European sites of biodiversity value. The significance of these effects and the effectiveness of mitigation possibilities depend upon the specific sensitivities of the sites together with details of design and site layout. This will be addressed alongside wider effects on local biodiversity during the project level HRA and EIA assessments. There can be possibilities to mitigate certain potential adverse effects on biodiversity, for example, project design to avoid sensitive areas, and habitat retention and species protection measures on site.

S.11.5 The HRA identified that all the sites have the potential for an adverse effect on European site integrity. The HRA recommended that further project level HRAs should be required and the revised draft Nuclear NPS requires that for new nuclear power stations any development consent will be required to be supported by a detailed HRA at the project level, including Appropriate Assessment where necessary.

S.11.6 The AoS identified the common implications for effects on biodiversity (international, national and local importance) and ecosystems from new nuclear power stations:

- Water discharge, abstraction and quality;
- Habitat and species loss and fragmentation;
- Coastal squeeze;
- Disturbance events (noise, light and visual); and
- Air quality.

S.11.7 The AoS identified that there are key inter-relationships between biodiversity and other sustainability effects, most notably flood risk management, health and well-

being, and sustainable communities. Significant cumulative effects are also possible in relation to proposed adaptation measures for climate change, and in relation to water quality and resources, flood risk, soils and geology, and air quality. Interactions and cumulative effects are likely where more than one new nuclear power station may be built and for biodiversity this may be significant with the cluster of two sites on the Severn Estuary (Oldbury and Hinkley) and two sites (Bradwell and Sizewell) on the Outer Thames Estuary. Consideration will also need to be given to cumulative effects of other major developments and infrastructure projects.

The AoS recommended that the revised draft NPS should advise the IPC that the significance of biodiversity effects can only be determined through project level studies and guide the IPC to the findings of the site level AoSs and site HRAs to help agree the scope of the studies needed for the project level EIAs and HRAs. Overall the AoS found that there are likely to be significant adverse effects on national and European sites of biodiversity value and that the effectiveness of mitigation possibilities is uncertain and needs to be evaluated at the project level assessments. The AoS also found that there are likely to be significant adverse effects on the wider biodiversity at the local level and that these need to be evaluated during the project level EIAs.

Communities: population, employment and viability; supporting infrastructure

S.11.8 The AoS identified that there are likely to be significant positive effects for employment locally and associated economic benefit through the use of supporting services, particularly during the construction phase and this could be of regional significance. During the operational phase and in the longer term, the Nuclear NPS is likely to contribute significantly to the development of jobs nationally in the nuclear and associated industries, including enhancement of training and skills, and provision of goods and services to the nuclear industry.

S.11.9 As with any large scale construction project, there is the potential for short term adverse effects during construction if a number of sites were developed at the same time with the risk of a shortage of construction workers, local communities disturbed by an incoming workforce, and additional pressures placed on local services and transport networks. However, there are possibilities for mitigating such effects depending upon local circumstances and needs.

S.11.10 The opportunities for upskilling, education and supporting industries are likely to be more significant if there were a cluster of new nuclear power stations, particularly for the north west and south west of England. The effects of the revised draft Nuclear NPS in combination with other renewable energy projects is likely to contribute positively to objectives for regional economic development.

The AoS recommended that the revised draft NPS should advise the IPC of the potential enhancement for positive economic development effects. Overall the revised AoS found that there are likely to be significant beneficial effects on employment and viability for communities.

Health and Well-Being

S.11.11 The AoS identified the common potential implications for health and well-being from new nuclear power stations as follows:

- radiation from permitted discharges and potential hazards from accidental emissions;
- perceptions of health risks;
- safety and security;
- employment;
- emissions to water and air;
- noise; and
- accessibility to green space and exercise.

S.11.12 The existing regulatory systems for operation of nuclear power stations will continue to apply to the new build so that potential effects associated with safety, security, and radiation doses to the public and workers will be dealt with through the current nuclear licensing and health protection systems.

S.11.13 Overall, there are health benefits to be realised from having a reliable and secure supply of energy. The AoS also identified that there are indirect positive health effects associated with enhanced prosperity and long-term employment opportunities. Any indirect effects on supporting services, associated infrastructure, and health inequalities are not significant at the national scale and will be addressed during the project level assessments; this includes the adverse local effects from noise and disturbance associated with the construction of many major infrastructure projects. Nuclear power stations are often located in rural areas on the coast with potential conflicts for recreation and amenity.

The AoS recommended that the revised draft NPS should guide the IPC to consider requesting a sustainability statement / assessment for each application to ensure full consideration is given to sustainable communities and interactions between a range of sustainability issues, including the wider determinants of health. The NPS should highlight to the IPC that there may be beneficial effects for health and well-being from secure long term employment and community viability arising from new nuclear power stations. The revised AoS also recommended that the revised draft NPS should advise the IPC that nuclear power stations are often located in rural areas on the coast with potential conflicts for recreation and amenity (and their subsequent impacts on health and well-being).

Cultural Heritage

S.11.14 The predicted effects of the revised draft Nuclear NPS on cultural heritage are likely to be negative throughout all phases of development and are associated with the location and scale of development at the potentially suitable sites. The significance

of these effects will depend on the importance of the cultural heritage features, their location within the site, and their setting relative to the site. Mitigation measures may be possible, although it may be very difficult to mitigate for adverse effects on the settings of important cultural features. Overall the AoS identified that adverse effects were likely to be at a local scale, except for one site at Bradwell where the importance of the setting of nationally protected features is likely to increase the significance of the effects.

The AoS recommended that the revised draft NPS should advise the IPC that significant adverse effects to cultural heritage resources may be difficult to mitigate. Overall the revised AoS found that there are likely to be minor significant adverse effects on cultural resources except for Bradwell where the effect may be more significant. The significance and effectiveness of mitigation possibilities is uncertain and needs to be evaluated at project EIA level.

Landscape

S.11.15 The potentially suitable sites generally share certain landscape and visual characteristics since they are usually in less populated areas in rural and coastal locations that may have value for visual amenity and as landscape resources. The AoS identified that there is potential for long-term irreversible adverse effects on landscape until decommissioning. At one of the potentially suitable sites, Oldbury, cooling towers have been proposed and the significance of the adverse impacts on landscape will depend upon the height of the cooling towers. The nominator of the site, Horizon Nuclear Power, has said that a hybrid cooling design is its preferred option for Oldbury, This design would mean cooling towers of 70 metres in height[25]. The Overarching NPS also states that the IPC should be satisfied that hybrid cooling technology or other technologies are not reasonably practicable before giving consent to natural draught cooling towers[26].

S.11.16 Some adverse effects on the landscape can be mitigated by changes to the site layout, use of buffer zones, and reinstatement after the short term effects during construction. Many of the proposed power station sites will be seen in the context of existing power stations. Nationally significant adverse effects were identified for the site at Sizewell which is completely within an Area of Outstanding Natural Beauty and Sellafield due to the proximity of the Lake District National Park.

The AoS recommended that the revised draft NPS should advise the IPC that there are likely to be some visual impacts that cannot be mitigated due to the scale of new nuclear power stations; the significance of this is increased if cooling towers are proposed. The significance and effectiveness of mitigation possibilities is uncertain and needs to be evaluated at project EIA level. Overall the revised AoS found that there may be neutral or minor negative effects on landscape except for the sites at Sizewell and Sellafield where effects may be of national significance because of the national level designations associated with these sites.

[25] www.horizonnuclearpower.com/downloads/Horizon_Oldbury_cooling_tower_press_release_8_Sept_2010.pdf
[26] Natural draught cooling towers can be up to 200 metres in height.

Air Quality

S.11.17 Radioactive discharges to air are strictly controlled by the regulatory system and discussed in the section on radioactive waste. Short term air quality impacts during construction will depend upon local site specific factors, such as transport routes and proximity to residential housing and these will be dealt with during the project level EIA. Air quality is unlikely to be a significant issue, principally due to the relatively low level of air pollutant emissions from nuclear power stations during operation and the satisfactory existing air quality at the potentially suitable sites

The AoS recommended that the revised draft NPS should highlight to the IPC that impacts on air quality are unlikely to be significant but that impacts associated with the construction phase should be considered in the scope of the project level EIAs. Overall, the revised AoS found that effects on air quality are likely to be neutral.

Soils, Geology and Land Use

S.11.18 None of the potentially suitable sites are located on or adjacent to sites of national or regional geological or geomorphological importance. Some minor adverse effects were identified by the AoS at the local levels and associated with potentially contaminated land adjacent to some sites and impacts on peat superficial deposits at two sites. There is the potential for impacts on soils to affect the soil water regime which then may affect terrestrial habitats and this will be need to be considered as part of the project level EIAs and HRAs. As with any major construction project, there is an increased risk of pollution and potential contamination of soils but this will be dealt with by the appropriate environmental management controls through the EIA process.

The AoS recommended that the revised draft NPS should inform the IPC that impacts on soils may affect the soil water regime which may affect various terrestrial habitats and this will need to be considered in the project level EIAs and HRAs. Overall, the effects of the revised draft Nuclear NPS are considered to be neutral on soils and geology.

Water Quality and Resources

S.11.19 Radioactive discharges to water are strictly controlled by the regulatory system and discussed in the section on radioactive waste. The AoS identified that for all sites minor negative effects may be expected on coastal or estuarial water quality locally where cooling water is to be abstracted and/or discharged. Such effects may compromise the achievement of water quality objectives, for example, the requirements of the Water Framework Directive (WFD), which aims to maintain or achieve good status. The significance of the effects and effectiveness of mitigation possibilities depends on the location and will need to be evaluated during studies as part of the project level EIAs. Interactions from these effects on European and nationally protected habitats and species will also need to be evaluated during project level EIAs and HRAs. These abstraction and discharge activities will also be subject to Environment Agency licensing and consenting processes, though it is noted that these processes may not fully mitigate against all effects. There may be minor negative effects on water supply and waste water treatment capacity in those regions already under stress.

S.11.20 Cumulative effects are likely to occur where there are clusters of nominated sites with increased water requirements and where several sites discharge cooling waters to the same water body. These effects are likely to be significant in the south west region for the Severn Estuary. Generally, the effects of the revised draft Nuclear NPS on water quality and resources may be minor negative, although this is likely to be able to be mitigated.

The AoS recommended that the revised draft NPS should highlight to the IPC the characteristics of cooling water for new nuclear power stations and the implications for the marine and estuarial environments, including the interactions between discharges from clusters of nominated sites. The revised NPS should also inform the IPC that there could be increased water demand, particularly during the construction phase, which would be of greatest significance in those regions that are already under water stress. Generally, the revised AoS identified that minor negative effects may be mitigated.

Flood Risk

S.11.21 The beneficial effect of power generation from nuclear power stations with regard to climate change mitigation is noted earlier under the climate change topic. As a low carbon source, nuclear power stations are expected to make a positive contribution to achieving carbon reduction targets which, indirectly, should have a beneficial effect on flood risk through moderating changes in rainfall patterns and sea level rise. Climate change adaptation is primarily considered in this section with regard to flood risk management.

S.11.22 In other respects, the relationship between the revised draft Nuclear NPS and flood risk is essentially local or possibly sub-regional where a number of potentially suitable sites are in proximity to each other. It also has a number of different effects. The first of these is the local impact that the individual development may have on the risk of flooding to land adjacent to those sites. Secondly the sites themselves, which are all proposed in coastal or estuarine locations, may be vulnerable to the risk of flooding from a number of causes, coastal, storm surge, fluvial, groundwater and

pluvial. Finally flood risk management measures put in place to mitigate the impacts of flooding on or from individual sites may impact on coastal processes, hydrodynamics and sediment transport, which in turn may impact on designated habitats. All of these flood risk effects can occur during the construction, operation or decommissioning phases. As a result flood risk assessments need to take a long term view.

S.11.23 The flood risk effects to areas surrounding development sites could be either negative or positive. Negative impacts could be that flood risk is increased to the surrounding area as a result of any land raising required to protect the power stations or the footprint and layout of the sites which could impact upon floodplain storage and flood flow pathways. Positive impacts could also arise, as flood risk mitigation measures constructed as a result of the power stations could also provide flood risk protection for new and existing developments in the district. Similar negative and positive impacts could affect designated landscapes, for example, sensitive habitats could become more vulnerable to flooding, or as a result of improved defences – less vulnerable.

S.11.24 Climate change will increase flood risk from all causes. Coastal flood risk is likely to increase as a result of predicted increases in sea level and changes in storm surge. Changes to the seasonal distribution of rainfall and in the intensity of extreme rainfall events are also likely to increase flood risk. Climate change is also likely to result in changes to coastal erosion.

S.11.25 The mitigation measures that may be required to manage flood risk as a result of the revised draft Nuclear NPS could have potentially adverse effects on coastal processes and hydrodynamics. These measures have the potential to have secondary impacts on biodiversity and water quality, therefore potentially hindering the objectives and requirements of the EU Water Framework Directive.

The AoS recommended that the revised draft NPS should highlight to the IPC the need for detailed, site-specific investigations, including flood risk assessment, to determine the most appropriate and sustainable methods for protecting sites from flooding through the life cycle of the new nuclear power stations and to assess how these measures may affect flood risk in adjacent areas. Studies should also be undertaken to assess the impacts that any flood control measures may have on coastal processes and, indirectly, on ecology and biodiversity. Overall, the revised AoS identified that the effect of the revised draft NPS on flood risk and of flood risk on the sites in the revised draft NPS is likely to be negative, and the scale of the effects are likely to increase over time as a result of climate change.

Radioactive and Hazardous Waste

S.11.26 The revised draft Nuclear NPS sets out the Government's consideration of the management of radioactive wastes, in particular the disposability of new build higher activity wastes and spent fuel. It also sets out that the Government is satisfied that effective arrangements will exist to manage and dispose of the waste that will be produced by new nuclear power stations. The AoS has considered the sustainability implications of managing the different types of waste associated with the construction, operation and decommissioning of new nuclear power stations in the UK under the following headings:

- Spent Fuel;
- Intermediate Level Waste (ILW);
- Low Level Waste (LLW);
- Gaseous and liquid radioactive discharges; and
- Non-radioactive hazardous waste.

S.11.27 The AoS has identified that the effects of waste management may arise both at a nuclear power station site and offsite at other locations where packaging, transport and/or disposal of waste is undertaken. Some minor negative effects have been identified at nuclear power station sites. These are principally associated with the management and storage of spent fuel and ILW. Minor negative effects may potentially arise during construction and decommissioning of interim waste storage facilities although some of these effects, for example on soils, cultural heritage and landscape are site specific and will need to be assessed at the project level.

S.11.28 The most important consideration for offsite waste management facilities is the additional quantity of spent fuel to be disposed of from new nuclear power stations that will require final disposal in a Geological Disposal Facility (GDF) that will be managed by the Nuclear Decommissioning Authority (NDA). The significance of these effects will depend upon the number of new nuclear power stations built. It is estimated that to dispose of the spent fuel produced by a 10GW programme of new nuclear power stations operating for 60 years would increase the underground area of a GDF required for the disposal of spent fuel and High Level Waste by around 50 to 55%[27].

S.12 The potentially suitable sites with key issues for the revised draft Nuclear National Policy Statement

Introduction

S.12.1 A site level AoS has been undertaken for each of the nominated sites. These appraisals identified potential impacts and likely effects of a generic design of a new nuclear power station. The significance of potential effects and the effectiveness of possible mitigation will depend upon detailed studies carried out as part of the EIA and other studies for individual applications for development consent. The individual site AoS reports are available as Annexes A to H of the Main AoS report[28].

S.12.2 The site AoSs identified likely strategically significant effects at the national or international levels and likely locally significant effects at the local or regional level. The significance of local effects and effectiveness of mitigation possibilities for adverse effects is less certain until detailed project level studies have been undertaken. The site AoSs recommended that this information would be helpful to

[27] Summary Disposability Assessment for the APR-1000. http://www.nda.gov.uk/documents/upload/TN-17548-Generic-Design-Assessment-Summary-of-DA-for-Wastes-and-SF-arising-from-Operation-of-APPWR-October-2009.pdf Summary Disposability Assessment for the EPR. http://www.nda.gov.uk/documents/upload/TN-17548-Generic-Design-Assessment-Summary-of-Disposability-Assessment-for-Wastes-and-Spent-Fuel-arising-from-Operation-of-the-EPWR.pdf

[28] These are available at www.energynpsconsultation.decc.gov.uk

the IPC when agreeing the scope of EIAs and other studies and when considering applications for development consent. Annex C of the revised draft Nuclear NPS sets out the findings of the SSA process for each listed site and includes other issues raised by the site AoSs. The following section sets out a high level summary of the environmental characteristics of the eight sites listed in the Nuclear NPS which are likely to be affected by development, a summary of the potential likely effects and possible mitigations which were identified. A more detailed analysis can be found in the AoS site reports (A-H) for each site which can be found at www.energynpsconsultation.decc.gov.uk.

Bradwell

S.12.3 The site at Bradwell is located in the east of England, to the east and south of the existing Bradwell nuclear power station and on the south side of the Blackwater Estuary at the northern extremity of the Dengie Peninsular. The site comprises largely arable farmland, a former military airfield, some agricultural buildings and areas of foreshore. There are 16 European protected sites within 20km of the site at Bradwell and ten scheduled monuments, one Conservation Area and around 132 listed buildings within an approximate distance of 5km of the site.

S.12.4 Potential likely effects and key findings recommended as guidance for the IPC to consider include:

- Adverse effects on the settings of nationally designated cultural heritage sites Possible mitigations include siting the development adjacent to the existing power station and through appropriate landscaping. It is recognised that adverse effects would be difficult to mitigate.

- Adverse effects on four national and internationally protected nature conservation sites; on water quality and fish/shellfish populations in nearby coastal waters and on coastal erosion through upgrading of flood defences. Possible mitigations include careful design and siting of cooling system to minimise impact; suitable design, location and construction methods for flood defence works.

- Adverse setting effects upon nearby Scheduled Ancient Monuments and listed buildings. Possible mitigations include siting the development adjacent to the existing power station and through appropriate landscaping. It is recognised that adverse effects would be difficult to mitigate.

- Positive effects associated with long-term employment and enhanced prosperity for local communities.

- The site is not part of a cluster of nominated sites, therefore regional cumulative effects are not considered relevant. However, the potential for adverse effects from Bradwell and Sizewell on the Outer Thames Estuary SPA indicates that there may be interactions and cumulative effects on biodiversity.

Hartlepool

S.12.5 The site at Hartlepool is located on the coast in the north-east of England, in an established industrial area. The site surrounds the existing Hartlepool nuclear power station and is located at the mouth of the River Tees on the north side of the Greatham Creek, opposite Seal Sands. There are eight European protected sites within 20km of the site.

S.12.6 Key findings recommended to consider include:

- Adverse effects on at least seven national and internationally protected nature conservation sites. Possible mitigations include designing a suitable intake/outfall system design, including fish protection measures and minimisation of effects on sedimentary processes or thermal regime; use of sensitive construction techniques.
- Adverse visual impact on the landscape, but in the context of an already industrialised area. Some potential for visual impact mitigation through sensitive siting, colouring and detailed building design, including application of principles of good design in accordance with PPS1.
- Positive local effects on long-term employment and enhanced prosperity for local communities.
- The site is not part of a cluster of nominated sites, therefore regional cumulative effects are not considered relevant.

Heysham

S.12.7 The site at Heysham is located in the north-west of England, south of Morecambe Bay, adjacent to the existing Heysham Docks and east of the existing Heysham nuclear power stations. The site occupies an area of drained marsh at the western side of a generally low lying area of land between the River Lune and Morecombe Bay, and is adjacent to residential and industrial areas with grazing land to the east. There are 19 SSSIs within 16km and 10 European protected sites within 20km of the site.

S.12.8 Potential likely effects and key findings recommended as guidance for the IPC to consider include:

- Adverse effects on three national and internationally protected conservation sites, and on water quality in the region. Possible mitigations include seeking to avoidance the need to disturb sensitive areas where possible; requiring studies to ensure that local groundwater bodies are investigated and suitable design is adopted to avoid or mitigate potential impacts on sensitive habitats/species
- Adverse visual impacts, potentially visible from Lake District National Park, but seen in the context of an already industrialised area. Mitigation possibilities include appropriate landscaping/planting schemes and visual impact mitigation through detailed design, including application of principles of good design in accordance with PPS1. This is, however, limited given the building scale

- Positive local effects on long-term employment and enhanced prosperity for local communities.

- The site at Heysham is approximately 60km south east of the nominated site at Sellafield. The possible, positive regional economic effects discussed above could be enhanced if both the nominated sites in the region were developed.

Hinkley Point

S.12.9 The site at Hinkley Point is located in the south-west of England, on the Severn Estuary and to the west and south of the of the Hinkley Point A and Hinkley Point B nuclear power stations. The site is bounded by the Severn Estuary to the north, the Quantock Hills to the south and west, and the Polden Hills to the east. The surrounding land is predominantly agricultural, and is sparsely populated. There are eight European protected sites within 20km of the site[29]. Located within 5km of the site, to the west and south west, is the Quantock Hills Area of Outstanding Natural Beauty (AONB), which covers 99km, from the Vale of Taunton Deane to the Bristol Channel Coast. The AONB consists of large amounts of heathland, oak woodlands, ancient parklands and agricultural land.

S.12.10 Potential likely effects and key findings recommended as guidance for the IPC to consider include:

- Adverse effects on protected conservation sites and designated species, including those in the Severn Estuary and Bridgwater Bay. There is the potential for adverse effects on water quality caused by the abstraction and release of cooling water and a risk to fish populations in nearby estuarine/coastal waters. Possible mitigations include ensuring fish protection in cooling water intake design and implementation of a Construction Environmental Management Plan;

- Adverse visual impact on views from an AONB, which would be difficult to mitigate. Possible mitigations include clustering of new and proposed buildings to avoid broadening of the potential visual impact and using existing screening woodland and use of protective buffer zones and application of principles of good design in accordance with PPS1;

- Positive cumulative effects associated with long-term employment and enhanced prosperity in the region;

- The site is in a cluster of two nominated sites in the south west region. Potential regional cumulative effects both positive and adverse may apply if both sites in the region were to be developed; and

- Further significant adverse cumulative effects if both new power stations were to be developed alongside any Severn Tidal Power scheme.

[29] A further two European protected sites – the River Wye SAC and River Usk SAC – were also considered because of hydrological connections even though they are further than 20km.

Oldbury

S.12.11 The site at Oldbury is situated on the southern bank of the Bristol Channel/Severn Estuary in the south west of England. The site is to the north of the existing Oldbury nuclear power station. The south western part of the site comprises silt lagoons (part of the existing nuclear power station site) and the remainder is agricultural land. To the west the site is bounded by the existing flood defences of the Severn Estuary. Some additional infrastructure may be also be required outside the site including additional flood protection measures and cooling water intake and outfall structures, which would extend into the Severn Estuary. There are seven European protected sites within 20km[30] and four scheduled monuments, one registered park and garden (Berkeley Castle), one Conservation Area and 250 listed buildings within an approximate distance of 5km of the site

S.12.12 Potential likely effects and key findings issues recommended as guidance for the IPC to consider include:

- Cooling towers are anticipated owing to insufficient volume of water for direct cooling systems from the river Severn at this location. There would be associated adverse visual impact on two AONB designated landscapes (within 10km of the site), which would be difficult to mitigate. The nominator has stated that its preferred cooling option is a hybrid cooling system which would utilise towers of 70 metres. The scale of the effects would depend upon the eventual size of the cooling towers.

- Adverse effects on five internationally protected conservation sites and three nationally protected conservation sites, and effects on water quality in the region. Possible mitigations include incorporation of fish protection measures within cooling water intake/system design; minimising need for encroachment of construction into sensitive habitat areas through site design; and implementation of a construction Environmental Management Plan to minimise disturbance, for example, through timing of construction programmes, visual/noise screening.

- Positive effects for long term employment and enhanced prosperity for local communities.

- The site is in a cluster of two nominated sites in the south west region. Potential regional cumulative effects both positive and adverse may apply if both sites in the region were to be developed.

- Further significant adverse cumulative effects if both new power stations were to be developed alongside any Severn Tidal Power scheme, the effects of which would be difficult to mitigate.

[30] An eighth European protected site – the River Usk SAC – was also considered because of hydrological connectivity, even though it was further than 20km from the site.

Sellafield

S.12.13 The site at Sellafield is located on the coast in the north west of England, adjacent to the existing Sellafield nuclear facilities and in an established area for the nuclear industry. The site is comprised of agricultural land. The boundary of the Lake District National Park is 1.5km to the east and 5km to the south of the site. The existing Sellafield nuclear facility and infrastructure is a dominant feature of this area of coastline and is visible from the surrounding hills and from the Isle of Man. There are six European protected sites within 20km of the site. Legally protected species within the area include great crested newts, with presence records of natterjack toad, otter, red squirrel and common species of reptile falling within 10km of the nominated site. Nationally important invertebrate species and rare and uncommon plants are also known to occur.

S.12.14 Potential likely effects and key findings recommended as guidance for the IPC to consider include:

- Adverse effects on three national and internationally protected nature conservation sites, and adverse effects on water quality in the region. Possible mitigations include further water quality studies to determine impacts; water quality monitoring; careful design of the site to avoid entering sensitive areas; and suitable design and location of coastal and fluvial flood defence works and marine landing station

- Low flood risk. Some additional adverse visual impact on the landscape, which may be visible from the Lake District National Park, but this would be in the context of an already industrialised area. Possible mitigations include visual impact mitigation associated with detailed siting of main buildings and application of principles of good design in accordance with PPS1.

- Positive effects associated with long-term employment and enhanced prosperity for local communities.

- Sellafield is approximately 60km north west of the nominated site at Heysham. The possible, positive regional economic effects discussed above could be enhanced if both the nominated sites in the region were developed.

Sizewell

S.12.15 The site at Sizewell is located on the coast adjacent and to the north of the existing Sizewell B nuclear power station near Leiston, Suffolk, in the east of England. The site is on the Suffolk Heritage Coast within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB) and includes part of the Sizewell Marshes SSSI and includes land in the Goose and Kenton Hills. There are 13 European protected sites within 20km of the site.

S.12.16 Potential likely effects and key findings recommended as guidance for the IPC to consider include:

- Adverse effects on nationally designated landscape areas. The site lies within an AONB and is part of a Heritage Coast. This would be difficult to mitigate.

- Adverse effects on at least five national and internationally protected nature conservation sites; and effects on water quality, and fish/shellfish populations in nearby coastal waters. Possible mitigations include avoidance of need to develop in or disturb sensitive areas; suitable design and location of coastal and fluvial flood defence works and marine landing station; suitable construction methods; and suitable design and location of cooling water abstraction and discharge points

- Positive effects associated with long-term employment and enhanced prosperity for local communities

- The site is not part of a cluster of nominated sites, therefore regional cumulative effects are not considered relevant. However, the potential for adverse effects from Bradwell and Sizewell on the European designated site of the Outer Thames Estuary indicates that there may be interactions and cumulative effects on biodiversity.

Wylfa

S.12.17 The site at Wylfa is located on the north coast of Anglesey, an island off the coast of North Wales, bounded by the Irish Sea. The site is located to the south east and to the east of the existing Wylfa nuclear power station. There are nine European protected sites within 20km of the site[31]. Tre'r Gof SSSI lies within the boundary of the site and this is a rich-fen habitat which supports nationally scarce plants and is considered a representative example of this habitat type within North West Wales. Early indications of legally protected species within 10km of the site include bat species, common species of reptile and choughs[32].

S.12.18 Potential likely effects and key findings recommended as guidance for the IPC to consider include:

- Favourable conditions in terms of coastal flooding, erosion, and dispersion of cooling water;

- Adverse effects on at least four nationally and internationally protected nature conservation sites; possible mitigations include implementation of a Construction Environmental Management Plan to avoid/minimise disturbance to wildlife, to minimise habitat loss and to prevent water pollution; ensuring fish protection in cooling water intake/system design; and avoidance of sensitive areas;

- Significant adverse effects on the local landscapes of an AONB and Heritage Coast;

- Significant beneficial effects for long-term employment and enhanced prosperity for local communities.

[31] A further eight European protected sites were also considered because of hydrological connectivity although they were more than 20km from the site.
[32] The RSPB notes that choughs, an Annex 1 species under the EC Birds Directive, use the headland and fields adjacent to the nominated site

- The site is not part of a cluster of nominated sites, therefore regional cumulative effects are not considered relevant.

Interactions and cumulative effects

S.12.19 Many of the potential impacts and likely significant effects of the revised draft Nuclear NPS for sustainable development are inter-related, particularly between biodiversity, water, climate change, human health, and communities – their social and economic viability including supporting infrastructure and basic services. Cumulative and synergistic effects may arise from the interactions and additions of small insignificant effects and the AoS identified that this was potentially likely where there are clusters of new nuclear power stations. These inter-relationships are considered in the relevant topic sections of the AoS.

S.12.20 The AoS found that these interactions and cumulative effects were more likely to be significant where there are clusters of proposed new nuclear power stations. The AoS recommended that for some areas the revised draft NPS should advise the IPC to consider interactions and cumulative effects if more than one station is built as follows:

- north west of England: Heysham, and Sellafield. The AoSs identified potential beneficial effects of regional significance on employment and community viability, with additional positive effects on health and well-being from secure employment.

- south west of England: Hinkley and Oldbury. The AoSs identified potential interactions and cumulative effects on water quality and on important biodiversity sites in the Severn Estuary and River Wye. Potential positive effects on local employment, upskilling, community viability and health/well-being could be more significant if more than one new nuclear power station is built.

- east of England: Bradwell and Sizewell. The AoSs identified potential interactions and cumulative effects on the important biodiversity site in the Outer Thames Estuary.

Summary of AoS findings

S.12.21 Overall and generally, the AoS identified that the revised draft Nuclear NPS was likely to have significant beneficial effects for energy security of supply and to contribute positively to the Government's targets for a low carbon economy, reducing emissions of greenhouse gases and mitigating the predicted effects of climate change. Significant adverse effects were indicated for internationally important nature conservation sites; the relative significance and effectiveness of mitigation possibilities will be determined at the subsequent project level EIAs and with individual planning applications to the IPC.

S.12.22 At local and regional levels, a combination of likely significant adverse and beneficial effects was identified and their significance depends upon further localised investigations; these will be carried out in more detail with project level EIA studies. Generally, likely adverse effects were associated with capacity of supporting

infrastructure, water, flood risk and biodiversity; likely beneficial effects were associated with long term employment and community viability.

S.13 How did the Appraisal of Sustainability help the development of the revised draft Nuclear National Policy Statement?

S.13.1 The AoS was carried out in an iterative and ongoing way with the development of the revised draft Nuclear NPS. The key recommendations from the AoS were associated with identifying any significant adverse effects and possibilities for mitigation that could help inform the revised draft NPS and its guidance on impacts for the IPC when considering applications for development consent. The AoS also drew attention to the potential for cumulative effects where there might be clusters of new nuclear power stations, particularly in the north west and south west of England.

S.14 Monitoring

S.15 How will we monitor the likely effects of the energy National Policy Statements?

S.14.1 Monitoring helps to examine the predicted effects of the NPS (identified through the AoS process) against the actual effects of the NPS when it is implemented e.g. when infrastructure is constructed and operating. It is not necessary to monitor everything or monitor a predicted effect indefinitely. The purposes is to monitor the significant, predicted and actual effects, and to identify any unforeseen effects.

S.14.2 The Government has published a draft monitoring strategy for public consultation which covers all the energy NPSs including nuclear[33]. As ENs-1-5 are not spatially specific and therefore the precise location, type and quantity of proposed energy infrastructure developments that will be granted development consents or licences to operate, is not known. Accordingly there are a wide range of potential effects that may occur and that will depend on a number of factors, including the speed and proportion of infrastructure development that is successfully developed across the range of energy sectors and the application of mitigation measures as set out in the NPSs. Monitoring is, therefore, most effectively focused on environmental and socio-economic trends. At a strategic level the lack of spatial definition means that it may not be possible to attribute changes (improvements or deterioration) in trends directly to any one individual NPS.

S.14.3 The Government proposes to make use of existing monitoring where possible. Key possible indicators/measures for monitoring the sustainability effects of the Nuclear NPS could include[34]:

- the condition of European Sites and SSSIs identified as potentially affected by development;

[33] www.energynpsconsultation.decc.gov.uk
[34] This is not an exhaustive list. See the draft monitoring strategy for more details.

- Emissions of air pollutants (nitrogen oxides (NOx), sulphur dioxide (SOx), particulates (PM_{10}); and
- Areas at risk of flooding (fluvial, groundwater, sea level rise).

S.16 Next steps

S.15.1 The revised draft Nuclear NPS, the revised AoS and the HRA Reports are subject to public consultation for 14 weeks from the date of publication. Details of how to submit comments are set out in the Consultation Document. All documents are available from the Department of Energy and Climate Change's consultation website www.energynpsconsultation.decc.gov.uk

S.15.2 The Government will consider comments received during the public consultation, and the Nuclear NPS will be subject to ratification by Parliament before final designation. Upon designation of the Nuclear NPS, an AoS Statement will be published and this will outline how the findings of the AoS and the responses to consultation have been taken into account. It will also provide further information on how monitoring will be carried out.

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